Effects of Participation in an Aging Game Simulation Activity on the Attitudes of Allied Health Students Toward Older Adults

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ABSTRACT

The Aging Game simulation activity was designed to improve medical students' attitudes toward older adults. This study was conducted to determine if the Aging Game, adapted for use with allied health students, could yield positive results in the students' levels of anxiety about aging and attitudes toward aging. The modified Aging Game was implemented at a large Midwestern university with 156 students from three allied health areas – nutrition and dietetics, physical therapy, and long-term care administration. All students actively engaged in the simulation activity and completed pre- and posttest questionnaires containing the Anxiety about Aging Scale (AAS) and the Aging Semantic Differential (ASD) measures. Results indicated most students had low anxiety about aging and positive attitudes toward older adults both before and after the Aging Game activity. Changes in the students' pre- and posttest scores on AAS and/or ASD measures were mixed, with small differences in average scores. The demographics of the sample group for this study may partially explain the effects the simulation experience had on these allied health students. That some students took on a more negative attitude toward older adults after the simulation could be attributed to a more realistic view of the difficulties and challenges of aging. Also, the shortened timeframe of the Aging Game simulation may have affected the students' reactions to the activity. Future activities to complement the simulation, such as reflective writing and interaction with older adults, may improve the impact of the Aging Game on the attitudes of allied health students.

INTRODUCTION

Adults 65 years of age or older represented one in every eight Americans in 2005 and by 2030 are expected to become one of every five Americans.[1] These changing demographics suggest that future generations of health care workers need to be prepared to care for an older and possibly more functionally impaired population. For front-line health care workers, it is necessary to be proficient in the basic skills of their given profession regarding aging adults. In addition, health care providers need to understand the perspectives, beliefs, and experiences of older individuals in their care in order to identify unique needs and respond appropriately. This clinical empathy is crucial in a therapeutic relationship and has been linked to improved patient outcomes.[2]

Nevertheless, societal norms sustain ageism, and education is recommended to address the misconceptions about aging held by every age group.[3] Despite educational efforts to decrease negative stereotypes of older adults, ageism associated with both cognitive and affective facets continues to be identified among college students.[4] Negative attitudes can become more pronounced during the educational process, and education interventions that focus on health care professionals and bridge the

gap between theory and practice may increase understanding of gerontology.[5]

The Aging Game, a simulation learning activity, aims to change attitudes and improve empathy toward older adults by having students personally experience functional changes often associated with aging such as loss of hearing, vision, and mobility.[6,7] While taking on the role of an older adult with disabilities, participants are asked to navigate various situations in simulated locations such as a grocery store, bus, and nursing facility. During this adventure, they are confronted with an array of obstacles common to older individuals in the real world, but generally unfamiliar to those who are young and healthy. Participants report experiencing frustration and negative thoughts, emotions similar to those that many older adults feel when working through daily challenges. At the end of the session, participants discuss their experiences and explore their own preconceived notions about aging. A discussion and debriefing help students to reassess and realign their attitudes in order to integrate this new experience into their belief system, so that they emerge sensitized to the issues facing older adults.[8]

Research on anxiety about aging is based on the premise that anxiety mediates attitudes toward and interactions with older adults. The Anxiety about Aging Scale (AAS), developed by Lasher and Faulkender, has provided an indicator of overall anxiety about aging, including one's own development/aging and one's attitudes toward older adults.[9] This instrument is intended to measure a person's anxiety about aging by identifying specific areas of concern that education may remediate. In this manner, educational interventions can be directed to promote lessened anxiety and more positive attitudes toward aging. The overall AAS scale has shown high internal consistency in a sample representing a wide age range of participants (Cronbach alpha = 0.82). Anxiety scores have been found to correlate with gender, frequency of contact, quality of contact, and knowledge about aging.[9] The AAS, in a study by Harris and Dolinger, was used to assess differences between students with different levels of education about aging. Results indicated that education was positively correlated with lowered anxiety on the AAS and improved attitudes towards older adults.[3]

