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**EDUCATING DIETETICS STUDENTS ABOUT THE NUTRITIONAL
CONCERNS OF OLDER ADULTS**

by

Lily Brickman

B.S. University of Maine, 2021

A THESIS

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Master of Science

(in Food Science and Human Nutrition)

The Graduate School

The University of Maine

December 2022

Advisory Committee:

Mary Ellen Camire, Professor of Food Science and Human Nutrition, Advisor

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**EDUCATING DIETETICS STUDENTS ABOUT THE NUTRITIONAL
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Thesis Advisor: Dr. Mary Ellen Camire

An Abstract of the Thesis Presented
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The percentage of individuals in the United States who fall within the 65 years and older cohort is anticipated to increase substantially over the next decade due to the large baby boomer generation aging into this category by 2030. Consequently, the healthcare demands of older adults are expected to increase, and medical and healthcare providers must be educated and prepared to meet the unique needs of this population. The purpose of this study is to help learn why interest in FSN 406 Nutritional Care of Older Adults has been so low since its inception in 2020, and whether other institutions offer classes on nutritional care of older adults to students in the nutrition and dietetics field. Two surveys were developed for this study, one for students at the University of Maine and another for members of the Nutrition and Dietetics Educators and Preceptors (NDEP) subgroup of the Academy of Nutrition and Dietetics (AND). Recruitment notices for student surveys were distributed via email to all students enrolled in the Food Science and Nutrition (FSN) program during the 2021-2022 academic year. Inclusion criteria included being over the age of 18 and being enrolled in an undergraduate or graduate FSN program during the 2021-2022 academic year. A total of 17 surveys were

completed. Recruitment notices for NDEP surveys were posted to the community's webpage, and members were encouraged to share the recruitment notice with their colleagues. Inclusion criteria included being over the age of 18 and being a member or colleague of the NDEP group. A total of 53 surveys were completed. Student survey results indicated that most FSN students did not take FSN 406 because it was not required for graduation. NDEP survey results indicated that participants felt both undergraduate and graduate-level courses on nutrition for older adults should be taught, though this is not available at all institutions. Further research regarding effective strategies for increasing national student interest levels in nutrition for older adults and making older adult-specific nutrition courses available at a much greater number of institutions is necessary.

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CHAPTER I

INTRODUCTION

By 2030, all members of the baby boomer generation, those born between 1946 and 1964, will be aged 65 and older and fall within the older adult age group.¹ The 2021 American Community Survey estimated that 55.9 million people (16.8%) in the United States were already aged 65 years and older.² The predicted increase in the number of working-age adults, those between 18 and 64 years of age, between 2020 and 2060 is significantly less than the predicted increase in the number of older adults during this same timeframe.³ The increase in older adults across the United States compared to that of the working population will be a nearly 2:1 ratio. This demographic shift poses a significant issue regarding whether the older adult population in 2030 will actually have access to the care and resources they may need in order to live safely and healthily.

It is likely that there will be significant economic implications associated with an increased number of older adults and a smaller working-age population. A larger older adult population means a larger number of Social Security payments on top of the already increasing costs of medical care, pharmaceuticals, and care services.⁴ The expenditure of Medicare grew 3.5% to \$829.5 billion in 2020, accounting for 20% of all national health expenditures.⁴ Medicaid spending grew 9.2% in 2020, reaching \$671.2 billion or 16% of all national health expenditures.⁴ Medical technologies have advanced significantly, and life expectancies have increased as a result. Thus, it is appropriate to predict that the youngest of the baby boomer generation will live to become part of the oldest old cohort, consisting of individuals aged eighty years or more. It is also reasonable to hypothesize that advancing medical technologies may decrease the number of older adults requiring

long-term or home healthcare services as they age, but there is no way to determine with certainty that this will happen.

Nutrition is a major component of healthy aging and healthcare for older adults. Proper nutrition is important for the prevention of chronic conditions that may arise with aging and is a key factor in the maintenance and preservation of muscular strength and body-system functions.⁵ Poor nutritional status in older adults can develop into malnutrition, which can further exacerbate existing conditions and increase the risk of developing others.⁶ Food insecurity, weight status, functional status, disability, sarcopenia, psychological and social factors, and economic or environmental factors can be catalysts for the development of malnutrition.⁷ Provision of adequate nutrients is often more difficult with aging, as proper dentition, dysphagia, alterations in taste and smell, decreased appetite, and the natural diminishing of hunger and thirst signals can become barriers to maintaining nutritional health throughout the aging process.⁵

Dietary recommendations for proper nutrition for older adults are different from those for adults of younger ages; older adults and their caregivers may not understand these differences.⁸ Dietitians and other nutrition professionals can be excellent resources and crucial members of the healthcare team for older adults.¹⁰ Due to the different nutritional needs of older adults, education focused on this unique life stage is essential for those entering the nutrition and dietetics field. However, specialized education for nutritional care of older adults is not necessarily available at all institutions, and relatively few students and professionals are interested in working with the older adult cohort.^{11,12}

The rapidly rising number of older adults within the United States is an unavoidable circumstance that healthcare providers must be prepared to handle. It is

pertinent that students in the nutrition and dietetics field are educated on the nutritional needs of older adults so that they are equipped to work with this population and provide them with high-quality, evidence-based care. Students should have the opportunity to learn about the nutritional needs of older adults, but they do not always have the opportunity to do so at every institution. The number of students interested in working with older adults must also be increased in order for there to be enough practitioners willing to work with the older adult population as the year 2030 approaches.

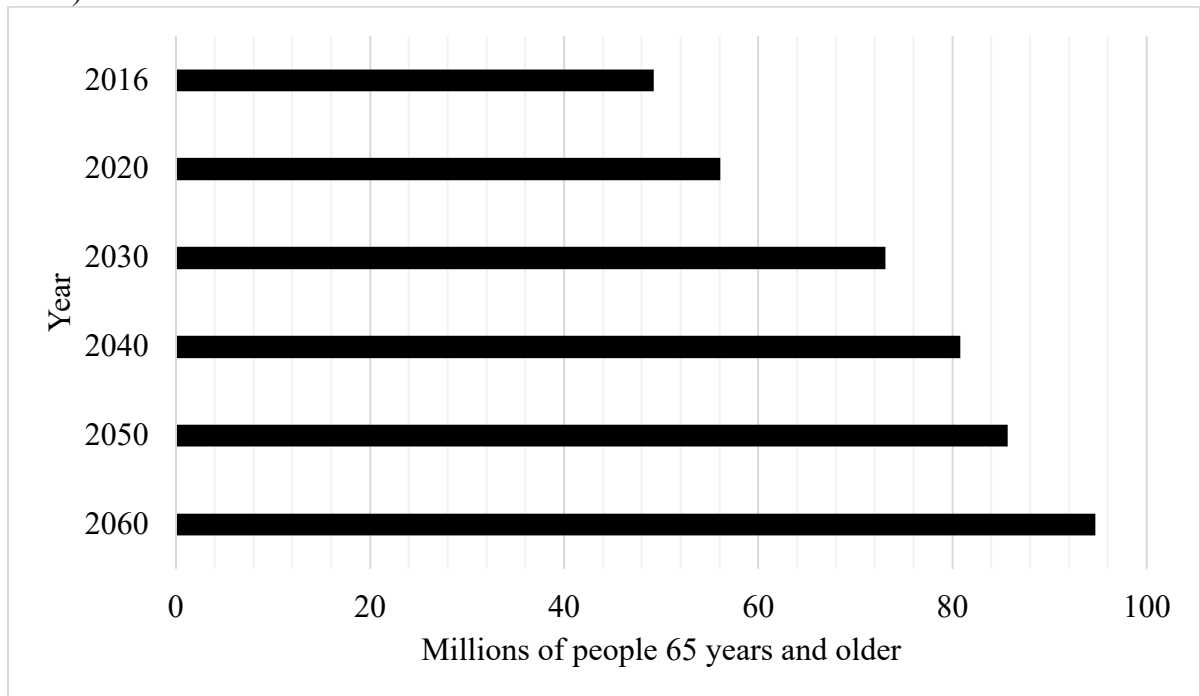
This project included two cross-sectional surveys designed with the intent of assessing University of Maine student interest in learning about and working with older adults, and the availability of classes teaching students about the nutritional needs of older adults across various U.S. higher education institutions. The data generated from this thesis will be presented and published for the benefit of nutrition and dietetics educators across the United States to provide them with a recent overview of student interest in nutritional concerns of older adults and the availability of educational courses in which they can receive this information.

CHAPTER II
LITERATURE REVIEW

2.1. United States Population Projections

The United States Census Bureau predicted the population of the United States to be 332,403,650 people as of January 1, 2022.³ This value represents an increase of 706,899 people since January 1, 2021. The 2021 American Community Survey estimated that 55.9 million (16.8%) of the people in the United States were aged 65 years and older.² This number is expected to increase significantly as the year 2060 approaches, particularly due to the baby boomer generation. This increase is shown in more detail in Figure 2.1. The baby boomers, born between 1946 and 1964, will be the greatest contributor to this increase. The youngest of the baby boomer generation, those born in 1964, will enter the 65 and older cohort by the end of 2029.³

Figure 2.1. U.S. Census Bureau National Population Projections of Older Adults (2016-2060)³



Between 2020 and 2030, it is projected that the percentage of people in the United States aged 65 years and older will increase by a total of 17 million people (Table 2.1).³ This surge will bring the number of older adults from just under 17% to over 22% of the United States population. The percentage of people aged 85 years and older is expected to more than double between 2020 and 2040, going from 6.5 million to 11.8 million. The number of people aged 85 years and older is expected to triple between 2020 and 2060, increasing significantly to nearly 19 million people.

Table 2.1. U.S. Census Bureau Population Projections by Age Group³

Age Group	Population (millions)						Change from 2016-2060	
	2016	2020	2030	2040	2050	2060	Millions	Percent
Total population	323.1	332.6	355.1	373.5	388.9	404.5	81.4	25.2
≤18 years	73.6	74.0	75.7	77.1	78.2	80.1	6.5	8.8
18-64 years	200.3	202.6	206.3	215.5	225.0	229.7	29.4	14.7
≥65 years	49.2	56.1	73.1	80.8	85.7	94.7	45.5	92.5

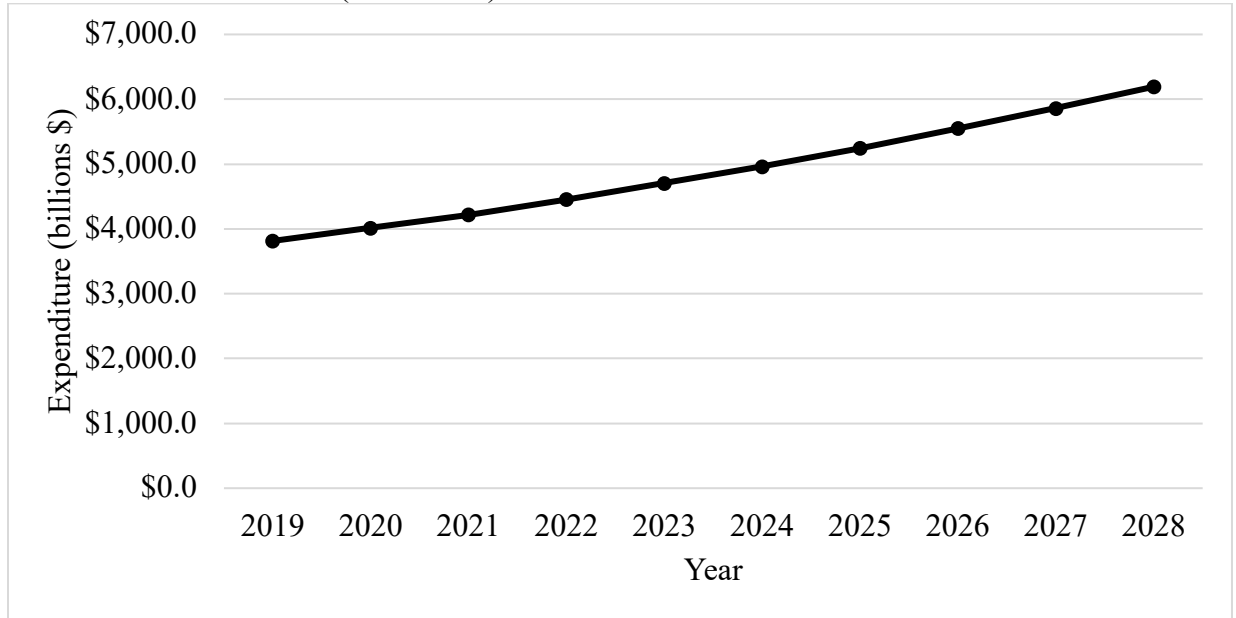
It is anticipated that between 2020 and 2060, the number of working-age individuals, those between 18 and 64 years of age, will increase by 29.4 million while the number of individuals 65 years and older is anticipated to increase by 45.5 million.³ The increase in older adults compared to that of the working population will be a nearly 2:1 ratio. Consequently, there will be fewer people entering the workforce than there will be leaving it, and simultaneously more older adults will require more care than can be provided. Therefore, it is pertinent that there are enough individuals willing and able to work with the aging population and provide them with the care they need to age healthily.

