Developing and Evaluating an Educational Program on Aging in the High School Curriculum

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Abstract

The purpose of this study was to develop and evaluate an educational intervention designed to address aging and careers in aging for high school students. A total of two teachers and 84 students participated in the study. Teachers and students were surveyed before and after the implementation of the educational module. Teachers and students had neutral to positive responses according to the pre-intervention survey. Most of the students reported that they had not learned about aging previously. Following the intervention students reported that they enjoyed learning about where older adults live and how the body changes with age. Teachers shared that parents responded well to the inclusion of aging specific education. It is imperative to increase efforts to improve attitudes about older adults/aging among high school students prior to enrolling in college or higher education and to increase their awareness of career opportunities in the aging field.

Keywords

Aging, High School Students, High School Teachers, High School Curriculum, Developing Educational Modules, Evaluation

1. Introduction

The growth in the section of the population that is older is no longer "breaking" news, nor are the reports about the impact of this growth on society by the popular press. The number of individuals 65 and older is expected to nearly double from 52 million in 2018 to 95 million in 2060, with their proportion of the total population rising from 16% to 23% (U.S. Census Bureau, 2019). Furthermore, the older adult population is becoming more racially and ethnically diverse. For instance, the share of this population that is non-Hispanic White is projected to

drop from 77% in 2018 to 55% by 2060 (U.S. Census Bureau, 2019).

With the growing aging population, there is an accompanying increase in the need for individuals with training in gerontology and geriatrics to respond to the needs of this population as well as to help society reap the potential rewards of this silver dividend (Administration for Community Living (ACL), 2022). To do so requires raising both awareness and sensitivity about aging issues as well as the challenges and opportunities it portends for persons of all ages—the currently old, and the future old alike. Furthermore, young individuals (the future old) cannot afford to face the future with ageist attitudes, nor is it optimal for society to be guided by individuals who are ageist and lack knowledge and sensitivity regarding aging (Couper & Pratt, 1999). Aging is a lifelong process, one in which we are all involved, and experience. Ultimately, as conveyed by many reports, there is a need for people of all ages to prepare themselves for their own old age.

A review of the extant literature indicates that programs regarding aging education either focus on primary school students or college students (undergraduate and graduate). Programs that target primary school students have investigated the effect of aging education on the attitudes of primary school students regarding aging. Langer (1999) suggests that such programs which teach students at an early age are a very effective strategy to prepare a generation that is free of age-related prejudice. These programs which have taken different forms, including intergenerational programs as well as the infusion of existing curricula with aging concepts, have shown effectiveness. Others have found similar effects and impacts from programs that infused aging concepts into elementary school curricula. For instance, Hembacher and Cruise (2006) sought to explore the impact on children's attitudes towards aging when a second-grade standards-based social studies curriculum was infused with positive aging concepts. To do so they provided literature with positive portrayals and images of older adults, as well as interviews with older adults. The researchers found a positive change in how participants perceived aging.

Alternatively, there are programs geared towards college/university students who are in disciplines or undertaking majors which lead to careers that are likely to encounter old adults, such as nursing or social work students. For instance, one study involving 70 undergraduate students in health and social service majors, examined the effect of a semester-long aging and adult development course that included an intergenerational, service-learning component on several issues including attitudes toward older adults, aging anxiety, and interest in occupations that serve older adults. Boswell (2015), found an improvement in participants' attitudes, a reduction in anxiety over the semester, however no change to the level of interest in careers/occupation that serve older adults.

More recently, Davis and Sokan (2019) conducted focus groups with both high school teachers and students to better understand high school student's attitudes and knowledge regarding aging, current high school curriculum for ag-

ing specific content, as well as to explore perceived barriers among teachers to incorporating aging education into the curriculum. Davis and Sokan (2019) chose to focus on high school settings, as the high school curriculum has been overlooked as a place to incorporate aging education. Furthermore, the researchers stated that teaching high school students about careers in aging before they make careers determinations (Davis & Sokan, 2019). High school teachers reported lack of resources, scheduling, and uncertainty about how to make the subject relevant to students and lacked competence in addressing aging related issues among the barriers to incorporating aging education in the high school curriculum. Student's attitudes varied from negativity towards aging and older adults—such as reporting that older adults are annoying, mean, stingy, and wrinkled, to more positive thoughts about older adults. For instance, several students acknowledged the need for older adults, and some recognized that aging is a privilege. The findings of the study indicate a need to educate high school students about aging, increase interactions among older and younger adults, incorporate education about careers in aging, and educate teachers on how to infuse more aging content into their curriculum.