Measurement of attitudes toward older adults has been advanced as a critical step in the preparation and assessment of care providers to older adults.[3,10] The Aging Semantic Differential (ASD), as developed by Rosencranz and McNevin, consisted of a 32-item list of bipolar adjectives forming three subscales to determine the presence of bias or negative attitudes toward older adults.[11] Several variables have been related to negative attitudes toward older adults, as measured by the ASD, that efforts to increase knowledge alone may not address. In a study of college students enrolled in gerontology courses, the ASD results were related to individual writing activities and demonstrated a stronger relationship between the age of the participant and their attitudes toward older adults than the relationship between their knowledge and attitudes.[12] The ASD was used to assess medical students' experiences with a geriatric training program that included active learning, simulation exercises, and social interaction skills training.[13] The average ASD score was neutral at baseline, and improved by about 10% for students in the intervention group, while the control group's average score remained stable. Application of the ASD measure with first-year graduate social work students, who scored fairly low on knowledge about aging, showed both male gender and younger age as predictive of less favorable attitudes toward an older person.[10] Several factor models of the ASD item list have been tested.[14] Polizzi refined the wording of items and conducted further factor analysis, revealing subscales that are useful measures of attitudes toward older adults.[15] The revised list of bipolar adjectives related to the dominant factor and global measure of attitude toward aging showed high internal consistency (Cronbach alpha = 0.97).[15]

To change the attitudes of healthcare providers about aging, active learning techniques are recommended, especially simulation experiences, as learners may be affected on a very personal basis.[16,17] Other examples of instructional methods in this vein have ranged from role-playing, games, and interpersonal activities with older adults, with varying lengths of time (one-time encounter to semester-long activities). For example, the Half-full Aging Simulation Experience (three hour class) provided medical students the opportunity to experience sensory and functional limitations and adapt to the environment.[18] Building Bridges, a half-day workshop for nursing assistants, incorporated didactic content, case studies, and a simulation exercise which offered students the opportunity to be both older adult and caregiver.[19] An 11-hour training program, the Life Cycle game for health care providers, incorporated simulation-gaming, role-playing, videotape/audiotape feedback, and peer learning.[20] Although generally considered beneficial by students, evaluation of these programs has had mixed results, indicating the need for further study of educational efforts.

Reports of the impact of the Aging Game simulation experience include measures of student response. When the Aging Game workshop was implemented with medical students at Duke University, results included increased awareness of problems associated with being older, from sensory deficits to loneliness.[6] The medical students also had intense, immediate reactions to the experience of the game, with the three most common being frustration, anger, and withdrawal/resignation. Medical educators at the University of Minnesota have had more than 10 years experience with the Aging Game workshop with varying results.[21] Initially, paired sample t-tests of the 32-item ASD scale from 39 fourth-year medical students were not statistically significant.[8, 11]

A later report of 84 first-year medical students' experiences with the Aging Game showed that participants had some improvement of attitudes toward caring for elderly patients including mixed changes on the 32-item ASD scale and a significant increase in empathy toward elderly patients.[22]

In this study, the Aging Game simulation was modified and implemented for students within the allied health professions. The purpose was to evaluate allied health students' anxiety about aging and the effects of a modified version of the Aging Game on students' attitudes toward aging.[23]

METHODS

For three successive years, a simulation exercise based on the Aging Game described by Pacala was conducted at a large Midwestern public university.[7] The study sample consisted of students in five allied health classes representing three different disciplines – nutrition and dietetics, physical therapy, and long-term care administration. The learning objective was for students to experience some of the challenges that older adults face in daily activities, interactions, and health care situations. A description of how the Aging Game was integrated into standard coursework is described elsewhere.[23]

For this study, data from pre- and posttest questionnaires was collected and analyzed to assess allied health students' anxiety levels about getting older and if participation in an Aging Game activity impacted anxiety or attitudes regarding older adults. It was hoped that improved understanding and awareness of older adults would advance students' feelings and attitudes toward older individuals in their care. Preliminary results of the facilitators' observations indicated that the students who were facilitators of the simulation had meaningful experiences with the Aging Game activity. However, it was uncertain if the activity affected the student-participant attitudes towards older adults.[23]

Following institutional review board approval and collection of informed consent, 156 students participated in the study. The students included 111 nutrition and dietetics majors (from three separate cohorts), 25 long-term care students (including both undergraduate and graduate students) and 20 physical therapy majors. Because the simulation was a learning experience conducted during class time, those who were not interested in participating were offered an alternate activity to address the issue of caring for older adults. However, no students opted for the alternative activity.