2.2. Predicted Medicare and Medicaid Expenditures

The number of individuals within the older adult population increasing at such a significant rate before 2030 will challenge healthcare services and impose an economic burden on the country. This economic burden will be the result of an increased number of Social Security payments, growing costs of medical care and pharmaceuticals, and long-term care services.⁴ In order to prepare for these anticipated events, it is important to have public policy goals related to the aging population that will minimize the amount of economic damage caused by the large aging baby boomer generation.

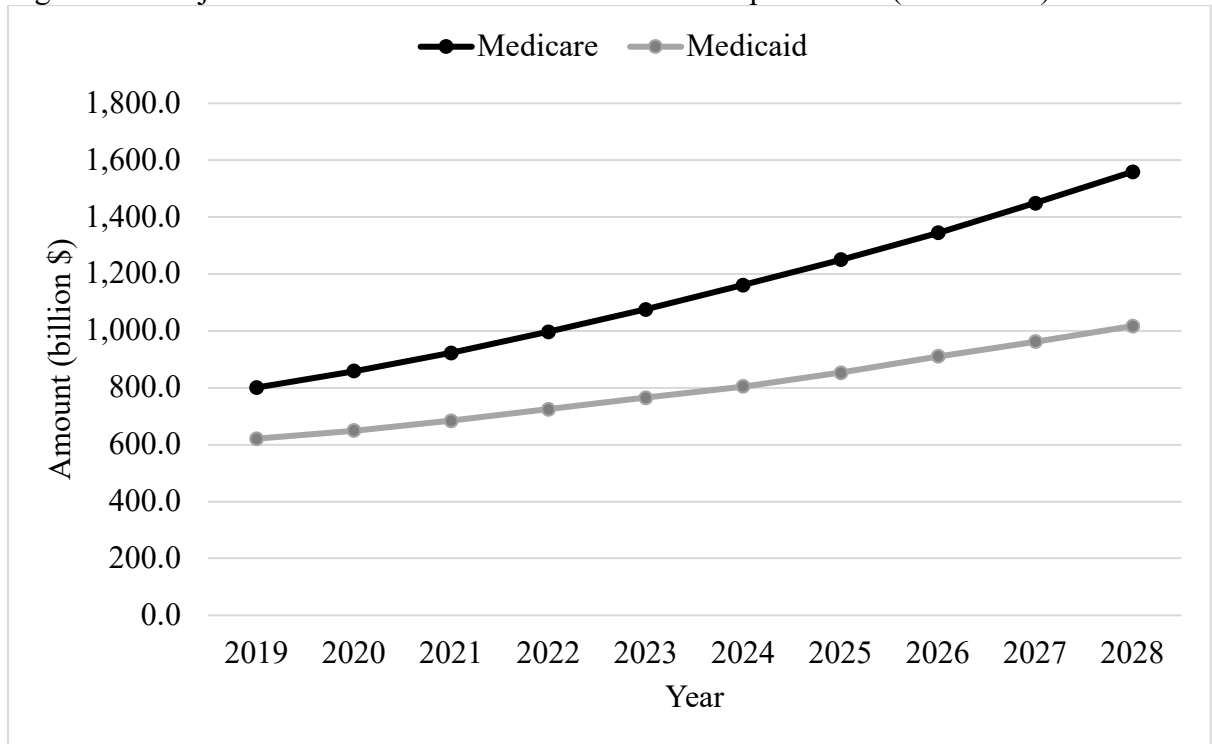
Population trends predict that there will be the greatest increase in the number of older adults within the United States by the year 2030.⁴ One of the largest increases among this population will be in those who are the "oldest-old," which includes individuals aged eighty years and older. The oldest-old will be those born within the beginning of the baby boomer generation, those born between 1946 and 1950.³ Individuals of the oldest-old cohort are more likely to require assistance or be disabled, causing them to seek out long-term care services to help them live safely and comfortably.³ Such a drastic increase in the number of individuals requiring assistance will stress the long-term care system both economically and with respect to the availability of care.^{3,4} The increase in national health expenditures between 2019 and 2028 is depicted in Figure 2.2.

Figure 2.2. National Health Expenditures on Nursing Care Facilities and Continuing Care Retirement Communities (2019-2028)⁴



Many older adults use Medicare or Medicaid to cover long-term or home health services. The expenditures of Medicare grew 3.5% to \$829.5 billion in 2020, accounting for 20% of all national health expenditures.⁴ Medicaid spending grew 9.2% in 2020, reaching \$671.2 billion or 16% of all national health expenditures.⁴ The U.S. Centers for Medicare and Medicaid Services (CMS) project that national health expenditures will increase annually at an average rate of 5.4% between 2019 and 2028, reaching \$6.2 trillion by 2028.⁴ These projections are shown in Figure 2.3. CMS also expects that Medicare spending will increase the fastest at 7.6% per year between 2019 and 2028 as a result of having the highest projected enrollment growth.⁴

Figure 2.3. Projected National Medicare and Medicaid Expenditures (2019-2028)⁴



Despite the increase in expenditures, there is still a significant need for more long-term care services and not enough individuals in the workforce are willing or available to provide them.³ Advancing medical technologies are extending average life expectancies, so it is appropriate to predict that the youngest of the baby boomers will live to be part of the oldest-old cohort. It is possible that these technologies may decrease the number of older adults requiring long-term or home health services; however, there is no guarantee, and the country must be prepared to work with and help its aging population.

2.3. Nutritional Concerns for Healthy Aging

The global population of individuals older than eighty years of age in 2050 will be three times greater than it was in 2013, potentially surpassing 392 million.⁵ Although the development of chronic diseases increases with aging, research indicates a higher

prevalence of these conditions in younger cohorts due to inadequate health practices and behaviors.⁵ The primary goal of healthy aging is to extend the number of healthy and active years both before and after an individual reaches sixty-five years of age. In addition to appropriate medical and social services, proper nutrition is an important component in the prevention of chronic diseases associated with aging.

During the aging process, it is common to develop various vulnerabilities that impact the quality of life and level of care that must be received. Older adults are more susceptible to nutritional frailty, or a sudden significant weight loss and decrease in muscle mass and strength that increases susceptibility to disabilities.⁵ Nutritional frailty also increases the risk of malnutrition, which can exacerbate existing medical problems and accelerate the development of underlying conditions.⁶ Malnutrition in older adults can be related to numerous factors such as food insecurity, weight status, functional status, disability, sarcopenia, psychological and social factors, and economic or environmental factors.⁷ Both undernutrition and excessive consumption of empty calories can be considered as malnutrition.^{6,7} Dietary recommendations for older adults are also different than those for adults in younger cohorts, which can make the provision of adequate nutrients more difficult if individuals are not aware of these differences.⁸

Before the 2020-2025 Dietary Guidelines for Americans (DGA), there have not been previous editions that provided specific recommendations for older adults. The 2020-2025 DGA define older adults as individuals aged 60 years and older, noting their increased risk of developing chronic diseases. The nutrients of concern for the general U.S. population include calcium, vitamin D, potassium, and dietary fiber; however, older adults also have special nutrition considerations based on the increased likelihood of their

underconsumption during this life stage.⁸ These nutrition considerations include nutrients such as protein and vitamin B₁₂, as well as beverage intake and hydration status.⁸

Adequate protein intake is especially important for older adults as it can help prevent the natural loss of lean muscle mass that occurs with aging. The Recommended Dietary Allowance (RDA) of protein for older adults is 0.8 grams per kilogram of body weight per day, which is determined as sufficient to meet the requirements of all healthy individuals within this age group.^{8,9} The RDA of vitamin B₁₂ is the same for older adults as it is for younger adults, which is 2.4 micrograms per day.⁸ Vitamin B₁₂ is a nutrient of concern for older adults because the ability to absorb it can decrease with aging.⁸ Common medications taken by older people such as proton pump inhibitors for stomach ulcers and metformin for diabetes can also impair vitamin B₁₂ absorption.¹³

Beverage intake and hydration status are of concern for older adults because many older adults do not drink enough fluids each day to stay hydrated.⁸ Thirst signals can naturally decline throughout aging, which can decrease fluid intakes among older adults.¹⁴ Other reasons for decreased fluid intakes can include fear of urinary incontinence or mobility issues hindering the ability to take in fluids.⁸ Adequate hydration is important for older adults to prevent dehydration, assist in digestion and absorption of nutrients, and maintain regularity of bowel movements.⁸

There are various barriers older adults may encounter that impact their nutritional status, such as proper dentition, dysphagia, changes in taste and smell, loss of appetite, natural decline in hunger and thirst signals, limitations in mobility, and difficulty in accessing nutrient-dense foods (Table 2.2).⁵ Older adults are also more likely to experience aging-related inefficiencies regarding absorption and utilization of nutrients.⁵

Nutrients such as protein, omega-3 fatty acids, dietary fiber, calcium, magnesium, potassium, and vitamins A, B₆, B₁₂, D, and E are most likely to be consumed by older adults at inadequate levels to meet their needs.⁵ It is critical to recognize that the progression of undernutrition and nutritional frailty among older adults if practitioners are sufficiently educated on strategies to slow progression and treat this increasingly-prevalent comorbidity.

Table 2.2. Factors Affecting Nutritional Status of Older Adults

Type	Associated Factors
Sensory	Changes in taste and smell ¹⁵
Digestive	Proper dentition, ¹⁶ dysphagia, ¹⁷ loss of appetite, ¹³ declines in hunger and thirst signals ¹³
Physical	Limitations in mobility, ability to self-feed or prepare meals ¹⁸
Neurological/Psychological	Dementia, ¹⁹ cognitive decline, ^{19,20} anxiety, ¹⁹ depression ²⁰
Social/Environmental	Access to nutrient-dense foods, ⁷ financial constraints ⁷

2.4. Perspectives of Dietitians and Older Adults on Undernutrition

Dietitians and other nutrition professionals are critical for the prevention, management, and treatment of undernutrition among older adults. Beelen and colleagues conducted interviews with older adults undergoing treatment for undernutrition to better understand the barriers they face when trying to adhere to nutrition treatments.¹⁰ Several dietitians were also interviewed about their perceptions on the barriers older adults may

face when undergoing dietetic treatment. The results of this investigation focused on three main topics: barriers for treating older adults who are undernourished, current dietetic treatments for undernutrition, and new strategies that could enhance current treatments.¹⁰

Some of the greatest barriers for the treatment of undernutrition in older adults include decreased appetite and physical limitations preventing compliance with dietetic recommendations.¹⁰ Hunger and thirst signals naturally decline in older adults, and taste and smell perceptions can change, which can contribute to decreased appetites.^{5,10} Many older adults reported that they did not eat for pleasure, but rather because they knew they had to or they had family members who made sure they ate. In conjunction with this, many older adults had difficulty thinking of themselves as being undernourished despite undergoing treatment for malnutrition.¹⁰

Physical limitations can also be a major barrier for older adults, and previously simple activities such as grocery shopping and preparing meals may become a strenuous activity that is too difficult to complete as often as necessary. These challenges can make ready-to-eat meals an easy option; however, they are often laden with sodium, added sugars, and saturated fats that can exacerbate conditions such as hypertension, diabetes, or coronary artery disease.^{7,10} One ready-to-eat meal from a grocery or convenience store or meal delivery program may often be divided into two or three meals due to low appetite or financial circumstances.^{7,10} This practice can lead to low caloric consumption and consequently weight loss, which older adults may view as a normal part of aging.¹⁰ Weight loss is seldom recommended to older adults, and inadequate nutrient consumption is almost never appropriate.

