

Undergraduate Students Knowledge and Perceptions regarding Older Adults

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Abstract

The US Census Bureau estimates an increase in the population aged 65+, which is projected to reach 83.7 million by 2050. With this changing demographic those with specialized training in aging are needed. Undergraduate students have varying knowledge and attitudes towards older adults. To better understand undergraduate student's knowledge and attitudes regarding older adults we surveyed a group of 171 undergraduate students enrolled in the school of arts and sciences. Students were surveyed using the Facts on Aging Quiz, the Aging Semantic Differential, Kogan's Attitudes Toward Old People Scale, and student's perceptions of working with older people. Students reported varying scores on perceptions toward older adults. The ASD found that students held more positive attitudes towards older adults, while the KAOP indicated that students had more neutral attitudes towards older adults. In general, students were neutral regarding perceptions about wanting to work with older adults.

Keywords

Undergraduate Students, Knowledge, Perceptions, Aging

1. Introduction

With increasing frequency, the popular press reports on the impact that the growing number of older adults may have on our society and the increasing need for individuals with training in gerontology and geriatrics. Furthermore, many reports convey the need for people of all ages to prepare themselves for their own old age. Aging is a lifelong process one in which we are all involved. Aging education is a key component in successful aging (McGuire, Klein, & Couper, 2005). The increase in number of older adults is upon us. The number of Americans ages 65 and older is projected to nearly double from 52 million in

2018 to 95 million by 2060, and the 65-and-older age group's share of the total population will rise from 16% to 23% (United States Census Bureau, 2019). Additionally, the older population is becoming more racially and ethnically diverse. Between 2018 and 2060, the share of the older population that is non-Hispanic white is projected to drop from 77% to 55% (United States Census Bureau, 2019). Given the increasing number of older adults, young individuals cannot afford to face the future with ageist attitudes; furthermore, our society cannot afford to be guided by individuals who are ageist and lack knowledge and sensitivity regarding aging (Couper & Pratt, 1999). With the increasing number of older adults, there come both challenges and opportunities for those of all ages.

Aging is often associated with multiple chronic diseases and reduced ability to independently perform activities of daily living, collaboration between clinical health, public health, and social care systems will be required. For example, additional healthcare navigators are going to be needed to help older adults navigate the healthcare system. Previous research indicates a high prevalence of chronic conditions among older adults in the U.S., including chronic obstructive pulmonary disease (COPD), Alzheimer's disease (AD), depression, heart failure, chronic kidney disease, diabetes, coronary heart disease, arthritis, high cholesterol, and hypertension (National Council on Aging (NCOA), 2017).

To respond to the unique needs of older adults and enhance the quality of care towards older adults, there is a need to increase the number of professionals, particularly health professionals with expertise in aging. Previous research has documented a lack of interest among nursing students in working with older adults (Liu, Norman, & While, 2013; Kydd & Wild, 2013; Heise, Johnsen, Himes, & Wing, 2012; Liu, While, Norman, & Ye, 2012). At the very least there is a need to provide general aging education to all individuals in a university setting to increase interest in careers in aging, but also to provide general education about aging since the aging population is increasing tremendously. Inability to recruit and retain individuals in the aging field has been attributed to low financial rewards, lack of aging knowledge, which can lead to negative attitudes towards aging and working with older adults (Masciadrelli, 2014; Meiboom de Vries, Hertogh, & Scheele, 2015). Luckily, we can change attitudes, perceptions, and knowledge regarding aging. Education on aging was shown to decrease ageist attitudes and increase interest in working with the aging population (Masciadrelli, 2014). In a study conducted by Masciadrelli (2014) among nursing students, it was found that by measuring the effects of experiential learning activity on knowledge competencies and attitudes towards older adults, a significant increase in the target competencies and decrease in ageist attitudes was found after undergoing the learning activity. This demonstrates the importance of providing positive learning activity experiences about older adults to students (Masciadrelli, 2014). Evaluating students' knowledge, attitudes, and perceptions about older adults is crucial in understanding their learning needs and identifying their potential misconception about older adults, which may in turn, guide the develop-

ment and refinement of aging education (Heise, Johnsen, Himes, & Wing 2012; Koren, Hertz, Munroe, Rossetti, Robertson, Pionczynski, Berent, & Ehrlich-Jones, 2008). However, to our knowledge these evaluations have not yet been conducted among students in exercise and aging and public health introductory courses in the school of arts and sciences. With the fast increasing number of older adults, it is imperative that we educate undergraduate students to provide high quality care to older adults. Therefore, we aim to examine and describe undergraduate student's knowledge of aging, attitudes towards older adults and perceptions about working with older adults. Specifically, there were three objectives for this study:

- 1) Examine what current undergraduate students known about older adults;
- 2) Identify attitudes that undergraduate students have towards older adults;
- 3) Explore undergraduate student perceptions about working with older adults.