Data was collected via self-administered questionnaires that included socio-demographic factors, a measure of anxiety about aging (the AAS), and a measure of attitudes toward older adults (the ASD). Socio-demographic factors included age, gender, contact with older people (relatives, work, course experiences), and plans for working with older adults. Standardized measures for anxiety about aging and attitudes toward older adults were included in the paper-and-pencil questionnaires given to student participants. These questionnaires were completed, in person approximately one week before and one week after participation in the Aging Game. To maintain confidentiality, no identifying information other than socio-demographic items was asked on the questionnaire. Missing responses occurred infrequently and did not preclude analysis of completed question items. For pre- and posttest comparisons, the majority of students (n=145, 93%) provided complete responses to all questions.

Study Measures of Students' Views on Aging

Anxiety toward aging was measured using the 20-item Anxiety about Aging Scale (AAS).[9] This scale consisted of four factors (five items in each) thought to comprise anxiety about aging: 1) fear of old people; 2) psychological concerns; 3) physical appearance; and 4) fear of loss. For example, one question from the physical appearance factor asked respondents the extent to which they agreed with the statement "I have never dreaded looking old." For the present study, AAS response options included a four-point rating scale of frequency (never to always) or agreement (strongly disagree to strongly agree) prompting students to chose one position or the other in response to each item. For most of the items, agreement indicated a positive response, or lessened anxiety. However, for seven items, agreement indicated a negative response and these responses were reversed for scoring purposes. The possible range of total AAS scores was 20 to 80, with higher scores representing lower levels of anxiety about aging. On the AAS pretest, internal consistency (alpha value) for each factor was 1) 0.83; 2) 0.72; 3) 0.61; and 4) 0.72, and for the total the alpha value was 0.82 with 20 items (150 respondents). Each AAS posttest factor showed an increased alpha value: 1) 0.84; 2) 0.79; 3) 0.63; 4) 0.73; and total AAS 0.84 (148 respondents).

Attitudes toward older adults were measured using the Aging Semantic Differential (ASD) as refined by Polizzi.[15] The ASD items consisted of 24 bipolar adjective pairs used to describe older people with a seven-point rating scale between each pair of terms. These ASD items entailed the most dominant factor from the original ASD, which was considered capable of measuring global attitudes toward both older men and women.[15] Examples of adjective pairs included "cheerful-crabby" and "pleasant-unpleasant." In one instance, based on student feedback from an earlier pilot of the instrument, a word was substituted (stingy for frugal) to improve student recognition of this item. Total scores could range from 24 to168, with lower scores indicating a more positive

attitude toward a typical person over 65 years of age. On the pretest, the internal consistency (alpha value) was 0.94 for the 24 items (148 respondents); the posttest alpha value was 0.96 (152 respondents). For this study, students' ASD scores were categorized based on the midpoint, or neutral, rating of 96 for the composite score as described by Polizzi and Millikin.[24] For analysis purposes, students were placed in one of three groups: those with a composite ASD score less than 96 as positive attitudes; students with a total score of 96 as neutral attitude; and those with a score of more than 96 considered as negative attitudes toward older adults.

RESULTS

The demographic results reflected the expected range for this largely undergraduate group of allied health students (n=156). The majority were under 25 years old (81%), and female (84%). For most participants, their oldest parent/grandparent was over 65 years old (78%), and the majority reported contact with their oldest parent/grandparent at least once a month (63%). The participants' prior experiences with older people are presented in Table 1. From the study sample, 83 students (53%) planned to work with older populations upon graduation.