Another barrier to adequate nutrition in older adults is lack of knowledge regarding undernutrition and its health-related consequences. This lack of knowledge is not just observed in older adults, but also in their families and caretakers, physicians, and other health professionals.¹⁰ More individuals in the healthcare field must be made aware of the specific nutritional needs of older adults and when consultation from a registered dietitian is appropriate, as often times referrals are made much later in the course of illness than recommended.¹⁰ Registered dietitians therefore need to be well educated on nutritional care for older adults and advocate for patients or clients who need nutrition intervention and may not be receiving it.

2.5. Accreditation Council for Education in Nutrition and Dietetics 2022 Accreditation Standards

The Accreditation Council for Education in Nutrition and Dietetics (ACEND) is the accrediting agency of the Academy of Nutrition and Dietetics (the Academy or AND) for college or university, health care facility, or federal or state agency programs in nutrition and dietetics.²¹ Didactic undergraduate programs in nutrition and dietetics (DPD) offered by a college or university or in a consortium with a college or university must be accredited by ACEND in order for participating students to be eligible to complete a dietetic internship. Programs must award at least a baccalaureate degree and verification statement to students upon completion of the program and its requirements if they enter the program with less than or equal to an associate degree.²¹ Individuals with a baccalaureate degree or greater who enter the program must be awarded at least a verification statement upon successful completion.

The ACEND accreditation standards for nutrition and dietetics didactic programs (DPD) include specific curriculum requirements to provide participants with the knowledge they need to partake in supervised practice and become a registered dietitian nutritionist. There are no learning requirements specific to particular age ranges for a program to become ACEND- accredited. The fifteenth required element specifies that students will learn about “integrative and functional nutrition across the lifespan,” but no other mentions of age are found. Students must also learn core knowledge components throughout their courses in an ACEND-accredited DPD program. While the curriculum specifies the areas in which students should receive education, they are quite vague regarding what knowledge dietetics students are actually required to know. This policy leads to inconsistencies between accredited programs and preparedness of students entering graduate programs, coordinated programs, or dietetic internships.

Students in dietetic internship programs must complete at least 1000 hours of supervised practice experiences, with at least 700 hours in a professional work setting and no more than 300 hours of alternate supervised experiences including simulations, case studies, and role playing.²² Successful program completion provides eligibility to take the Commission of Dietetic Registration credentialing exam for dietitian nutritionists. There are various core competencies (CRDN) for participants to complete throughout the duration of the dietetic internship program. Dietetic interns must be prepared to become competent practitioners in five domains: Scientific and Evidence Based Practice; Professional Practice Expectations; Clinical and Client Services; Practice Management and Use of Resources; and Leadership and Career Management.²² Within each domain are multiple related competencies that interns must become proficient in before they are

able to successfully complete their program. The only specification regarding age-related competencies is under the third domain, Clinical and Client Services, which specifies that interns should be able to perform medical nutrition therapy with groups and populations of differing ages and health statuses in various settings.²²

ACEND also has accreditation standards for nutrition and dietetics coordinated programs. These programs must be offered in a college or university or in a consortium with a college or university. Like the dietetic internship, coordinated program participants must complete at least 1000 hours of supervised practice experience with at least 700 hours in professional work settings and no more than 300 hours in alternate supervised experiences including simulations, case studies, or role playing.²³ The coordinated program curriculum contains the same domains as the curriculum for dietetic internship programs, but also includes core knowledge guidelines participants must show competence in before successful completion of the program.

A new model for education in nutrition and dietetics was developed by the ACEND Standards Committee with intent to advance the profession and protect the public.²⁴ Previously, organizations had the opportunity to apply to take part in sponsoring a nutrition and dietetics program that would be accredited under the ACEND Future Education Model Accreditation Standards for Graduate Programs in Nutrition and Dietetics in an early adopter demonstration program. This model was released by the ACEND Board in November 2021 for voluntary adoption in participating organizations, with mandatory adoption by June 2022 in graduate programs following the demonstration program standards.²⁴ These standards contain more requirements and competences regarding age-related nutrition knowledge than other accredited programs. Lifespan

nutrition requirements for ACEND accredited didactic programs in dietetics, dietetic internships, coordinated programs, and Future Education Model Graduate Programs are displayed in Table 2.3.

Table 2.3. Lifespan Nutrition Requirements for ACEND Accredited Programs

Program	Description of Lifespan Nutrition Requirement
Didactic Program in Nutrition and Dietetics	Requirement 15: Organic chemistry, biochemistry, anatomy, physiology, genetics, microbiology, pharmacology, statistics, logic, nutrient metabolism, integrative and functional nutrition, and nutrition across the lifespan
Dietetic Internship and Nutrition and Dietetics Coordinated Programs	CRDN 3.1: Perform Medical Nutrition Therapy by utilizing the Nutrition Care Process including use of standardized nutrition terminology as a part of the clinical workflow elements for individuals, groups and populations of differing ages and health status, in a variety of settings.
Future Education Model for Graduate Programs	<p>1.5 Learning Activity: Review research findings and evidence-based literature related to the physiological process through the lifecycle (e.g., nutrition health, progress of heart disease, the lactation process).</p> <p>1.14: Integrates knowledge of nutrition and physical activity in the provision of nutrition care across the life cycle.</p> <p>1.14.1: Evaluates, integrates and communicates nutritional requirements across the lifecycle.</p> <p>1.14.3: Teaches the benefits of physical activity across the lifecycle to individuals, groups and populations.</p> <p>2.3 Learning Activity: Utilize the nutrition care process with individuals to manage basic to highly complex health and nutrition needs at different stages of the lifecycle and in different environments (e.g., acute care, long-term care, rehabilitation, community, mental health facilities, grocery stores, clinics).</p>

2.6. Student Interest in Geriatric Care

The specialty of geriatric care has been relatively unpopular amongst individuals entering healthcare fields for many years.¹¹ With the rapidly growing older adult population, it is necessary to determine why the field of geriatrics is unappealing to individuals entering healthcare and what can be done to ensure that there are enough trained practitioners to meet the increased demand for specialized care in years to come.

Haron and colleagues conducted a cross-sectional survey to assess student nurses' views on entering the field of geriatrics and the factors influencing those views. They found that 61% (n = 296) of students that participated in their survey had no intentions of working with older adults while only 12% (n = 58) would positively consider working with older adults.¹¹ Almost one third of respondents (27%; n = 131) would consider working with older adults if they received specialized training, and 69% (n = 335) would consider it if geriatric care providers would be granted more abilities.¹¹

Multiple regression analysis on the survey responses indicated that the factor most predictive of students wanting to work with older adults were positive prior experiences with older adults and a favorable view of older adults.¹¹ The researchers concluded that efforts should be targeted towards making the field of geriatrics more attractive to students by increasing pay, providing more authority, and highlighting the benefits of working in the field. That study showed an important glimpse into how to improve the appeal of working with older adults for student nurses. Further research regarding how to entice more students entering various fields of healthcare into considering a specialty of geriatrics is warranted.

2.7. Comparing Student Interests in Gerontology

King conducted an exploratory study using an online survey of graduate students in a counseling program to compare differences between students with and without an interest in the field of geropsychology.¹² Just over half of the respondents (25, 53%) indicated an interest in treating older adults, while 40% (n = 19) had little to no interest in working with this population.¹² Students uninterested in working with older adults were significantly more likely to want to avoid sick or dying patients and believed they did not have enough life experience to work with this population.¹² They were also significantly more likely to believe working with older adults would be too depressing or challenging.¹² These results suggest that students uninterested in working with older adults may have misconceptions regarding what working with older adults entails. Further research regarding which factors influence students to be uninterested in working with older adults and what methods are most effective for increasing student interest in working with older adults are needed.

2.8. Student Attitudes about Older Adults following Service-Learning Activities

The number of healthcare workers in the United States that are prepared to provide care for older adults is critically low, according to a study conducted by Augustin and Freshman of California State University.²⁵ In order to be prepared for the anticipated increase of the older adult population in 2030, more working-age individuals, especially students newly entering the workforce, must want to pursue a career in nutrition with a focus on gerontology. Possessing positive attitudes toward older adults and quality interactions is associated with positive attitudes towards the population.²⁶ Therefore, service-learning activities that allow students opportunities to learn about older adults and

have interactions with them in the healthcare setting may improve attitudes towards older adults and increase interest in wanting to work with the population.²⁵

Augustin and Freshman surveyed undergraduate students enrolled in a healthcare administration program to explore how service-learning activities can affect student attitudes towards older adults.²⁵ These students were required to participate in a service-learning project for course credits in their degree program. Of the 36 students in the course, 24 (67%) were randomly assigned to a senior facility. Weekly interviews were conducted with the students at senior facilities, and they were also required to keep regular journal entries to further analyze their experiences and attitudes. Following assessment of these interviews and journal entries, researchers observed that many of the students were initially nervous and somewhat disinterested in working with the older adults.²⁵ Throughout the completion of their service-learning activities, the students started contemplating a career working with seniors and even began envisioning themselves at that age. When asked about their career choice, some students mentioned an intention to pursue gerontology following their program completion, and others were interested in learning more about various careers involving the care of older adults.²⁵ The behaviors and attitudes of students towards older adults became more positive throughout their experiences, and the students actually began to relate themselves to the seniors they worked with.²⁵

Evaluation of what worked well for the service-learning projects was also conducted by Augustin and Freshman who noted that it is important for experiences to be clearly relevant to students' degree programs and course material.²⁵ It was also observed that incorporating the service-learning projects into course discussions provided students

with not only a place to connect the materials they learned in class with their experiences, but also a safe space to share their challenges and successes with the project.²⁵

Additionally, having meaningful projects for both the students and the older adults they worked with helped motivate students to continue their work as it showed the direct benefits of their actions. One of the most important things to note from this study was the progression and development of student attitudes and interests towards working with older adults. By providing students with the opportunity to work with older adults that they otherwise might not have experienced, their attitudes toward the population improved and their interest in pursuing a career in gerontology increased.

Upon analysis of these studies, multiple hypotheses can be drawn to in order to help get more students interested in caring for older adults following the completion of their program. A general, overarching hypothesis for these studies is that it is important to incorporate relevant experiences with older adults into course requirements. From this, more specific hypotheses can be formed. The first hypothesis is that providing students with the chance to observe how their coursework directly applies and helps the older adult population can encourage them to consider a career in gerontology. The second is that positive experiences with older adults can also improve attitudes towards the population and influence students to become advocates for older adults even if they choose not to pursue this career path. Lastly, is that educational experiences with older adults can also increase awareness of the growing need for healthcare providers for older adults and the problems that will ensue if the healthcare system is not prepared for the incoming increase in older adults seeking care.

The goal of this study was to examine the current interest of undergraduate and graduate students in learning about nutritional care for older adults, and understand academic programs' needs for teaching dietetics students about nutritional care of older adults. It is hypothesized that nutrition and dietetics students at the University of Maine are not interested in learning about nutritional care of the older adult population due to consistently low enrollment numbers in FSN 406 since its inception. It is also hypothesized that the availability of education for dietetics students on nutritional care of older adults is not consistent across institutions nationwide. The objectives of the Student Survey were to learn why students at the University of Maine have not taken FSN 406 Nutritional Care of Older Adults and to develop strategies that could increase their interest in enrolling in the course. The objectives of the Nutrition and Dietetics Educators and Preceptors Survey were to assess the availability of education for students on nutritional care for older adults at various institutions and understand academic programs' needs in order to teach dietetics students about nutritional care for older adults at least maintaining or increasing interest in the field.