2. Methods

A repeated cross-sectional study design was used to examine changes in aging knowledge, attitudes, and perceptions among undergraduate student in exercise and aging and introductory public health courses in New Brunswick, New Jersey. A total of 171 undergraduate students participated in this study. The study was conducted from September 2019 to May 2020 (i.e., three semesters). The surveys were conducted as a part of two courses both taught through the school of arts and sciences—both courses contained lessons on aging and an experiential learning component with an aging focus. This was part of a class assignment and there for IRB approval was not sought, however all ethical standards were in place. Therefore, informed consent was not obtained. During the first week of class students were asked to complete several assessments. During the first semester students were only asked to complete two assessments (i.e., Facts on Aging Quiz and Aging Semantic Differential). The next two semesters Kogan's Attitudes Toward Old People Scale and the Health and Social Care student's perceptions of working with older people were added to the assessment. To be included in the survey, you had to be a student enrolled in one of the two courses during the three semesters in which the assessments were conducted.

Four assessments were used in this study. Knowledge of aging was assessed using the revised version of the Palmore Facts on Aging Quiz comprised of 50 true-false questions designed to assess factual knowledge about aging and older adults (Breytspraak & Badura, 2015). Each correct answer receives a score of one, while incorrect or no answer receives a score of zero; cumulative scores ranges from 0 to 50. The higher total knowledge score indicates greater knowledge of aging.

The Aging Semantic Differential (ASD) is the most widely used instrument in gerontological and geriatric education assess the stereotypic attitudes young people have toward older adults (Rosencranz & McNevin, 1969). The revised scale has 24 adjectives that can be used to describe older adults. Participants are

asked to circle a number between 1 and 6 to indicate their perceptions about older adults. Scores range from 24 to 144, which higher scores indicating more negative perceptions of older adults.

The Kogan's Attitudes toward Older People Scale (KAOP) was used to measure attitudes towards senior citizens (Kogan, 1961). The KAOP is a 34-item Likert-type scale; six-point responses to statements range from 1 = strongly disagree to 6 = strongly agree. The scale contains 17 matched positive and negative statement; negative statements are reverse scored. The cumulative KAOP score ranges from 34 to 204, with higher total scores indicating more positive attitudes toward older adults (Kogan, 1961).

The Health and Social Care Students' Perceptions of Working with Older People was used to assess participants perceptions regarding working with older adults (Nolan, Brown, Davies, Nolan, & Keady, 2006). This scale was grounded in the experiences of students themselves. The scale covers three broad areas addressing the following: perceptions of working with older adults in general, intentions to work with older people when qualified, and perceived consequences of working with older people in terms of future career prospects and job satisfaction (Nolan et al., 2002). For each statement, students indicate their agreement on a five-point Likert scale from strongly agree to strongly disagree (Nolan et al., 2002). Scores range from 15 to 75. Higher scores indicate greater likelihood of wanting to work with older adults.

Demographic information was collected on both the ASD and the Health and Social Care student's perceptions of working with older people. The demographic variables that were collected including the following: age, race, gender, highest level of education, and ethnic or cultural origin. Additionally, participants were asked about their present educational program/course and about their experience with older adults.

All data was analyzed using IBM SPSS 26. Frequencies and percentages were obtained for categorical variables. Continuous variables were summarized with either mean and standard deviation (SD) or median and range, as appropriate. Differences in mean distributions between groups were assessed using independent t-tests. To assess relationships between scores on the knowledge, attitude and perceptions scales, individual linear regressions models were constructed. Each model had one scale's score as the outcome variable, with another score as a predictor, adjusted for covariates found to significantly different for that specific outcome. For all statistical tests, two-tailed P-values < .05 were considered statistically significant.