To build upon what we have learned from previous research; the current study was designed with the purpose of developing and testing an educational intervention to address aging and careers in aging for high school students. Specifically, the aims are as follows:

1) Develop a module on aging and careers in aging that high school teachers can insert into their current curriculum.

2) Develop a training module for high school teachers, so that high school teachers feel competent to incorporate the module on aging with their students.

3) Implement and evaluate both the training module for the high school teachers and students.

2. Methods

2.1. Participants

Two high school teachers, one who taught in Southern New Jersey and one who taught in Central New Jersey participated in the current pilot study. One teacher had been teaching for 22 years and was currently teaching tenth grade and the other teacher had been teaching for 13 years and taught both 11th and 12th grade. A total of 79 students participated in the pre-educational intervention survey and 86 participated in the post-educational intervention survey. Students were either enrolled in a tenth-grade science course or an 11th grade healthcare course, however, one student reported being in 12th grade. Students ranged in age from 15 to 17, with an average of 15.9. A total of 48 females, 38 males, and one non-binary individual participated in the study.

2.2. Measures

Both the teachers and the students were asked to complete a pre and post educa-

tional intervention assessment. Teachers were surveyed using a brief surveyed using a brief survey instrument prior to implementing the educational intervention and two separate interviews were held with the teachers following the intervention. Both the students' and teacher's pre-test, as well as the student's post-test incorporated open and closed-ended questions. All questions included demographic questions (i.e., age, gender, state of residence, grade level or years of teaching, and to rate their current knowledge of aging). Student pre-test surveys aimed to understand how students feel about older adults, whether they had previously learned about aging in school, if students had considered careers in aging, and which specific careers students were currently considering. Student posttest aimed to understand if there was any change in general attitudes towards older adults, what the student liked most and least about learning about aging, if students felt that aging curriculum should be incorporated into the high school curriculum, and whether students would consider a career in aging after the intervention.

Teacher pre-test incorporated demographic questions, but also sought to assess whether aging content was currently incorporated into their curriculum, their confidence in their ability to incorporate aging into the curriculum, general attitudes towards older adults, should aging content be incorporated into their curriculum, and what are the barriers and facilitators to incorporating aging content. A semi-structured interview guide was developed to interview teachers following the implementation of the intervention. The interview aimed to understand what teachers like most and least about incorporating the aging modules into their curriculum, are they likely to add aging content to the curriculum moving forward, how they felt the student's responded, how the modules could be improved, and if the teachers would recommend the modules to other teachers.

2.3. Procedures

The research was approved by the University's Institutional Review Board (Protocol #22021000713) and followed all ethical guidelines. Data were collected September 2021 through January 2022. Teachers were contacted via E-mail to participate in the current study. The researcher reached out to a total of 145 teachers to participate. A total of six agreed to participate, however 4 withdrew before the study began due to competing responsibilities (e.g., COVID-19). The author developed 4 modules as part of a training module designed to be stand-alone curricular, with components that teachers can select from, mix, and match, or in its entirety. All modules provide content curated and tailored for the specific focus of the module. Table 1 provides an overview of the design of the educational modules.

Consent was obtained from teachers and parents (s) of each student. Additionally, students were required to sign an assent form prior to participating in the study. All study materials were mailed to the teachers and materials were

Table 1. Educational modules.