CHAPTER III

METHODOLOGY

3.1. Study Design

This project included two survey studies. The first study was a cross-sectional survey design that included undergraduate and graduate students in the Food Science and Human Nutrition programs at the University of Maine; the second survey was focused on members of the Nutrition and Dietetics Educators and Preceptors (NDEP) organizational unit of the Academy of Nutrition and Dietetics and their colleagues. Student survey assessments measured student interest in working with older adults and their interest in taking a course to learn about older adults. NDEP survey assessments examined the availability of or need for coursework to teach dietetics students about nutritional care of older adults. The University of Maine Institutional Review Board for the Protection of Human Subjects approved this study on June 6, 2022.

3.2. Survey Development

The survey instruments used in this study were developed by Dr. Mary Ellen Camire and Lily Brickman. Demographic questions such as age, race, and gender identity were included, as well as student year and program status, or role in nutrition and dietetics education. The FSN 406 Student Survey included questions regarding prior experience working with older adults and if there were any changes in their interest in working with older adults following the COVID-19 pandemic. The survey also asked whether or not they had been or were currently enrolled in FSN 406 Nutritional Care for Older Adults, and if they had not enrolled in the course, their reasoning behind that decision. The final question in this survey was included to allow participants the

opportunity to provide recommendations as to what they think might increase enrollment in FSN 406. The NDEP Survey included questions regarding whether a participant's academic institution offered classes focused on the nutritional needs of older adults, at which level they felt such classes should be taught, and whether they were the instructor of a class involving nutrition for older adults. The survey also asked which types of resources they may find helpful for delivering a class on the nutritional needs of older adults. The final question in this survey allowed participants the opportunity to share their thoughts on teaching students about the nutritional care of older adults.

3.3. Survey Participants

The participants in the FSN 406 Student Survey were undergraduate and graduate students (n=17) at least 18 years of age who were enrolled in the Food Science and Human Nutrition program during the 2021-2022 academic year.

The participants in the NDEP Survey were members and colleagues (n = 53) of the Nutrition and Dietetics Educators and Preceptors organizational unit of the Academy of Nutrition and Dietetics who were at least 18 years of age.

3.4. Recruitment and Eligibility

Recruitment notices for the FSN 406 Student Survey were emailed to all students enrolled in the FSN program during the 2021-2022 academic year in June 2022. The recruitment notice can be found in Appendix A. Screening eligibility included being listed on the 2021-2022 FSN program enrollment email list and being at least 18 years of age. Screening occurred when students received the recruitment notice email and clicked on the survey link and selected the answer "Yes" that they agreed to take the survey.

A recruitment notice for the NDEP Survey was posted to the NDEP group page for all current members to access courtesy of Dr. Mary Ellen Camire. Members were encouraged to send a copy of the recruitment notice to their fellow nutrition and dietetics colleagues who were not NDEP members. The recruitment notice can be found in Appendix C. Screening eligibility included being a member of the NDEP group or a group member's colleague being at least 18 years of age. Screening occurred when participants saw the recruitment notice and clicked on the survey link and selected the answer "Yes" that they agreed to take the survey.

3.5. Research Protocol

All surveys were conducted online via Qualtrics. The informed consent form was the first item to appear on the Qualtrics webpage when participants clicked on the survey link (Appendix B, Appendix D). Selection of the answer "Yes" to the first survey question and participation in the survey indicated consent. The FSN 406 Student Survey can be found in Appendix B and the NDEP Survey can be found in Appendix D.

Participants were given the option not to answer any questions that they did not want to answer as well as the option to indicate if they did not know the answer to a question, or if they preferred not to respond. They were also made aware that they could stop the survey at any time. Participant responses were randomly assigned computer-generated codes following their entry into Qualtrics. Names and addresses obtained for the purpose of sending student participants their compensation were entered into a separate password-protected document and kept on a password-protected computer. Email addresses obtained for the purpose of sending NDEP Survey participants a copy of the survey results were entered into a separate password-protected document and kept on

a password-protected computer. Only the researcher knew the password to the computer and documents containing personal information. The files containing personal information will be permanently deleted prior to June 30, 2023.

3.6. Compensation

Participants who completed the FSN 406 Student Survey were given the option to provide their email address on a separate secure webpage to be entered into a drawing to win one of five \$20.00 cash prizes. Each of the five prize winners was asked for their preference for how they would obtain their cash prize, which could be done by either picking up the prize from Dr. Camire's office on the University of Maine campus, or having their prize mailed to an address of their choice. Survey responses and any email or physical addresses provided were stored in separate password-protected documents to ensure utmost confidentiality. The selected participants were all provided their cash prizes at the end of August.

Participants who completed the NDEP Survey were given the option to provide their email address on a separate secure webpage if they wished to receive a copy of the survey results. Survey responses and any email addresses provided were stored in separate password-protected documents on the principal investigator's computer to ensure confidentiality. The participants will be sent a copy of the survey results following the completion of this thesis.

3.7. Data Analysis

Data recorded in Qualtrics was downloaded as an Excel file. Data were then analyzed using JMP Pro 15 statistical analytics software. The Chi-Squared statistic was used to examine the difference between observed counts and expected counts to

determine the presence or absence of a relationship between the variables. Chi-Squared was chosen because the variables in the surveys were categorical. The p-value was used to determine the statistical significance of the relationship between the variables. A p-value of less than 0.05 was considered statistically significant.

3.8. Student Research Training

The researcher completed the Responsible Conduct of Research for Undergraduates training and the CITI training for research with human subjects. The researcher also completed the FSN 524 Responsible Design, Conduct and Analysis of Research course, during which they were trained in JMP Pro 15 statistical analytics software.

CHAPTER IV

STUDENT SURVEY RESULTS AND DISCUSSION

4.1. Student Survey Responses

A total of 17 surveys were conducted between June 14 and June 30, 2022.

Surveys were conducted among undergraduate and graduate Food Science and Nutrition students at the University of Maine. According to the Office of Institutional Research and Assessment (OIRA) at the University of Maine, there were 84 undergraduate, 45 master of science, and 7 Ph.D. students enrolled in the Food Science and Nutrition programs in Spring 2022. Table 4.1 shows survey response rates between undergraduate and graduate students. Most responses came from undergraduate students (70.6%; n = 12). There were no surveys collected from Ph.D. students.

Table 4.1. Goal FSN 406 Survey Responses vs. Actual Responses

	Total Enrollment	Goal Response	Actual Response	Percent of Goal Response	Percent of Total Response
Undergraduate	84	25	12	48.0%	70.6%
Graduate	52	16	5	31.3%	29.4%
Total	136	41	17	41.5%	

4.1.1. Student Survey Participant Demographics

Over half (58.8%; n = 10) of survey participants were between the ages of 18 and 21 years, over one third (35.3%; n = 6) were between the ages of 22 and 25, and only one participant (5.9%) was between the ages of 30 and 33. No participants were between the ages of 26 and 29, or 34 years of age or older. The majority of participants identified as female (76.5%; n = 13) and less than a fourth of participants (23.5%; n = 4) identified as male. No participants identified as agender. A breakdown of the student survey

participant demographics can be found in Table 4.2. These percentages are similar to the demographic traits of all students in FSN majors in Spring 2022. Almost half (43.3%; n = 59) of the students in FSN majors in Spring 2022 were between the ages of 18 and 21, and over one fifth (22.1%; n = 30) were between the ages of 22 and 24. Over one fifth of students (22.1%; n = 30) were between the ages of 25 and 29. Less than one tenth of students were between the ages of 30 and 34 (6.6%; n = 9) or 35 and older (5.9%; n = 8). The majority of FSN students in Spring 2022 identified as female (75%; n = 102) and less than one fourth of students identified as male (23%; n = 31). There were 3 students (2%) whose gender identity was not known.

Seven responses came from students who were in their fourth or senior year of study during Spring 2022 (41.2%), while the fewest responses came from third-year students (11.8%; n = 2). A third-year nutrition course, FSN 301 Life Cycle Nutrition, is recommended but not required for FSN 406. Undergraduates who have not taken FSN 301 may have felt that they were not ready to take FSN 406. There were no surveys from first year, Ph.D., or master's students who were not enrolled in the dietetic internship program. However, there were five surveys from students enrolled in the combined master's and dietetic internship program during Spring 2022.

Table 4.2. Student Survey Participant Demographics

Demographic Characteristics	Count	Percent of Total
<u>Age (Years)</u>		
18-21	10	58.82%
22-25	6	35.29%
26-29	0	-
30-33	1	5.88%
34 or older	0	-
<u>Sex</u>		
Female (cis or trans)	13	76.47%
Male (cis or trans)	4	23.52%
<u>Year or Program during Spring 2022</u>		
First year	0	-
Second year	3	17.64%
Third year	2	11.76%
Fourth year (senior)	7	41.17%
M.S. student	0	-
M.S./Dietetic Internship student	5	29.41%
Ph.D. student	0	-
<u>Field of Study</u>		
Food management	0	-
Food science	1	5.88%
Human nutrition/dietetics	16	94.11%

4.1.2. Student Survey Responses by Age

The responses to the survey questions were analyzed by five groups of four-year age ranges representing all participants. There were no participants between the ages of 26 and 29, or 34 years of age or older, so those age ranges will not have any associated data. Students were asked whether they had prior experience working or volunteering with older adults, to which they could respond “Yes,” “No,” or “Not sure.” All student survey participants answered this question. The responses to whether students had experience working or volunteering with older adults by age range are displayed in Table 4.3. A response of “No” to this question was chosen by ten (58.82%) participants. Only five participants (29.41%) answered “Yes” to indicate that they have previously worked

or volunteered with older adults, and two (11.76%) of the participants were not sure if they had experience with older adults.

Table 4.3. History Working with Older Adults by Age Range

Age Range	Worked or Volunteered with Older Adults			Total (#)	Total (%)
	Yes	No	Not sure		
18-21	4	6	0	10	58.82%
22-25	1	3	2	6	35.29%
26-29	0	0	0	0	-
30-33	0	1	0	1	5.88%
34 or older	0	0	0	0	-
Total	5	10	2	17	$\chi^2 = 1.346; p > 0.05$

Chi-Squared analysis of age range and its relationship to history of working with older adults produced a p-value > 0.05 , meaning there is no statistically significant relationship between age range and experience in working with older adults. The variables are thus deemed independent of each other.

Survey participants were asked if the COVID-19 pandemic had any influence on their level of interest in working with older adults. Responses according to age range are displayed in Table 4.4. Participants could answer that they had “Less,” “More,” or “No change” regarding their interest in working with older adults following the COVID-19 pandemic. All student survey participants answered this question. There were eleven participants who responded “No change” (64.70%) to their interest levels before and after the onset of the COVID-19 pandemic. Four participants (23.52%) indicated that the COVID-19 pandemic has made them more interested in working with older adults, while two (11.76%) indicated that the pandemic made them less interested.

Table 4.4. COVID-19 Pandemic Influence on Interest in Working with Older Adults by Age Range

Age Range	How the COVID-19 pandemic influenced interest in working with older adults			Total (#)	Total (%)
	Less	More	No change		
18-21	1	2	7	10	58.82%
22-25	1	2	3	6	35.29%
26-29	0	0	0	0	-
30-33	0	0	1	1	5.88%
34 or older	0	0	0	0	-
Total	2	4	11	17	$\chi^2 = 1.236; p > 0.05$

Of the participants who indicated that the COVID-19 pandemic has made them more interested in working with older adults, two (11.76%) were between the ages of 18 and 21, and another two were within the ages of 22 and 25. Of the two participants who indicated that the COVID-19 pandemic has made them less interested in working with older adults, one was between the ages of 18 and 21, and the other was between the ages of 22 and 25. The eleven remaining participants (64.70%) indicated that there was no change in their interest in working with older adults following the COVID-19 pandemic. A total of seven (41.2%) participants who selected this answer were between the ages of 18 and 21, while three (17.64%) were between the ages of 22 and 25, and one (5.88%) was between the ages of 30 and 33.