3. Results

All the participants were undergraduate students in the school of arts and sciences. Three different groups of students participated in the survey, for a total of 170 students who participated. Group one participated in the survey in the spring of 2019. Group one completed the Facts on Aging Quiz and ASD survey before and

after interacting with older adults at a senior center for Bingocize® or adult coloring. A total of 46 students completed the pretest, while 29 students completed the posttest. Group two participated in the assessments in the fall of 2019. In addition to the Facts on Aging Quiz and the ASD group two (and group three) completed Kogan's Attitudes toward Old People Scale and the Health and Social Care student's perceptions of working with older people assessment before and after interacting with older adults at a senior center for Bingocize® or adult coloring. A total of 69 students completed the pretest, while 19 completed the posttest. Group three completed all four of the assessments; however, the group did not have an opportunity to interact with older adults at a senior center due to the COVID-19 pandemic. A total of 55 students completed the pretest, while only eight students completed the posttest. All students regardless of which group they were in received lessons on aging, which incorporate many of the topics from the Facts on Aging Quiz. The average age across the three groups was 20.3, most of the students indicated that they had a high school diploma, and the sample was racial diverse (Table 1).

Overall, the pretest scores on the Palmore Facts on Aging Quiz ranged from 21 to 48 (0 - 50 possible), with the mean score being 32.4 (SD = 5.3). Across the three semesters the undergraduate students incorrectly identified the following on the pre-test: as adults grow older, reaction time increases (62.9%), remaining life expectancy of blacks at age 85 is about the same as whites (68.8%), and all medical schools now require students to take courses in geriatrics and gerontology (66.5%). The results of the posttest indicate that there was a slight increase in scores on the Palmore Facts on Aging Quiz 33.9 (SD = 5.2). The posttest scores ranged from 22 - 41. Scores improved aforementioned questions, with the exception of one questions: reaction time increases (39.3%), remaining life

Table 1. Participant demographics.

	Fall 2019 (N = 69)	Spring 2019 (N = 50)	Spring 2020 (N = 51)
Gender (%)	Not collected	Male-24 (48.0) Female-20 (40)	Male-23 (45.1) Female-17 (33.3)
Race	White-16 (32.0) Black-6 (12.0) Asian-13 (26.0) Other-12 (24.0)	White-16 (32.0) Black-6 (12.0) Asian-13 (26.0) Other-12 (26.0)	White-17 (33.3) Black-5 (9.8) Asian-12 (23.5) Other-4 (7.8)
Age M (SD)	20.7 (1.2)	20.7 (1.2)	20.0 (1.4)
Education	Bachelor's Degree-1 (1.0) High School Diploma-55 (56.7) Other-6 (6.2)	Not Collected	High School Diploma-34 (66.7) Other-4 (7.8)

expectancy of blacks at age 85 is about the same as whites (68.8%), and all medical schools now require that students take courses in geriatrics and gerontology (54.1%).

The range of scores among the participants on the ASD ranged from 24 to 144. The results indicate that the participants generally held positive views of older adults. The average pretest scores across the three groups was 67.7 (SD = 16.6), while the average posttest scores was 64.8 (SD = 23.1). For instance, most students indicated that older adults are safe as opposed to dangerous, as highlighted by the low averages on the ASD scale. The average was 1.99 across the three groups pretest and 2.26 posttest. Participants were neutral on the following characteristics (pre/post average): flexible/inflexible (3.94/3.00), cooperative/uncooperative (3.38/3.08), tolerant/intolerant (3.00/3.17), cheerful/crabby (3.10/2.96), and optimistic/pessimistic (3.13/2.76). There was no significant difference found between pretest and posttest scores for any of the groups (Table 2).

The range of scores on the KAOP ranged from 55 to 134 among the two groups of students. The results indicated that overall, the participants generally held positive attitudes toward older people. Pretest scores ranged from 90 - 143. The average pretest scores was 109.2 (SD = 7.0) and 116.1 (8.6) for groups two and three, respectively. Posttest scores ranged from 55 to 106, while the average posttest scores was 99.4 (SD = 5.5) and 86.2 (SD = 16.4) for groups two and three, respectively. There was a significant difference found with both groups (Table 2).

Table 2. Differences in scores on knowledge, attitude, and perception.

Group	n	Knowledge M (SD)	Perception M (SD)	Attitude M (SD)	Working with Older Adults M (SD)
Group 1 (pre)	46	30.5 (7.7)	74.3 (21.0)		
Group 1 (post)	29	33.6 (4.1)	68.3 (21.2)		
		$t = -5.3$ $p = .000$	$t = 1.9$ $p = .054$		
Group 2 (pre)	69	35.2 (7.7)	66.3 (13.6)	109.2 (7.0)	41.5 (3.4)
Group 2 (post)	19	36.2 (7.1)		99.4 (5.5)	41.5 (3.4)
		$t = -1.0$ $p = .312$	$t = .27$ $p = .790$	$t = 13.2$ $p = .000$	$t = -.003$ $p = .997$
Group 3 (pre)	55	32.1 (5.9)	65.3 (15.2)	116.1 (8.6)	42.9 (3.9)
Group 3 (post)	8	30.0 (4.3)	60.1 (24.6)	86.2 (16.4)	80.2 (7.6)
		$t = 7.4$ $p = .461$	$t = 2.3$ $p = .029$	$t = 23.3$ $p = .000$	$t = -59.9$ $p = .000$

*Group 1 (Spring 2019), Group 2 (Fall 2019), and Group 3 (Spring 2020). Facts on Aging Quiz-Knowledge. Aging Semantic Differential-Perception. Kogan Attitude-Attitude. Health and Social Care-Working with Older Adults.