Pretest and Posttest Comparisons of Study Measures

The participants' results on the AAS and ASD measures are reported from responses on the pre- and posttest questionnaires. The AAS pretest, indicative of anxiety about aging, reflected a wide range of responses. Scores on the four AAS factors ranged from 5-20 point totals (the maximum possible) and the totals scores ranged from 42 to 80 points (possible 20 to 80 points). The average pretest AAS score was 55.73 (SD 6.0), falling in the upper half and suggesting lower levels of anxiety. In regard to the ASD scores that reflect global attitudes about people over 65 years of age, the pretest response totals ranged from 24 to 118 points (possible 24 to 168 points). The majority of students (118, 81%) fell into the positive attitude group with less than 96 points on the composite or total ASD score. For the total group, the average ASD pretest score was 78.84 (SD 18.2), which was lower than the neutral point of 96.

Table 1: Allied Health Students' Experience with Older People

	Yes		No		Missing	
	N	%	N	%	N	%
Lived with someone over 65 years old	58	37.2%	97	62.2%	1	<1%
Worked with someone over 65 years old	97	62.2%	59	37.8%	0	0.0%
Previous coursework on older people	78	50.0%	78	50.0%	0	0.0%

Most participants' scores on the questionnaire measures changed after the Aging Game experience (see Table 2). The change in total AAS ranged from -14 to +13 points with 44 students (31%) showing lower anxiety levels. On the ASD, scores changed from +65 to -39 points with 56 (39%) students showing improved attitude scores. In addition to the composite scores, individuals' pre- and posttest results differed on the AAS individual factors (see Table 3). Changes in students' scores following participation in the Aging Game suggested a reduction in anxiety about physical appearance and increased anxiety regarding psychological concern and fear of losses, though results were stable with regard to fear of old people. On the average, the change in composite AAS scores represented an increase in anxiety level following participation in the Aging Game (paired t-test, t = 4.16, df = 144, p<0.001). However, the overall mean remained within the range of lower anxiety toward aging.

Table 2: Comparison of Pre-Post Scores on the Anxiety about Aging (AAS) and Aging Semantic Differential (ASD) Measures after the Aging Game Activity

Pre-post change in student scores	Pre-post test AAS		Pre-post test ASD	
	N	Percent	N	Percent
Scores indicating more positive attitudes and less anxiety about aging	44	31%	56	39%
No Change	11	7%	10	7%
Scores indicating less positive attitudes and more anxiety about aging	90	62%	82	54%

*Improved scores are indicated by a change in the individual's overall score on each measure which suggest a reduction in anxiety or more positive attitude.

Table 3: Comparison of Pre-Post Scores on the Anxiety about Aging[a] (AAS) Factors for Aging Game Participants

AAS Factors (possible range)	N	Mean Pre-Test (SD)	Mean Posttest (SD)	Difference in Mean Scores
1) Fear of Old People (5-20 points)	151	15.42 (2.67)	15.21 (2.49)	-0.22
2) Psychological Concern (5-20 points)	150	14.77 (1.94)	14.02 (2.22)	-0.69*
3) Physical Appearance (5-20 points)	153	12.75 (2.12)	13.08 (2.33)	+0.34*
4) Fear of Losses (5-20 points)	155	12.68 (2.35)	11.77 (2.24)	-0.91*
Total AAS (20-80 points)	145	55.73 (6.00)	54.21 (6.47)	-1.52*

[a] For the AAS measure, higher values indicate less anxiety
* $p < .05$ on paired sample t-tests

Concerning the ASD scores, the majority of students stayed in their initial attitude groups (positive, neutral, or negative). Posttest responses did affect the ASD attitude group status for 36 students (26%) and more than 10% fewer students had posttest scores in the positive attitude range (see Table 4). Analysis of variance with ASD attitude groups revealed significant differences with ASD scores at pretest ($F_{(2,148)} = 54.48$, $p<0.001$) and posttest ($F_{(2,145)} = 68.84$, $p<0.001$) and AAS scores both at pretest ($F_{(2,144)} = 5.45$, $p<0.01$) and posttest ($F_{(2,141)} = 5.16$, $p<0.05$). There appeared to be an age effect on changing to the ASD negative attitude group as 24 of those 26 students were less than 25 years of age. While the mean change in ASD score for all the students was -2.91, for the students less than 25 years of age the mean change pre-post ASD was -3.66, significantly different by Chi square analysis (df 116, $p<0.05$). The mean ASD scores were higher after the Aging Game than before, though still below 96 (the neutral attitude midpoint). However, students' ASD scores before and after the Aging Game activity revealed a significant difference (paired t-test, t=-2.1, df =144, $p<0.05$).