The COVID-19 pandemic did not have a significant influence on students' interest in working with older adults according to age range did not show any statistical significance, as evidenced by a p-value > 0.05 . This finding indicates that age range does not impact whether FSN students' interest was influenced by the COVID-19 pandemic regarding working with older adults.

Student survey participants were asked whether they had been or currently are enrolled in FSN 406 Nutritional Care of Older Adults. All student survey participants answered this question. Responses to this question by age range are displayed in Table 4.5. Eleven participants (52.94%) responded that they have not taken and were not currently enrolled in FSN 406.

Table 4.5. FSN 406 Enrollment by Age Range

Age Range	FSN 406 Enrollment History			Total (#)	Total (%)
	Yes	No	Not sure/ Prefer not to answer		
18-21	2	8	0	10	58.82%
22-25	1	3	2	6	35.29%
26-29	0	0	0	0	-
30-33	1	0	0	1	5.88%
34 or older	0	0	0	0	-
Total	3	11	2	17	$\chi^2 = 4.486;$ $p > 0.05$

Two participants (11.76%) who have taken or are enrolled in FSN 406 were between the ages of 18 and 21. Only one participant who indicated that they have taken or are enrolled in FSN 406 currently was between the ages of 22 and 25, and only one was between the ages of 30 and 33. Eight participants (47.05%) that have not taken FSN 406 were between the ages of 18 and 21, and three (17.64%) were between the ages of 22 and 25. Two participants (11.76%) selected the “Not sure/Prefer not to answer” response.

The Chi-Squared analysis between prior FSN 406 enrollment status and age range did not show statistical significance between the two variables ($p > 0.05$). This finding means that enrollment status and age range were independent of one another, so a student’s age did not impact their enrollment in FSN 406.

Chi-Squared analysis did not show statistical significance for any variables when compared with age range. The age groups were collapsed to be 18 to 21 years and 22 years and older and the data were analyzed again to determine if the lack of values biased the Chi-Squared results. The collapsed ranges produced no statistically significant results for any variables based on the resulting p-values all being > 0.05 . The results of the collapsed age-range data analysis can be found in Appendix F.

4.1.3. Student Survey Responses by Enrollment Status

The responses to the survey questions were analyzed by four categories representing participant enrollment status during the Spring 2022 semester. No students enrolled in their first year of school or in a Ph.D. program took the survey, so those categories have been eliminated from the data set. All student survey participants answered this question.

Out of seventeen total student responses, twelve students (70.58%) who took this survey had not previously taken and were not currently enrolled in FSN 406. These results are displayed in Table 4.6. None of the participants who were enrolled in their second year of college during Spring 2022 that took the survey (100%; $n = 3$) had previously taken, nor were they currently enrolled in, FSN 406. Half of the third-year students (50%; $n = 1$), almost three-quarters of the fourth-year students (71.43%; $n = 5$), and almost two-thirds of the M.S. and Dietetic Internship students (60%; $n = 3$) had also not previously taken and were not currently enrolled in FSN 406. Two participants (11.76%) selected the “Not sure/Prefer not to answer” option for this question, one being a fourth-year student and the other being in the M.S. and Dietetic Internship.

Table 4.6. FSN 406 Enrollment History by Enrollment Status

Enrollment Status	FSN 406 Enrollment History			Total (#)	Total (%)
	Yes	No	Not sure/ Prefer not to answer		
Second Year	0	3	0	3	17.65%
Third Year	1	1	0	2	11.76%
Fourth Year	1	5	1	7	41.18%
M.S./Dietetic Internship	1	3	1	5	29.41%
Total	3	12	2	17	$\chi^2 = 3.258;$ $p > 0.05$

Chi-Squared analysis did not show statistical significance between enrollment status and history of enrollment in FSN 406, as evidenced by a p-value > 0.05 . This indicates that a student's current year of enrollment in undergraduate or graduate school and whether or not they took FSN 406 were unrelated.

Chi-Squared analysis of whether the COVID-19 pandemic influenced a participant's interest level in working with older adults by enrollment status did not indicate statistical significance (p-value > 0.05). Only two participants indicated that the COVID-19 pandemic made them less interested in working with older adults. All student survey participants answered this question, and the results are displayed in Table 4.7. Of those who indicated they were less interested in working with older adults following the pandemic, one reported that they were in their second year of school and the other reported that they were in the combined master's and dietetic internship program. Four participants (23.52%) reported that the COVID-19 pandemic made them more interested in working with older adults. Of these participants, three (75%) reported that they were in their fourth year of school and one (25%) reported that they were in their second year of school. Eleven participants (64.70%) indicated that their interest in working with older

adults was not affected by the COVID-19 pandemic. Eight of these participants (72.73%) were in either their fourth year of school or a part of the combined master's and dietetic internship program.

Table 4.7. COVID-19 Pandemic Influence on Student Interest in Working with Older Adults by Enrollment Status

Enrollment Status	How the COVID-19 pandemic influenced interest in working with older adults			Total (#)	Total (%)
	Less	More	No change		
Second Year	1	1	1	3	17.65%
Third Year	0	0	2	2	11.76%
Fourth Year	0	3	4	7	41.18%
M.S./Dietetic Internship	1	0	4	5	29.41%
Total	2	4	11	17	$\chi^2 = 6.498; p > 0.05$

Out of the 17 total respondents, nine (52.94%) reported that they had not previously worked or volunteered with older adults. All three second-year students and one third-year student who participated in this survey selected this answer. Three of the students in the combined master's and dietetic internship program (60%) indicated that they had not worked or volunteered with older adults. Eight (47.05%) respondents reported that they had previously worked or volunteered with older adults. No second-year students selected this answer, but one of the third-year students who participated in this survey selected this answer. Since the suggested prerequisite, FSN 301, is typically taken in the third year of study, these results are not surprising. Most of the fourth-year students (71.43%; n = 5) indicated that they had worked or volunteered with older adults in the past. Only two students (40%) in the combined master's and dietetic internship

program selected this answer. All student survey participants answered this question, and the results can be found in Table 4.8.

Table 4.8. History of Working with Older Adults by Enrollment Status

Enrollment Status	Worked or Volunteered with Older Adults			Total (#)	Total (%)
	Yes	No	Not sure		
Second Year	0	3	0	3	17.65%
Third Year	1	1	0	2	11.76%
Fourth Year	5	2	0	7	41.18%
M.S./Dietetic Internship	2	3	0	5	29.41%
Total	8	9	0	17	$\chi^2 = 4.442; p > 0.05$

According to Chi-Squared analysis, the enrollment status of a participant and whether they had previously worked or volunteered with older adults had no relation ($p > 0.05$).

4.1.4. Student Survey Responses by Field of Study

There are three different concentrations within the Food Science and Human Nutrition program at the University of Maine: Foodservice Management, Food Science, and Human Nutrition and Dietetics. No students within the Foodservice Management concentration elected to participate in this survey, so there is not data in this set associated with this concentration. Only one student (5.88%) from the Food Science concentration participated in this survey (Table 4.9). The remaining sixteen participants (94.12%) were all students from the Human Nutrition and Dietetics undergraduate concentration of the M.S. program.

Table 4.9. FSN 406 Enrollment by Field of Study

Field of Study	FSN 406 Enrollment History			Total (#)	Total (%)
	Yes	No	Not sure/ Prefer not to answer		
Food Science	0	1	0	1	5.88%
Human Nutrition / Dietetics	3	11	2	16	94.12%
Total	3	12	2	17	$\chi^2 = 0.443$; $p > 0.05$

The one participant from the Food Science concentration indicated that they had not taken and were not currently enrolled in FSN 406. Food science students may not take human anatomy and physiology, which is a prerequisite for FSN 301 Life Cycle Nutrition, thus food science students may avoid the class because they lack the prerequisite. The same issue may apply for food management students. Only three students from the Human Nutrition and Dietetics concentration indicated that they had taken or were currently enrolled in FSN 406. Two participants (11.76%) selected the “Not sure/Prefer not to answer” option for this question.

The Chi-Squared analysis did not show statistical significance between student field of study and history of enrollment in FSN 406 since only one food science student responded to the survey.

Table 4.10 displays the results of statistical analysis on the potential relationship between student field of study and whether or not the COVID-19 pandemic influenced their interest in working with older adults. The one student in this study who was from the Food Science concentration indicated that the COVID-19 pandemic influenced them to be more interested in working with older adults. Of the students in the Human Nutrition and Dietetics concentration, only three (18.75%) also indicated that the

COVID-19 pandemic increased their interest in working with older adults. Two students from the Human Nutrition and Dietetics concentration (12.50%) reported that the COVID-19 pandemic influenced them to be less interested in working with older adults. The remaining eleven students (68.75%) from this concentration reported no change in their interest towards working with older adults following the COVID-19 pandemic.

Table 4.10. COVID-19 Pandemic Influence on Student Interest in Working with Older Adults by Field of Study

Field of Study	How the COVID-19 pandemic influenced interest in working with older adults			Total (#)	Total (%)
	Less	More	No change		
Food Science	0	1	0	1	5.88%
Human Nutrition / Dietetics	2	3	11	16	94.12%
Total	2	4	11	17	$\chi^2 = 3.453;$ $p > 0.05$

Of all the survey participants, four (23.52%) reported increased interest in working with older adults following the pandemic, two (11.76%) reported less interest, and eleven (64.70%) reported no change. Chi-Squared analysis did not reveal any statistical significance between field of study and how the COVID-19 pandemic influenced interest in working with older adults, as evidenced by a p-value > 0.05 .

Student field of study was also analyzed against history of working or volunteering with older adults to determine if a relationship was present between the variables. This data can be found in Table 4.11. The one participant in the Food Science concentration (5.88%) reported that they had not previously worked or volunteered with older adults. Of the sixteen participants in the Human Nutrition and Dietetics

concentration, eleven (64.70%) also reported not having experience working or volunteering with older adults. Of the remaining participants who were in the Human Nutrition and Dietetics field of study, three (18.75%) indicated that they did have experience working with older adults, and two (12.50%) were not sure if they had experience working or volunteering with older adults.

Table 4.11. History Working with Older Adults by Field of Study

Field of Study	Worked or Volunteered with Older Adults			Total (#)	Total (%)
	Yes	No	Not sure		
Food Science	0	1	0	1	5.88%
Human Nutrition / Dietetics	3	11	2	16	94.12%
Total	3	12	2	17	$\chi^2 = 0.944$; $p > 0.05$