The scores on the Health and Social Care Student's Perception of Working with Older People ranged from 33 to 53 (15 to 75 possible). The scores indicate that students have a neutral opinion about wanting to work with older adults. The students were generally neutral on the responses to the questions; however there were four questions where students disagreed. The majority of students disagreed with the following (pre/post average): health care professionals work with older people because they cannot cope with hi-tech care (2.07/1.92), once you work with older people it is difficult to get a job elsewhere (1.99/1.97), working with older people provides little satisfactions as they rarely get better (2.17/2.25), and working with older people is not a good career move (2.07/1.97). Participants indicated that they find working with older people to be a very positive or quite a positive experience (1.55/1.83), however, most students do not currently work with older adults. The students who indicated that they currently work with older adults and shared their thoughts about further thoughts about working with older adults. Several examples include, "Some older people are very nice and have great stories and memories that they share. While some other older people seem to look down upon the newer and younger generations and it is evident through our interactions together", "I am nervous but excited. I feel that the elderly is a group that is really forgotten about in some ways in society", "I think that although sometimes it can be very upsetting, working with older people is very rewarding and something that gets overlooked", and "I think that working with older people is all about balance and finding the correct ways to individualize care for each person". Students were asked several open-ended questions as a part of the Health and Social Care Student's Perception of Working with Older People survey. Participants were asked if they had worked with older people before starting their professional education program. The following is a list of the places/positions that students have worked prior to their professional program: internship with physical therapist, senior center, nursing assistant, playing music at a senior center, hospital volunteerism, emergency medical services, and through a school program that connected older adults with students.

4. Discussion

The purpose of this study was to assess undergraduate students' knowledge of aging, attitudes towards older adults and perceptions of working with older adults before and after an intergenerational activity at a senior center. Undergraduate students in exercise and aging or introduction to public health displayed relatively low level of knowledge, with many of the participants getting less than 70% of the answers correct on both the pre and posttest. However, most students displayed a positive attitude towards older adults and a positive perception of working with older adults.

Our findings of relatively poor knowledge about aging on the pretest are not surprising since most students indicated that they had not had an aging educa-

tion previously. Only group one had a significant increase in scores on the Facts on Aging Quiz. The other two groups did not experience a significant increase on the Facts on Aging Quiz. This is concerning because the answer to all the questions on the Facts on Aging Quiz were reviewed immediately after the pretest and the material included on the quiz was covered in class throughout the semester. In addition to covering the material in class throughout the semester, students in group one and two interacted with older adults at a senior center and engaged in meaningful conversations with older adults about their lives. These findings are like the findings from a study conducted in Nepal by Ghimire et al. (2019). Ghimire et al. (2019) found that nursing students had relatively low knowledge scores as measured by the Facts on Aging Quiz, even though students had participated in a geriatric nursing module.

Despite low scores on the Facts on Aging Quiz, most students reported mainly positive perceptions towards older adults based on the ASD. Group one and two had slightly higher scores on the ASD as opposed to group three. Group three had lower scores as compared to the other groups yet did not have the opportunity to engage with seniors at the senior center. Perhaps this group just held more positive views of older adults in general, because all groups did have a reduction in ASD scores on the posttest as compared to the pretest. Comparable to the ASD the KAOP was used to measure attitudes toward old people, however indicated different levels of positivity. The scores on the KAOP indicated more neutral attitudes towards older adults. Furthermore, there was a significant reduction in scores posttest indicating a trend towards more negative attitudes toward older adults. This is interesting because one group (group 2) had the opportunity to interact with older adults, while the other group (group 3) did not. These findings are different than a study conducted in Saudi Arabia, where students had more positive attitudes towards older adults, despite low levels of knowledge about older adults (Alsenany, 2010).