Table 4: Comparison of Aging Semantic Differential (ASD) Attitude Groups with Pretest and Posttest Scores for Both Measures

ASD Pretest Groups[a] N (percent)	ASD Pretest Scores[a] Mean (SD)	AAS Pretest Scores[b] Mean (SD)	ASD Posttest Groups[a] N (percent)	ASD Posttest Scores[a] Mean (SD)	AAS Posttest Scores[b] Mean (SD)
Positive 119 (81%)	73.01 (15.1)	56.41 (6.1)	Positive 104 (68%)	73.06 (17.4)	55.16 (6.7)
Neutral 5 (3%)	96.0 (0.0)	58.60 (2.8)	Neutral 12 (8%)	96 (0.0)	54.0 (6.0)
Negative 24 (16%)	104.17 (6.0)	52.04 (4.1)	Negative 36 (24%)	105.75 (8.2)	51.12 (4.8)
Total 148	78.84 (18.2)**	55.79 (6.0)*	Total 152	82.61 (20.7)**	54.15 (6.5)*

[a] ASD possible point range from 24–168, lower values indicate better attitude
[b] AAS possible point range from 20–80, higher values indicate less anxiety
** Difference between ASD scores based on ASD group status by ANOVA $p<0.001$
* Difference between AAS scores based on ASD group status by ANOVA $p<0.01$

Analysis of Study Measures with Demographic Characteristics
The students' pre- and posttest score changes in AAS and ASD were negatively correlated (Pearson's correlation coefficient -0.204, $p<0.05$), indicating that the two measures had the expected relationship. Analyses were also conducted to determine if the students' AAS factors and ASD scores were different based on background characteristics of age, gender, year of the activity, major, experiences with older people, or plans to work with older adults. A few results were statistically significant (see ANOVA results in Table 5) and significant trends are noted here. First, differences by gender were found on factors of the AAS measure: males' scores indicated more fear of old people; however, for physical appearance, females had more anxiety than males at pretest (differences were not significant at posttest). Next, when the students' scores were compared by the year of the activity, a difference was found on scores for anxiety about physical appearance. However, a difference by year of the activity was not found for the degree of change on the pre- and posttest AAS (Chi square [df 2] =1.06, p=0.588) or the pre- and posttest ASD (Chi square [df 2] = 0.740, p=0.691). Thirdly, nutrition majors' scores did indicate more anxiety about physical appearance than the combined group of long term care students and physical therapy majors.

Testing with ANOVA also revealed that students with increased contact, work history, or prior coursework on older adults had AAS scores indicating less anxiety. Those who had prior coursework on older adults (76 of 152) also had a more positive attitude than those who did not have prior coursework on pretest ASD scores with a mean of 75.51 (SD 16.8) versus 82.35 (SD 19.03). However, the average posttest ASD score for those with prior coursework significantly increased toward negative attitude more than the change of those without prior coursework (average 5.62 (SD 15.82) versus 0.08 (SD 14.07)). Consequently, there was less of a difference in positive attitude among those with prior coursework after the activity.

Table 5: Analysis of Variance (ANOVA) Results of Participants' Background Characteristics on Attitude Measures

Significant Differences Between Groups on Attitude Measures	df	N	F Score	P value
Gender on fear of old people, AAS Factor 1				
1) pretest	1	154	10.31	P<0.01
2) posttest	1	153	5.68	P<0.05
Gender on anxiety about physical appearance, AAS Factor 3				
1) pretest only	1	156	6.76	P<0.05
Year of activity on physical appearance, AAS Factor 3				
1) pretest	2	155	3.59	P<0.05
2) posttest	2	153	6.65	P<0.01
Major on anxiety about physical appearance, AAS Factor 3				
1) pretest	1	155	12.24	P<0.01
2) posttest	1	153	11.04	P<0.01
Contact with older adults on improved AAS total scores				
1) pretest	4	149	2.69	P<0.05
2) posttest	4	147	4.25	P<0.01
Contact with older adults on positive change in fear of losses, AAS Factor 4				
1) at posttest	4	154	4.15	P<0.01
Worked with older adults on improved AAS total scores				
1) pretest	1	150	7.09	P<0.01
2) posttest	1	148	5.49	P<0.05
Coursework on older adults on improved AAS total scores				
1) pretest	1	150	8.85	P<0.01
2) posttest	1	148	11.73	P<0.01
Coursework on positive attitude on ASD total scores				
1) pretest only	1	145	5.36	P<0.05
Coursework on older adults on negative change in ASD scores				
1) at posttest	1	152	4.94	P<0.05