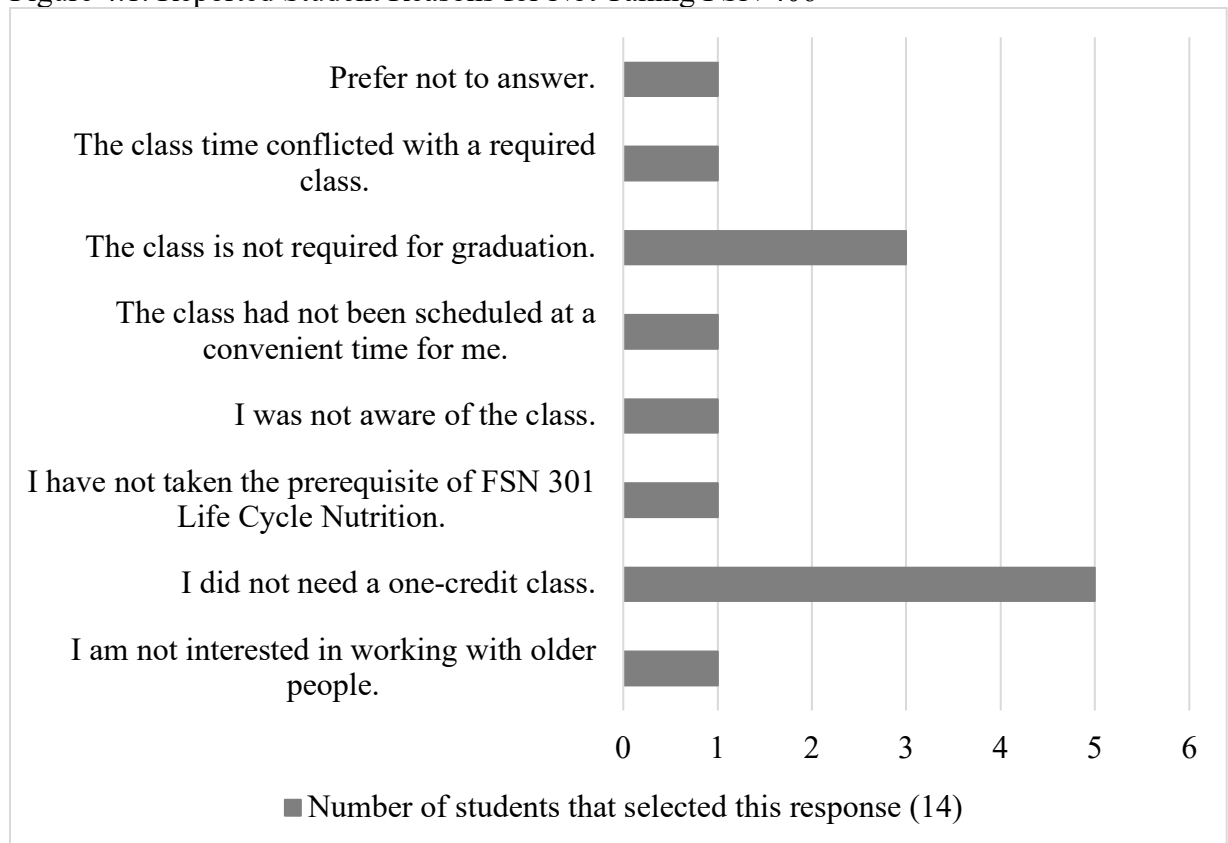
Out of all survey participants, regardless of their field of study, twelve (70.58%) had no experience working or volunteering with older adults. Three students (17.64%) did have experience with older adults, and two (11.76%) were not sure of their prior experience working or volunteering with older adults. Chi-Squared analysis on participant field of study and history of working or volunteering with older adults did not indicate statistical significance ($p > 0.05$). This indicates that there is no relationship between the variables, meaning they function independently.

4.1.5. Student Reasons for Not Taking FSN 406

There were multiple options for students to select to indicate the reason they had not taken FSN. Results are displayed in Figure 4.1. Fourteen (82.35%) students that participated in this survey responded to this question. Of those fourteen students, five (35.71%) indicated that the main reason they did not take FSN 406 was because they did

not need a one-credit class. Three students (21.43%) reported that they did not take FSN 406 because the course is not required for graduation. Each of the following responses were selected by only one student as the reason that they did not take FSN 406: because the class time conflicted with a required class; because FSN 406 had not been scheduled at a convenient time for them; because they were not aware that FSN 406 was an available course; and because they had not taken the prerequisite of FSN 301 Life Cycle Nutrition.

Figure 4.1. Reported Student Reasons for Not Taking FSN 406



4.1.6. Student Recommendations for Increasing Enrollment

The last portion of the survey asked participants for recommendations to increase the enrollment in FSN 406. A breakdown of the responses from participants are shown in Table 4.12. Only five (29.41%) of the seventeen survey participants chose to answer this

question and provide recommendations. The course has been offered in Fall and Spring semesters since Fall 2020. However, no one enrolled for Fall 2022, and there are currently no registrants for Spring 2023.

Table 4.12. Participant recommendations for increasing enrollment in FSN 406

Survey Participant:	I think just continuing to spread the word. I regret not taking it after hearing about it from those that took it. In Maine older adults are an important part of our practice with us having an elderly population.
Survey Participant:	Have it in both fall and spring
Survey Participant:	It's a very hands-on class! Even with the Covid restrictions in place at the time I was enrolled, there was still several lab activities that provided experiential learning.
Survey Participant:	Could be made into a five-week course. Class was slow.
Survey Participant:	Get people excited about treating older adults somehow.

4.2. Project Goals

The goals of this survey were to examine the current interest of undergraduate and graduate students in learning about the nutritional care of older adults, their interest in working with older adults, and how an elective course on nutritional care of older adults could be better promoted among students to increase its enrollment.

4.2.1. FSN 406 Student Survey Response Rate

Only students responded to the survey. The actual response rate for this survey (12.5%) was less than half of the goal response rate of 30%. Similar surveys of university students also produced response rates below their goal rates. One study of the nutrition practices of undergraduate students attending Lenoir-Rhyne University yielded only a 5.8% response rate, receiving 103 responses after recruitment emails were sent to over 1700 students.²⁷ Another study on the prevalence of basic needs insecurity among students at one large public university in southeastern United States had an 11.2% response rate, receiving 2634 responses from 23,444 recruitment emails.²⁸ Both of these studies were conducted in 2022 like the FSN 406 Student Survey. For these surveys conducted among students attending one specific university, actual response rates fell below the goal response rate and were similar to that of the FSN 406 Student Survey; however, more information regarding typical response rates of students attending one university is needed to determine if a low response rate is truly common.

This survey was conducted in June 2022 after the Spring 2022 semester had already been completed. Due to this timing, survey promotion was not possible during classes or advising meetings. Students might have only learned of the opportunity to take this survey if they were regularly checking their University of Maine email during the summer. Possibly more students may have participated in this survey if it was conducted during the Spring 2022 semester, however there is no guarantee that this would yield more respondents.

4.2.2. FSN 406 Enrollment

The FSN 406 Nutritional Care for Older Adults course was developed in 2020 to provide undergraduate and graduate students in the Food Science and Human Nutrition program at the University of Maine the opportunity to learn more about the unique needs of older adults. Enrollment in the course since its inception has ranged from four to six students each semester, with no students enrolled for the Fall 2022 semester or Spring 2023 semester. Students have some exposure to older adult nutrition in FSN 301 Lifecycle Nutrition, a course that delves deeply into nutritional needs from pre-conception until death. Due to the chronological nature of the course, nutritional care for older adults is discussed at the end of the semester, which limits the amount of time that can be spent on this life stage. This is the only required course for a degree in Food Science and Human Nutrition that discusses nutritional care specifically for older adults. FSN 301 is a prerequisite course for FSN 406, which is an optional one-credit elective course. An elective graduate class, FSN 508 Nutrition and Aging, is offered in the summers of odd years but few undergraduate students take that course.

Of the fourteen students that took the survey and had not taken FSN 406, five reported that the main reason they did take FSN 406 was because they did not need a one-credit class. Eleven of the students who had not taken FSN 406 were in at least their third year of school. Most students take their elective credits during their first two years of college and have their more advanced courses during their final two years of college. It is possible that students may not feel compelled to take an optional one-credit course during their final years of school if they have enough credits for graduation and already have a full schedule of tough classes. The second-most selected answer in this survey

(21.43%; n = 3) was that the students chose not to take FSN 406 because it was not required for graduation.

4.2.3. Navigating Barriers to Student Interest in Nutritional Care of Older Adults

In order to gain a deeper understanding of the current interest of undergraduate and graduate students in learning about the nutritional care of older adults, it is pertinent to examine the barriers that may be influencing low interest levels. One barrier could include the belief that working with older adults would be depressing.^{12,29} Studies have indicated that students sometimes also view older adults as boring and find it challenging to work with them given such a large age gap.^{12,29} Students may also feel they lack experience working with older adults and feel as though they would not be able to provide them with the care they need due to this deficit.¹² Many students do not have experience working with older adults outside of having older members within their extended family.^{12,29} Fourteen of the students at the University of Maine who participated in this study did not have any prior experience working or volunteering with older adults.

Another barrier that may be influencing student interest levels is a lack of knowledge on older adults and their care. The majority of the students at the University of Maine who participated in this study did not take FSN 406 Nutritional Care of Older Adults for reasons such as not needing a one-credit elective course and the course not being required for graduation. Studies have shown that student attitudes towards older adults and their interest in working with older adults improved after having educational experiences learning about and working with older adults.^{12,29,30} It is important to note that unless students enter a career in nutrition and dietetics that involves a very specific age group, they will at one point or another need to work with older adults.^{29,31} Therefore

it is hypothesized that the rate and intensity at which the population of older adults is increasing will require incoming nutrition and dietetics practitioners to be knowledgeable about the unique needs of older adults and feel comfortable and confident in the care that they provide them.

As of June 1, 2022, the Accreditation Council for Education in Nutrition and Dietetics (ACEND) has minimal criteria that accredited programs must meet regarding what students are taught about nutrition throughout the lifecycle, let alone nutrition for older adults.^{21-23,31} The vague nature of these guidelines thus leads to discrepancies between the education offered to nutrition and dietetics students among ACEND accredited institutions. It is relevant to examine these discrepancies in education in order to determine methods that could potentially increase student interest in learning about and/or working with older adults, or at the very least provide them with the basic knowledge they will need in order to work with a quickly aging population. Future studies on student interest in learning about and working with older adults are warranted.

Members of the AgingME GWEP project suggested placing the course online and advertising the class to the general public to attract caregivers to increase enrollments (personal communication, M.E. Camire). However, an online class would not provide the same hands-on class exercises available on campus. Other than interviewing an older adult for an assignment, the students did not interact with any older adults in the class during any semester. Nutrition-focused physical examinations (NFPE) were performed on classmates rather than older people due to concerns about COVID-19 exposure. As undergraduate students become familiar with NFPE as a required skill for dietitians, there

may be more interest in gaining experience with a broader group of people than fellow students who may not exhibit malnutrition-related physical symptoms.

CHAPTER V

NDEP SURVEY RESULTS AND DISCUSSION

5.1. NDEP Survey Responses

A total of 53 responses from members of the Nutrition and Dietetics Educators and Preceptors organizational unit of the Academy of Nutrition and Dietetics and their colleagues were collected between September 2 and September 30, 2022. Table 5.1. shows predicted NDEP survey response rates compared with actual NDEP survey response rates.

Table 5.1. Goal NDEP Survey Responses vs. Actual NDEP Survey Responses

	Goal Response	Actual Response	Percent of Goal
NDEP Survey Participants	405	53	13.08%

5.1.1. NDEP Survey Participant Demographics

The NDEP group has approximately 1,350 members. The goal response rate was 30%, which would have provided 405 survey responses. The actual amount of survey responses was 53, only 13.08% of the goal. The response rate was about 4%, which is unexpectedly low.

Only one (1.89%) of the NDEP survey participants was between the ages of 21 and 30. Almost one third of participants (28.30%; n = 15) were between the ages of 31 and 40, and nine participants (16.98%) were between the ages of 41 and 50. Almost one fourth of participants (24.53%; n = 13) were between the ages of 51 and 60, and one fifth (20.75%; n = 11) were between the ages of 61 and 70. Three participants (5.66%) selected the “Prefer not to answer” option for this question.

Most responses came from individuals who identified as female (86.79%; n = 46), while the fewest came from individuals who identified as male (3.77%; n = 2). Almost

one tenth (9.43%; n = 5) of participants selected the “Prefer not to say” option for this question.

The majority of survey participants (39.62%; n = 21) reported that their primary role in dietetics education was as a faculty member. Almost one fourth (22.64%; n = 12) of participants were didactic program directors, and ten participants were dietetic internship directors. Eight (15.09%) participants were preceptors. None of the participants were students, but student membership is uncommon in NDEP. Only 2 (3.77%) participants selected that their primary role in dietetics education was “Other” and did not fit within one of the roles listed.

Table 5.2. NDEP Survey Participant Demographics

Demographic Characteristics	Count	Percent of Total
<u>Age (Years)</u>		
18-20		
21-30	1	1.89%
31-40	15	28.30%
41-50	9	16.98%
51-60	13	24.53%
61-70	11	20.75%
71 or older		
Prefer not to answer	3	5.66%
<u>Sex</u>		
Female (cis or trans)	46	86.79%
Male (cis or trans)	2	3.77%
Prefer not to say	5	9.43%
<u>Primary Role in Dietetics Education</u>		
Faculty Member	21	39.62%
Didactic Program Director	12	22.64%
Dietetic Internship Director	10	18.87%
Preceptor	8	15.09%
Student		
Other	2	3.77%

5.1.2. NDEP Survey Responses by Role in Dietetics Education

Participants were asked at which level they felt a class on nutritional care of older adults should be taught. The results of this question are detailed in Table 5.3. Of the twenty-one participants who identified their role in dietetics education as a faculty member, thirteen (61.90%) reported that they felt both undergraduate and graduate level classes should be taught on the nutritional care of older adults. The remaining eight faculty participants (38.09%) reported that a class on the nutritional care of older adults should be taught in the later undergraduate years. There were twelve participants (22.64%) who reported their role as didactic program directors, and almost half (51.67%; n = 5) responded that a class on the nutritional care of older adults should be taught at both undergraduate and graduate levels. Four (33.33%) of the twelve didactic program director respondents indicated that they felt a class on nutritional care of older adults should be taught during the later undergraduate years, and three (25%) said it should be taught at the graduate level.