Finally, scores on the Health and Social Care student's perceptions of working with older people indicate that students have neutral feelings about working with older adults. Neither group had a reduction in score. With group two the scores remained the same pre and posttest, while the scores from group three increased, even though group three did not have an opportunity to engage with older adults. These findings are not surprising, as most of the students in two courses that were sampled have already selected a career track and already knew what they want to do. Many students are interested in healthcare careers, and they acknowledged that they should have some knowledge of the aging process to best serve the patient population. Students who indicated that they had worked with older adults in various positions reported that working with older adults was a positive experience. A study conducted by Allen (2018) found that after an aging simulation among young and middle-aged adults, participants had more empathy and positive thoughts about older adults. Interacting and simulating aging can be helpful in changing views towards older adults. It is believed

that if students in both groups had the opportunity to interact with older adults in a positive manner, students may have expressed more positive results on the Health and Social Care perceptions of working with older adults. Additionally, if students were freshman or sophomore as opposed to upper classmen, they may have been more open to a career in aging.

The findings of this study help us to understand that there is a need to improve upon educational strategies for teaching students in exercise and aging and introduction to public health about aging. The material was presented to the students, but the material was not maintained. Perhaps trying different methods of teaching may increase the maintenance of knowledge, for instance a flipped classroom may help students to retain the knowledge. A flipped classroom is an instructional strategy, which focuses on student engagement and active learning. This can help students work with students of different levels and differential learning styles. The findings of this study indicate that students have mixed attitudes and perceptions towards older adults, regardless of whether they had an opportunity to interact with seniors at the senior center. This indicates that students may need more interaction with older adults to increase positive attitudes and perceptions. For instance, having a panel of older adults attend class and share some of their life stories and positive events in their lives would help students in addition to visiting the senior center. Finally, students indicate that they are neutral regarding working with older adults. Almost all the students in the two courses already knew what they wanted to do for their career; therefore they were not interested in changing their career track. The students did acknowledge that it would be important for them to know how to work with older adults, since it is very likely that in healthcare or public health that students will encounter older adults. While the students in this study were undergraduate students, most of the students were upper classmen. If students knew about careers in aging when they first started an undergraduate program, they may show greater interest in a career in aging. For instance, two researchers (2019) have investigated including aging education in the high curriculum so that students are more aware of careers in aging prior to entering college.

The strength of the current study is that it includes three groups of racially diverse students from three semesters. Additionally, we were able to have the students complete the assessments before and after taking either an exercise and aging or introduction to public health course. Furthermore, this is the first study assessing undergraduate exercise and aging and introduction to public health student's knowledge of aging, attitudes towards older adults and perceptions of working with older adults in the northeast region of the United States (US). As aforementioned the aging population is increasing tremendously, and we need to prepare future healthcare workers to provide a high level of care for our aging population. Furthermore, it is important for students to learn about aging for their own benefit. Students need to learn how to prepare for their future and they should be able to help their parents make decisions as they age. This study

may aid educators, researchers, curriculum developers and policy makers in devising effective strategies to enhance and promote gerontology education.

Nonetheless, this study is not without limitations. The Facts on Aging Quiz was used as part of class at the beginning of the semester; however, the other surveys were optional, therefore a significant number of students did not complete the posttest. Also, the COVID-19 pandemic stroke and limited opportunities to interact with older adults at the senior center and students were lost to follow up. In the future, strategies should be implemented to increase posttest completion. For instance, in the future students will be asked to complete the posttest before completing the final exam. Another limitation is that the first group of students that we assessed only completed two of the four surveys. Two additional assessments were added after the first group completed. In the future, all groups will be assessed using all four surveys so comparisons can be made across all groups. We only examined students in the school of arts and sciences, therefore our selection may not be entirely representative of all undergraduate students. In the future, we will aim to include students from other courses that include an aging component.

5. Conclusion

Increased number of adults 65 and older in the US, means an increased need for professionals prepared to work with older adults in all sectors of healthcare. Beliefs and values currently held by students are the basis for future professional practice. This research provides important preliminary results that can be used to prepare future healthcare professionals.

Undergraduate students in this study had relatively low levels of aging knowledge, but had varying attitudes regarding older adults—attitudes varied between positive and neutral. Many students had neutral feelings about working with older adults. There is a definite need to increase knowledge of aging, attitudes regarding older adults and perceptions about working with older adults. Regardless of what health profession the students go into, students will need to be prepared to provide care to older adults. Faculty who teach aging courses and/or courses that include a section on aging can change attitudes and stereotypes held towards older adults, as well as to increase aging knowledge. If faculty members do not take the opportunity to educate students about aging, they are missing a tremendous opportunity to prepare students to provide the necessary care to older adults. It is imperative that we take every opportunity to educate and motivate students to work with older adults.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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