With the identification of some effects on AAS and ASD scores due to socio- demographic items, the sample was reviewed for trends within the group related to these factors. The majority of participants (n=111, 71%) were nutrition students, and this was the only group to participate all three years. The nutrition students did not differ significantly from long term care students or physical therapy majors in age, age of oldest parent/grandparent, nor histories of living or working with individuals over 65 years of age or plans for working with older adults. Of significance, using Chi Square analysis, long term care students and physical therapy majors combined (45 of 156) compared to the nutrition students were more likely to have had prior coursework focusing on older populations (84% v 36%, p<0.001) and more likely to be male (31% v 11%, p<0.01). Also of note, students 25 years of age or older (29 of 156) and females (130 of 156) had more frequent contact with older relatives than students less than 25 years of age or males (df 4, p<0.05; df 4, p<0.05 respectively).

Analyses of variance were conducted on the nutrition students alone in order to determine if the score changes between pretest and posttest were different based on age and experiences. No significant differences were found in the degree of change demonstrated by students with different family and work histories with older individuals, plan for work, or differences in ASD scores among nutrition students due to age and experiences were identified. However, the change in both the AAS Factor 3 physical appearances and Factor 4 fear of losses were significantly different for nutrition students based on age. Interestingly, pre- and posttest changes for the nutrition students on Factor 3 indicated less anxiety for those less than 25 years of age, while pre- and posttest scores for Factor 4 indicated less anxiety for students 25 years of age or older $(F_{(1,108)} = 11.4, p < 0.01;$

$F_{(1,110)} = 6.28$, $p<0.05$ respectively). Factor 4 pre- and posttest values with the nutrition students indicated less anxiety for those with more contact with older relatives ($F_{(4,109)} = 3.38$, $p<0.05$), consistent with the whole sample.

DISCUSSION

In summary, these results indicated an effect on the allied health students after participation in a modified version of the Aging Game simulation as measured by the AAS and the ASD. It is important to note that most students began with scores indicating lower levels of anxiety about aging and positive attitudes toward older adults going into the simulation exercise, and most students maintained low anxiety and positive attitudes. Additionally, even when statistically significant, overall changes in the students' anxiety levels and attitudes were small. However, the changes in students' anxiety levels and attitudes found here warrant explanation. Three main factors, as compared to prior research, may offer some explanation for these results: the sample group for this study, the allied health students' response patterns on the AAS and ASD measures, and the modifications to the Aging Game activity.

First, there was a preponderance of females in the study, and students entered the simulation with low anxiety and positive attitudes toward older adults. Participants with prior coursework on aging and frequent contact with older relatives were also well-represented in this sample. These variables have been related to lower anxiety and less negativity towards older adults, as seen with this group.[9,10,14] However, these factors may have been countered by the young age of the sample with over 80 percent under age 25. Poorer attitudes towards older adults have been seen more often with younger ages.[10,12] It may be that this is the first time many of the young students in this study considered older adults in terms of their own aging process. Because the simulation required that students consider their own aging, this alone could result in a short-term rise in anxiety and dip in attitudes toward older adults.