There were ten participants who reported their role as dietetic internship directors, and half (50%; n = 5) reported that both undergraduate and graduate classes on nutritional care of older adults should be taught to dietetic students. Two (20%) of the dietetic internship directors reported that they felt a course on the nutritional care of older adults should be taught during the later undergraduate years.

Five of the eight participants who identified themselves as a preceptor indicated that there should be both undergraduate and graduate courses on nutritional care of older adults. Early undergraduate, later undergraduate, and graduate levels were each selected by one (12.5%) preceptor who participated in this survey. Of the survey participants

whose role in dietetics education was listed as “other,” both indicated that they felt a class on nutritional care of older adults should be taught in both undergraduate and graduate levels.

Out of all participants, regardless of their role in dietetics education, over half (56.60%; n = 30) indicated that both undergraduate and graduate level courses on older adult nutrition should be taught. Only two participants (3.77%) indicated that this course should be taught during early undergraduate years, while fifteen participants (28.30%) indicated that it should be taught during later undergraduate years. Five participants (9.43%) indicated that a graduate level course would be most appropriate, and only one participant (1.89%) was unsure what level would be most appropriate to teach a course on nutritional care of older adults.

Table 5.3. Level a Class on Nutritional Care of Older Adults Should be Taught by Role in Dietetics Education

Role in Dietetics Education	At which level do you feel that a class on nutritional care of older adults should be taught?					Total (#)	Total (%)
	Both undergrad and graduate	Early undergrad (first 2 years)	Later undergrad	Graduate	Not Sure		
Faculty Member	13	0	8	0	0	21	39.62%
Didactic Program Director	5	0	4	3	0	12	22.64%
Dietetic Internship Director	5	1	2	1	1	10	18.87%
Preceptor	5	1	1	1	0	8	15.09%
Other	2	0	0	0	0	2	3.77%
Total:	30	2	15	5	1	53	$\chi^2 = 17.301$; $p > 0.05$

Chi-Squared analysis of which level a class on nutritional care of older adults should be taught at by role in dietetics education was not statistically significant ($p > 0.05$).

Participants were asked whether their academic institution offered any classes focused on the needs of older adults. One participant, a dietetic internship director, did not respond to this question, so data is analyzed out of fifty-two responses instead of fifty-three. Results of this question are detailed in Table 5.4. Of the fifty-two participants who responded to this question, eighteen (34.62%) reported that their institution offered a graduate class on the needs of older adults. Of the eighteen participants who indicated that their institution offered a graduate course on the needs of older adults, half (50%; $n = 9$) were faculty members, three (16.67%) were didactic program directors, four (22.22%) were dietetic internship directors, and two (11.11%) were preceptors.

Fifteen participants (28.85%) reported that their institution offered an undergraduate course on the needs of older adults. Of these fifteen participants, six (40.00%) were faculty members, five (33.33%) were didactic program directors, two (13.33%) were dietetic internship directors, one (6.67%) was a preceptor, and one (6.67%) indicated their role in dietetics education as “other.”

Only five (9.62%) of the fifty-two participants who responded to this question indicated that their institution offered a service-learning activity focused on the needs of older adults. One faculty member, one didactic program director, one dietetic internship director, and two preceptors selected this response. Only four participants (7.69%) who responded to this survey question indicated that they were not sure if their academic institution offered any classes focused on the needs of older adults. Of these four

participants, one was a faculty member, one was a dietetic internship director, and two were preceptors.

Ten survey participants (19.23%) who responded to this question reported that their institution did not offer any classes focused on the needs of older adults. Of these ten participants, four were faculty members, three were didactic program directors, one was a dietetic internship director, one was a preceptor, and one indicated their role in dietetics education as “other.”

Table 5.4. Academic Availability of Classes on Needs of Older Adults by Role in Dietetics Education

Role in Dietetics Education	Does your academic institution offer any classes focused on the needs of older adults?					Total (#)	Total (%)
	Graduate	Undergrad	Service-Learning Activity	Not Sure	None		
Faculty Member	9	6	1	1	4	21	40.38%
Didactic Program Director	3	5	1	0	3	12	23.08%
Dietetic Internship Director	4	2	1	1	1	9	17.31%
Preceptor	2	1	2	2	1	8	15.38%
Other	0	1	0	0	1	2	3.85%
Total:	18	15	5	4	10	52	$\chi^2 = 12.733;$ $p > 0.05$

Chi-Squared analysis of if a respondent’s academic institution offered any classes focused on the needs of older adults by role in dietetics education did not show any statistical significance, as evidenced by a p-value > 0.05.

5.1.3. NDEP Survey Participant Thoughts on Teaching Nutrition for Older Adults

The last question of this survey asked participants to share their thoughts on teaching students about the nutritional care of older adults. A breakdown of participant responses to this question are shown in Appendix G. Almost half (45.28%; n = 24) of the 53 total participants chose to answer this question and share their thoughts regarding teaching students about the nutritional care of older adults.

5.2. Project Goals

The goals of this study were to understand academic programs' needs for teaching dietetics students about nutritional care of older adults, examine the current availability of education for nutrition students regarding the care of older adults, and what nutrition and dietetics educators find helpful in teaching students about older adults.

5.2.1. NDEP Survey Responses

A total of 53 surveys (n = 53) were completed by members of the Nutrition and Dietetics Educators and Preceptors (NDEP) organizational unit of the Academy of Nutrition and Dietetics and their colleagues. Thirty (56.60%) participants indicated that both undergraduate and graduate level courses should be taught on older adult nutrition. Thirty-three participants (63.46%) indicated that their academic institution offered a graduate (34.61%; n = 18) or undergraduate (28.85%; n = 15) course on the nutrition needs of older adults. Only five participants (9.62%) indicated that their institution offered a service-learning activity on the needs of older adults. Ten participants (19.23%) reported that their institution did not offer any classes regarding older adults, and four participants (7.69%) were not sure if such classes were offered at their institution. The ACEND requirements for accredited programs do not require students to specifically

learn about nutritional care for older adults, so it was anticipated that not all individuals who participated in this survey would report that their institution offered a graduate or undergraduate course on this subject.

The actual response rate for this survey (4%) fell far below the goal response rate of 30%. A 2018 survey of the Nutrition and Dietetics Educators and Preceptors (NDEP) group on their views of interprofessional collaboration received a total of 260 survey responses with a 19.5% response rate, of which 126 responses were able to be included in the data analysis.³² A 2017 survey of 128 random members of the NDEP group on instructional strategies to promote cultural competence in nutrition and dietetics education received only nine responses, a 7.03% response rate.³³ Both surveys noted that it took multiple recruitment notices to receive the amount of survey responses that they did.^{32,33} While both low and below their respective goal rates, these surveys received a greater number of responses than the NDEP Survey in this study. Another study sent to 585 ACEND Program Directors to distribute to their preceptors received 2101 responses, but only 12% of the preceptors were members of the NDEP group.³⁴ It is hypothesized that more survey results from nutrition and dietetics preceptors would have been received if this recruitment approach was taken, as not all nutrition and dietetics educators or preceptors are members of the NDEP group or the Academy of Nutrition and Dietetics.

5.2.2. Teaching Students about Nutrition for Older Adults

Participants were given the opportunity to share their thoughts regarding educating students about the nutritional needs of older adults. Almost half (45.58%; n = 24) of the participants responded to this question. From those responses, there were some common themes that emerged: 1) nutritional care of older adults is complex and

important for students to understand; 2) some courses touch on nutrition for older adults, but a full course dedicated to nutrition for older adults would be most beneficial; 3) many students do not have much experience around older adults; 4) interactive and immersive activities giving students a glimpse into what life is like as an older adult can be eye-opening for many students previously uninterested in the population.

Various participants commented on their institution's approach to teaching dietetics students about older adults. Many noted that students were taught about older adults during their undergraduate lifecycle nutrition course or briefly during medical nutrition therapy courses. Some participants noted that courses specifically on nutrition for older adults were only offered at the graduate level, and students only learned about older adults briefly during other courses. A unique component of one program was having two lifecycle nutrition courses to allow for ample time to discuss each stage of the lifecycle.

One participant mentioned that their clinical interns were frequently unprepared to work with older adults and had very little experience with the population. Another participant noted that their students were seldom interested in learning about the population and were more interested in pediatrics or sports nutrition. Many participants reported that they believed having a course dedicated to nutrition for older adults and not just a component of other classes would be beneficial to their program considering the increasing aging population.

It was mentioned a number of times that interactive experiences were found to be quite effective in getting students to understand the importance of learning about and advocating for nutritional care for older adults. Participants mentioned having completed

exercises and activities either working with older adults or simulating the experience of older adults during their education, and that these were the most valuable lessons they took away from their courses. Interactive activities and experiences with older adults have shown to increase student interest in working with the aging population.^{11,12,25,26} Further studies examining the effectiveness of various interactive activities and experiences for nutrition students that involve older adults would be beneficial, as it would provide evidence-based materials for different programs to utilize when trying to improve or enhance their curriculum regarding older adults.

5.2.3. Navigating Barriers to Providing Students Education on Nutrition for Older Adults

NDEP survey respondents indicated that they felt nutritional care of older adults was important for students to understand, especially because of how rapidly the United States population is aging. As of 2022, the Accreditation Council for Education in Nutrition and Dietetics (ACEND) does not require any of its accredited programs to teach students about nutrition for older adults.²¹⁻²³ The current standards for life stage specific education are quite vague and do not provide educators with structure or guidance for designing or modifying their courses. A recent study examining geriatric content of nutrition and dietetics programs found that most (83.2%; n = 89) program directors felt that nutrition and aging content was important, but less than half (43.9%; n = 47) indicated that they were satisfied with the current curriculum on nutrition and aging.³¹ When asked about adding a separate course, the primary barrier identified was that curriculum was already full.³¹ Contrary to this, many NDEP survey participants indicated that a course dedicated to nutrition for older adults would be most beneficial for students. There is a barrier between educators recognizing the importance of educating students on

nutritional care for older adults and being able to provide students with this education. It is hypothesized that specification from ACEND regarding what students must be taught about nutrition and aging, or even life stage specific nutrition in general, would help in navigating this barrier.

It was noted by multiple NDEP survey participants that many of their students did not have much experience with older adults. Additionally, twelve of the seventeen students who participated in the FSN 406 survey reported having no experience working or volunteering with older adults. This does not appear to be uncommon, as many studies examining student attitudes towards older adults report that most students did not have much experience or knowledge about older adults prior to participating in the study.^{11,12,25,29} The overall attitudes of students after participating in educational experiences with older adults showed improvement and increased likelihood of students considering entering the field of geriatrics.^{25,26,30} Whether intending to pursue a career in geriatrics or choosing a different route, it is important for students to at least have some experience learning about or working with older adults, given that the average age of the general population is rising.^{4,10} Providing students with this opportunity in their undergraduate and/or graduate coursework is just one method for increasing interest in nutritional care for older adults, but it has shown to be effective.^{25,26,30} Further research relating to increasing student interest in nutritional care for older adults both inside and outside of the classroom is warranted.

CHAPTER VI

CONCLUSION

The substantial increase in individuals 65 years of age and older by 2030 and significantly smaller increase in working-age individuals is likely to further strain the United States healthcare system and decrease the availability of care for older adults.^{3,4,10} Educational opportunities for dietetics students to learn about nutritional care for older adults are not available at all institutions, and when provided the option to learn about nutritional care for older adults, many students are not inclined to do so. Thus, it is important to further explore why many students are uninterested in learning about the older adult population or pursuing a career in gerontological nutrition.