Section	Material Provided
Introduction:	Introduces the content and sets the stage for topic(s) to be discussed.
Definition(s):	Each module includes a central word or term around which content is built. This section provides a basic definition of the term(s).
Synonyms:	Provides alternate words or terms that can be used for the central word or term
Content:	Main part of the module and contains all the relevant learning/teaching components. Includes: information on the sub-topics, any charts, tables, and suggested activities. Color coded blocks aid quick identification of module components, as shown in the legend below: -Class activity, and instructions -"Did You Know?" – Fast facts -Other information block -Information about careers in aging
Summary:	A summary of the content or information presented. Restatement of key point(s) in relation to the topic(s) discussed.
Key terms:	A list of key terms used in the module as well as their definitions.
Additional activities:	Additional suggested activities, and any accompanying material.
Resources:	List of other resources users might find useful as they teach the module

distributed via mail due to the COVID-19 pandemic. Teachers distributed the materials and explained the study to parents and students. After obtaining consent and assent, teachers implemented the self-selected portions of the educational modules in a way that worked best for their students. After the aging content was incorporated students were surveyed regarding their experiences with the content. And interviews were conducted via telephone or Zoom with the teachers. Both teachers who participated received a $25.00 Starbucks gift card for personal use and a $75.00 Visa gift card to use for their students.

All quantitative data was analyzed in SPSS 28. Frequencies were used to describe the sample. T-test was used to assess changes in age-related knowledge among high school teachers before and after implementation of the educational module. All qualitative data was analyzed using Excel. All qualitative data was transcribed verbatim into Excel. All data was reviewed repeatedly to ensure familiarity with the data. Data was organized and analyzed using thematic analysis.

3. Results

3.1. Teacher Pre-Test

Both teachers indicated that they included little to no aging content in the current curriculum. Both teachers reported being somewhat confident in their ability to incorporate aging content into their curriculum. Both teachers reported having negative feelings and concerns about aging or old age. For instance, one teacher said, "I have concerns about my own aging and the disregard most Americans have for the elderly." One teacher reported neutral feelings towards older adults in general while the other teacher reported more positive feelings, sharing, "I generally enjoy and respect them (older adults). I am sometimes frustrated with how easily they give up on modern things." Both teachers were asked to think about their current curriculum and to think about any specific curriculum that applied directly or indirectly to older adults—both teachers reported that they did. One teacher shared, "we do population pyramids which look at older population number as they related to the population as a whole." The teachers said, "yes it (aging) should definitely be a part of both social and emotional learning as well as science to further encourage care and values of an elderly population." The teachers did mention that there were several barriers to incorporating aging content, for *instance* school board approval time, relevance to student's/student engagement, and competing priorities.

3.2. Student Pre-Test

Students were asked to describe their thoughts about older adults in general (i.e., positive, or negative). The responses were positive for the most part. For instance, one student shared, "my thoughts about older adults is positive because I love listening to thing they did when they were my age and the advice they have for me." Other students shared positive notions about older adults, for example one student said, "positive because they are always helping others and being nice." Other students had more of mixed reaction to the question. "Some older adults are nice and some are just mean." A small number of participant's share negative feelings, for example one student said, "some older adults are very disrespectful or immature. They believe they know everything."

Students were asked if they had learned anything about older adults as a part of their education. By and large most of the students mentioned that they had learned about how certain parts of our body do not work as well as we age, such as the ability to maintain homeostasis. Other students who indicated they learned about aging predominately mentioned that women then to outlive men. And, a few students reported some misinformation, such as "some older adults in this country do not stay alive until their 90s, it is rare. They usually die at like 50."

Like teachers, students were asked if specific aging content should be included in the high school curriculum. Student responses were split in thirds almost ex-

actly. "Yes, because most people think about aging in a negative way, so I think if we learn about aging in school more people will think about it in a positive way." Other students did not feel it was necessary to incorporate aging content, for instance one student said I do not think so because it really is not relevant to the kids in the school at that age. The remaining third of students did not respond to the questions.

Students were asked if they had ever considered a career in aging. Most students had not considered a career in aging. Students reported various reasons for their lack of consideration, for example they don't know enough information about the topic, wanting to work with kids, not thinking about it, considering the topic irrelevant, or boring, requiring too much patience, being too challenging, and some others simply reported that they did not know what they wanted to do for their career. In a similar vein, students were asked to list the careers that they were currently interested in pursuing—some careers included, healthcare, law, engineering, cosmetology, athletics, acting, marketing, modeling, and finance.