Second, the allied health students' response patterns on both the AAS and ASD showed high internal consistency comparable with prior research.[9,15] The students' scores on these measures were negatively correlated, reflecting the expected relationship between anxiety and negative attitude toward older adults. Also, the students' responses on the posttest may reflect the personal impact of the simulation experience.[16] Of note is the greater shift in negative attitude for the students' with prior coursework on aging, indicating the unique features of the Aging Game simulation. The focus in health care toward person-centered care reinforces the need for coursework that enhances students' understanding of the older adult's experience and ensures that students are sensitized to the older adult's needs. Empathy has been conceptualized in various ways in the literature, but some have argued that the older adult's perception of the relationship between themselves and their caregiver should be central to the definition.[25] As the Aging Game simulation places the student directly in the role of older adult, it is hoped that this experience would allow students to understand the older adult's point-of-view. Thus increased empathy, defined as understanding of the meaning of another's experience, would result.[25] Empathy has also been conceptualized as an affective response to another's suffering and may be reflective of the Aging Game participants experiencing some level of discomfort or shared emotional arousal.[26]

For the AAS, anxiety toward physical appearance lessened. Anxiety increases were primarily in the areas of psychological concern and fear of losses. The student participants in the Aging Game simulation were asked to take on roles that included both psychological and physical disability. As with the medical students at Duke University, the simulation may have led to intense, immediate reactions to the experience of the game, including frustration, anger, and withdrawal/resignation.[6] These feelings, in turn, could account for increased anxiety about aging in the short-term. In terms of the changes in the ASD, most students remained positive in their attitudes toward older adults and some changes occurred in a favorable direction. For those who took on a more negative attitude toward older adults after the simulation, this could be attributed to a more realistic view of the difficulties and challenges of aging. Overall, these students had a smaller increase toward negative attitude on the average ASD score than earlier work with medical students (about 5% versus 10%).[8] The results of this study compare with the recent report from the University of Minnesota, as the means for most of the ASD items were slightly more negative with only a few items having a more positive result.[22]

Third, the Aging Game activity was modified in two main ways for implementation within the class time for these allied health students – duration and applications to health care practices. According to some researchers, shared suffering is essential to a meaningful and appropriate response by the caregiver.[27] The results of this study suggest that the participants experienced some sense of "shared suffering." However, areas of improvement for the activity are indicated. The length of the activity was limited to 80 minutes; other workshops report half-day duration for similar events.[18,21] Due to limited time within the simulation, students' adaptation to their role/environment was not facilitated nor did they practice the role of caregiver as others have found beneficial.[18,19] Also, this adaptation of the Aging Game could be more fully integrated into course content. Supplementing the Aging Game activity with other exercises such as written assignments or interpersonal activities with older adults might have

helped students to further improve their attitudes.[13,17] To improve the effects of the Aging Game activity, reflective practice may be encouraged and students could be asked to complete a written reflection on their experiences, how it relates to their own aging process and how it relates to their allied health care practice.[28] Another modification would be to provide opportunities for the students to participate in positive and empowering communication between older adult and caregiver. Posttest measures of anxiety and aging toward aging should be conducted at a later point after these supplementary activities.

CONCLUSION

Overall, participation in an Aging Game simulation activity appeared to be beneficial to allied health students in increasing their awareness of aging. The primary goals of the activity were for students to increase their understanding of the problems that older adults face and emerge sensitized to older adults. However, students responded differently to the experience and a variety of factors appeared related to results of the Aging Game. A short-term effect of this awareness was reflected in some increase in anxiety and less positive attitudes toward older adults – especially among the younger students.

Further work is needed to optimally affect more students' understanding and attitudes over the long-term. Efforts that might strengthen this experience are modifications to the simulation itself to include examples of positive communication with older adults. Also, class experiences can build from the Aging Game simulation and emphasize opportunities to improve the health and abilities of older adults relative to each discipline. These activities can take many formats, such as written assignments, interaction with older adults, and development of strategies for health promotion at any age. Developing learning activities that help students to understand the perspectives, beliefs, and experiences of older adults can have a positive impact on the empathetic delivery of care.

Additional testing of students allowing for a longer period between the simulation and the posttest is also needed. The changes seen in this study, though minor, were based on a very short time period. These changes may have been merely short-term reactions to the simulation rather than long-term indications of feelings and attitudes toward older adults. In the future, the curriculum of these allied health courses may include activities such as those described above and use of the AAS and ASD with measures of empathy at longer time intervals to determine changes and stability of changes in students' anxiety about aging and attitudes toward older adults over time.

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