3.3. Teacher Post-Intervention Debrief

Both teachers were debriefed on their experience with the educational modules. Each teacher was interviewed individually, using a semi-structured interview guide with six questions—see Table 2 for the questions and the responses.

3.4. Student Post-Test

Students were asked what they like most and least about the aging content that they teachers incorporated as a part of this study. Student's responses varied. Students reported learning about differences between men and women in terms of life expectancy, where older adults live, how their body may change with age, and how older adults have varying levels of functionality—for example, one student said, "I liked learning that an 80-year old individual can skydive or run a marathon!" Students reported disliking the learning about how poorly some older adults are treated, being reminded of personal loss through discussion of aging, didn't like researching nursing home or the cost associated with nursing homes, and some students reported they didn't like the thought of aging themselves, for instance one student said, "the part where I get old!"

3.5. Student Pre-Test/Post Test Comparison

Two questions were included on both the student pre and posttest to measure the impact of the aging modules on student's self-reported knowledge and thoughts about aging. Prior to the educational interview the mean student self-reported knowledge score was 3.30 (SD = 0.77), after the intervention the mean student self-reported knowledge score was 3.46 (SD = 0.59). A one-sided t-test was used to assess for difference in self-reported knowledge before and after the educational module (t = 1.962, df = 83, $p < 0.05$).

Table 2. Questions and responses from interviews with teachers.

Interview Question	Teachers Response
What did you like most about incorporating the aging module(s) into your curriculum?	- *It felt relevant. Particularly the unit on human populations. They looked at the history of aging and the projections for the future.* - *The housing and careers section was most relevant for my students.*
What did you like least about incorporating the aging module(s) into your curriculum?	- *The fact that I had to make up my own assignments. I ended up making up activities that were a little bit more concrete in what would be assessed.* - *Nothing.*
How likely are you to add aging content to your courses going forward?	- *Would use the assignments that I created. Maybe should build on them. And, would add more stuff.* - *I plan to keep aging stuff in my curriculum going forward. I have plans to have speakers from senior residential settings.*
How did the students respond to the curriculum?	- *My students struggled with giving opinions about aging.* - *Student were neutral about the material. They like hands on stuff. They do not really like anything. They were neutral.*
How can we improve the modules that we provided to you?	- *Teachers like grab and go activities. They want to be able to copy right out of the book. Teachers pay teachers for prepared lessons, I don't….* - *I included my own information. I incorporated commercials about older adults and asked the students to evaluate.*
Are you likely to recommend the modules to other teachers?	- *Yeah. I would, they would be great. It is hard content wise—even in science. It would be good in statistics. Interpreting graphs and such on the 11th grade state test. Good practice for the state. Students had a little bit of a conversation about the graphs and talked about services that would be needed for students.* - *I should mention that parents liked it.*

4. Discussion

This study built upon previous research that explored high school teachers and student's attitudes and knowledge regarding aging (Davis & Sokan, 2019). Davis and Sokan (2019) found that attitudes about aging are both positive and negative and that there was a consensus among both teachers and students that incorporating aging into the high school curriculum would be beneficial. Teachers in the previous study indicated that they needed assistance with incorporating aging content into their curriculum. Thus, the purpose of this study was to develop and test an educational module for high school teachers to incorporate into their curriculum.

Both teachers agreed that there was a need to incorporate aging content into the high school curriculum. Currently, there is no mandate by the education board to incorporate aging content, even though we know the number of older adults is increasing substantially and there is a growing need for those with training in aging to provide quality care for the aging population. Teachers in this study expressed concern about their own aging and treatment of older adults by society. Previous research has found that incorporating additional content into the high school curriculum can be challenging for a variety of reasons including lack of time and competing priorities. By providing teachers with tools (i.e., modules) to integrate lessons on aging, we can reduce the time teachers need to spend developing lessons and providing strategies to incorporate lessons with existing content. Providing teachers with the materials on aging can also increase confidence among teacher's ability to successfully incorporate the content—both teachers in this study reported feeling somewhat confident in their ability to incorporate aging prior to doing so.

Amongst the general population there are mixed feelings and attitudes about aging, the same can be said for high school students. Students in this study shared mixed attitudes about aging and older adults, based on previous research we can assume that this is based on interactions with older adults and the portrayal of older adults in the media. Students in general have formed their views and opinions about older adults without formal education on aging, as evidenced by findings from this study. Most students stated that they had not learned about aging prior to the educational intervention evaluated in this study. Other students who indicated that they had learned about aging as a part of their education had false information, for instance believing that most adults only live to 50. Students shared a variety of responses when asked if aging content should be incorporated into the curriculum, with approximately one-third in favor of adding aging content. One could expect to have similar responses from students if asked if other subjects should be incorporated into the high school curriculum.

From previous research we learned that there are numerous barriers to incorporating aging content—for instance lack of time for planning and competing priorities. The modules were well received by the teachers. The material felt relevant to the teacher, and they appreciated the flexibility that the modules allowed them to have. Furthermore, the parents of the students also shared that they liked the fact that the students were learning about aging. Because this was the first time testing the modules, we asked teachers for specific feedback about the modules. Based on the information obtained from the teachers, in the future more concrete assignments, more sample lesson plans, and suggestions for experiential learning. Studies performed among college students have found that students who have opportunities to engage with older adults often have improved attitudes toward them (Sarabia-Cobo & Pfeiffer, 2015).

Findings from the current study indicate that students self-reported knowledge regarding aging significantly increased following the educational interven-

tion. While self-reported knowledge increased students' attitudes about aging did not change, nor were they considerably more interested in a career in aging. However, the findings of this study indicate that there is a significant disconnect among the students who participated in this study. Students in this study listed a wide variety of career interests, for example students reported interest in careers in healthcare, marketing, law, travel, engineering, and real estate, among others. While these careers may not specifically include a focus on aging, there is no doubt that there will be interactions with older adults. Even students who indicated they would be interested in a career in pediatrics need to learn about aging, as now more grandparents are involved in raising grandchildren. More effort needs to be made to help students understand that regardless of career choice, there is value in learning about aging. More effort needs to be made to help students realize that more and more individual are living into their 80s, 90s, and beyond. Intergenerational programs and experiential learning my help students better understand aging and what true old age is. Student's self-reported knowledge was higher than expected both before and after learning about aging. In the future, a more concrete assessment of aging knowledge prior to teaching about aging would help to better measure success of lessons on aging. Future studies should aim to expand on the content in the modules and add activities to help students better connect with the aging population.

This study is not without limitations. Study participants were recruited using both snowball and convenience sampling methods. Snowball and convenience sampling methods can lead to sampling bias (Henry, 2009). Additionally, this study had a small sample of teachers who were willing and able to participate in the current study. Recruitment efforts may have been affected by the COVID-19 pandemic and teachers were struggling to adjust to changes to teaching practices due to the pandemic. Multiple recruitment strategies should be used to increase the number of participants included in future studies. All participants were recruited from school in New Jersey; therefore, the results may not be generalizable to other regions. In future studies, a larger more diverse sample, including more high school teachers can increase our understanding of opportunities to incorporate more aging education into the high school curriculum.

5. Conclusion

High school students need increased knowledge and awareness about aging. Increased knowledge and awareness about aging can help students prepare to provide care for their parents or other family members, to start preparing for their own aging, and/or to prepare for their career in aging or otherwise. The study found that teachers believe that high school students should learn about aging and that teachers are amendable to incorporating aging content if provided tools to aid in the process. Based on the results of this study, we know that teachers can successfully incorporate aging content into the high school curriculum, however, the modules should be modified to include more concrete assessment,

sample lesson plans, and experiential activities. With the increasing aging population, it is imperative to increase efforts to improve attitudes about older adults/aging, improve perceptions and enhance knowledge base among high school students prior to enrolling in college or higher education and increase their awareness of career opportunities in the aging field.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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