There are often misconceptions about working with the older adult population among those who have minimal experience with or knowledge regarding the age group.^{11,12} The simplest method for resolving these misconceptions may be increasing the availability for dietetics students to learn about older adults. Without the incentive or requirement to do so, however, there is a chance that institutions may not feel obligated to incorporate another element into their curriculum. More specific guidelines from ACEND regarding lifespan nutrition requirements for its accredited programs could accelerate the process of getting more institutions to offer older adult nutrition courses. The mission statement for ACEND specifically states that: *ACEND ensures the quality of nutrition and dietetics education to advance the practice of the profession.*³⁵ This is certainly important, yet their guidelines for accredited programs still remain vague in an area that needs quality nutrition and dietetics education provided to future practitioners.²¹⁻
²³ The Future Education Model for Graduate Programs has more lifespan specific

requirements, but still lacks in specificity and may contribute to variations in preparedness of students from different institutions to work with the older adult population.

Another option for increasing opportunities for education about older adults is incorporating relevant lessons and assignments regarding nutrition and aging into existing courses. This could be done in many ways, including but certainly not limited to looking at the foodservice operation within a long-term care facility in a foodservice management course, conducting a nutrition focused physical exam (NFPE) on an older adult in a nutrition assessment course, or performing a case study assignment on an older adult in a medical nutrition therapy course. Having various assignments or experiences incorporated into different required courses could be easier than incorporating an entirely new course on older adults or modifying larger sections of only a few courses. Having guest speakers who work with older adults discuss the benefits of the profession with students could also be beneficial, as they could learn firsthand from nutrition and dietetics professionals about what it is like to work with older adults. Having older adults that have experience working with a nutrition professional and benefitted significantly from their interventions talk to students about the impact it made on their health and wellbeing could leave a strong impression on students. Additionally, planned experiences scheduled in advance outside of class time or as a part of an internship could provide students with hands-on experience working with older adults.

At the University of Maine, there are opportunities for nutrition and dietetics students to learn about the nutritional care of older adults in their required courses. For instance, courses such as Medical Nutrition Therapy I and II, Lifecycle Nutrition, and

Community Nutrition all incorporate lessons or assignments regarding older adults into their curriculum. There are not many other opportunities for exposure to the population throughout the entirety of the degree program, which could potentially deter students from considering gerontological nutrition as an interesting and important career option. Incorporating a course such as FSN 406 into the requirements for a degree in nutrition and dietetics at the University of Maine, or even having advisors strongly encourage students to take the course as an elective could be promising for increasing interest in gerontological nutrition. For students both early on in their education and those preparing to enter the workforce, they should be made aware that there are a lot of nutrition and dietetics related jobs available working with older adults in long term care or clinical facilities.

There are also opportunities for individuals who are credentialed dietitian nutritionists and dietetic technicians to learn about the nutritional needs of older adults. Offering Continuing Education Units (CEUs) is a great incentive for getting practitioners to learn more about older adults. Providing CEUs for taking courses such as FSN 406, participating in workshops that offer trainings on how to conduct NFPEs on older adults, or attending conferences related to nutritional care for older adults could all entice practitioners into furthering their knowledge on the population. Both future and current nutrition and dietetics professionals should be encouraged to learn more about gerontological nutrition, as it is important for new and seasoned professionals to be knowledgeable and confident in caring for the nutritional needs of the quickly increasing older adult population.

This research provides insight into student interest in learning about and working with older adults and why they choose not to further their education on this population when provided the opportunity. This research also provides insight into how various institutions across the United States provide students with education on the nutritional needs of older adults, if provided at all. The most common reasons that students did not take FSN 406 Nutritional Care for Older Adults at the University of Maine were because they did not need a one-credit class and the course was not required for graduation. Most of the NDEP Survey participants indicated that they felt nutritional care of older adults should be taught at both the undergraduate and graduate levels, and that older adult nutrition should be incorporated into more dietetics programs given the aging population.

This study was designed to explore why students at the University of Maine do not want to learn about nutritional care of older adults, and the availability of classes across various institutions to teach dietetics students about the nutritional needs of this population. The information obtained from this research would be beneficial for educational institutions across the country as a resource that provides information on both why students are not compelled to work with older adults and how various institutions incorporate curriculum regarding nutrition for older adults into their programs. Further research regarding effective strategies for increasing student interest in working with older adults is warranted. This research provides a basis for potential program development and further research regarding the rapidly increasing need for nutrition and dietetics professionals capable and willing to work with the older adult population.

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APPENDICES

APPENDIX A: STUDENT RECRUITMENT NOTICE

Hello-

We hope that your summer is off to a great start. You are invited to take part in a research study involving an anonymous survey (no more than six minutes long) about FSN 406 Nutritional Care of Older Adults. The faculty and graduate assistant are hoping to learn how to make the class more appealing to students. The survey results will be part of M.S. student and Dietetic Intern Lily Brickman's M.S. thesis, advised by Professor Mary Ellen Camire of the School of Food and Agriculture at the University of Maine.

The purpose of this research is to understand student interest in learning more about the nutritional care of older adults.

Survey participants must be at least 18 years old and have been a student in Food Science and Human Nutrition during the Spring 2022 semester.

We have received your email address from one of the School of Food and Agriculture's student email lists.

When you reach the end of the survey, you will have the option to enter a drawing for one of five \$20.00 cash prizes.

For more information about the survey please contact Lily Brickman (lily.brickman@maine.edu).

The link to the survey is: https://umaine.qualtrics.com/jfe/form/SV_8izukRhhoumlEBo

Please participate in the survey by **June 30** to be eligible for the drawing.

Thank you!

Lily Brickman, B.S. and Mary Ellen Camire, Ph.D., CFS

APPENDIX B: STUDENT SURVEY

FSN 406 student survey

Start of Block: Default Question Block

Greetings! You are invited to take part in a research project being conducted by Graduate Assistant Lily Brickman and Professor Mary Ellen Camire of the School of Food and Agriculture at the University of Maine. The purpose of the research is to understand student interest in learning more about the nutritional care of older adults. You must be at least 18 years old to participate.

What Will You Be Asked to Do? If you decide to participate, you will be asked to take a confidential survey. It should take you about 6 minutes to complete. The survey will ask questions about your age, years of college completed, and similar questions.

Risks

Except for your time and inconvenience, there are no risks to you from taking part in the research.

Benefits

There are no direct benefits to you for taking part in the research. However, this research may help the School better promote an existing class.

Compensation

Students who answer all of the questions and provide their email address will be entered into a drawing to win one of five \$20.00 cash awards.

Confidentiality

This research is confidential. There will be no records linking you to the data. Your email address (if provided) will be removed from the rest of the data before any analyses. Data will be stored on a password-protected computer indefinitely.

Voluntary

Participation is voluntary. If you choose to take part in the research, you may stop at any time, but you will not be eligible for the compensation drawing.

Contact Information

If you have any questions about this research, please contact Professor Mary Ellen Camire, at camire@maine.edu or (207) 581-1627. If you have any questions about your rights as a research participant, please contact the Office of Research Compliance, University of Maine at (207) 581-2657 or umric@maine.edu. Submission of the survey implies consent to participate.

Do you agree to take the survey?

- No
- Yes

Skip To: End of Survey If Do you agree to take the survey? = No

End of Block: Default Question Block

Start of Block: Block 2

Please select the year that or program that best corresponds to your student status during the Spring 2022 semester.

- First year
 - Second year
 - Third year
 - Fourth year (senior)
 - M.S. student
 - M.S./Dietetic Internship student
 - Ph.D. student
 - Not sure/ prefer to not answer
-

What is your gender identity?

- Female (cis or trans)
 - Male (cis or trans)
 - Agender
 - Prefer to not answer
-

How old are you?

- 18-21
 - 22-25
 - 26-29
 - 30-33
 - 34 or older
 - Prefer to not answer
-

Which area best describes your field of study?

- Food management
 - Food science
 - Human nutrition/dietetics
 - Not sure/prefer to not answer
-

Have you ever worked or done volunteer work providing care to older adults?

- Yes
 - No
 - Prefer to not answer
-

How has the COVID-19 pandemic influenced your interest in working with older adults?

- Much Less
 - Less
 - No change
 - More
 - Much more
-

Have you ever taken FSN 406 Nutritional Care of Older Adults? Please select "Yes" if you are currently enrolled in the class.

- No
- Yes
- Not sure/Prefer to not answer

Skip To: Q12 If Have you ever taken FSN 406 Nutritional Care of Older Adults? Please select "Yes" if you are currently enrolled in the class = Yes



Please select the one main reason that you have not taken FSN 406 Nutritional Care of Older Adults.

- I was not aware of the class.
 - I did not need a one-credit class.
 - The topic is not related to my concentration/field of study.
 - I have not taken the prerequisite of FSN 301 Life Cycle Nutrition
 - The class has not been scheduled at a convenient time for me.
 - I am not interested in working with older people.
 - The class is not required for graduation.
 - The class time conflicted with a required class.
 - Not sure.
 - Prefer to not answer.
-

If you are considering taking the class, which semester is best for you?

- Fall
 - Spring
 - Either semester
 - I do not want to take the class or do not have time to take it
-

If you have taken FSN 406 Nutritional Care of Older Adults, would you recommend the class to other students?

- Yes
- Maybe
- No
- Prefer to not answer
- I have not taken the class.

Do you have any recommendations to increase the enrollment in FSN 406?

If you would like to be entered into the drawing to receive \$20.00, please provide your email address. Your email will be removed before data analysis to protect your privacy.

End of Block: Block 2

APPENDIX C: NDEP RECRUITMENT NOTICE

Hello-

You are invited to take part in a survey to understand how many colleges and universities are offering classes on the nutritional needs and care of older adults. We would also like to know which types of assignment or hands-on exercises you would find to be helpful in demonstrating key concepts to dietetics students.

If you have any questions about the survey, you can contact me at lily.brickman@maine.edu or my advisor, Dr. Mary Ellen Camire, at camire@maine.edu.

APPENDIX D: NDEP SURVEY

NDEP survey

Start of Block: Default Question Block

Greetings! You are invited to take part in a research project being conducted by Graduate Assistant and Dietetic Intern Lily Brickman and Professor Mary Ellen Camire of the School of Food and Agriculture at the University of Maine. The purpose of the research is to understand academic programs' needs for teaching dietetics students the nutritional care of older adults. You must be at least 18 years old to participate.

What Will You Be Asked to Do?

If you decide to participate, you will be asked to take a confidential survey. It should take you about 10 minutes to complete. The survey will ask questions about your role in dietetics education, availability of classes on the nutritional needs of older adults, and similar questions.

Risks

Except for your time and inconvenience, there are no risks to you from taking part in the research.

Benefits

There are no direct benefits to you for taking part in the research. However, this research may provide guidance on training dietetics students to work with older adults.

Compensation

There is no compensation for completing this survey, but the results will be sent to you if you provide your email address.

Confidentiality

This research is confidential. There will be no records linking you to the data. Your email address (if provided) will be removed from the rest of the data before any analyses. Data will be stored on a password-protected computer until June 30, 2023.

Voluntary

Participation is voluntary. If you choose to take part in the research, you may stop at any time.

Contact Information

If you have any questions about this research, please contact Professor Mary Ellen Camire, at camire@maine.edu or (207) 581-1627. If you have any questions about your rights as a research participant, please contact the Office of Research Compliance, University of Maine at (207) 581-2657 or umric@maine.edu. Submission of the survey implies consent to participate.

Do you agree to answer the survey?

- No
- Yes

End of Block: Default Question Block

Start of Block: Block 1

How would you describe your primary role in dietetics education?

- Faculty member
 - Didactic Program Director
 - Dietetic Internship Director
 - Preceptor
 - Student
 - Other
-

Does your academic institution offer any classes focused on the nutritional needs of older adults?

- An undergraduate class
 - A graduate class
 - Serving learning activity
 - None
 - Not sure
-

At which level do you feel that such a class should be taught?

- Early undergraduate (first 2 years)
 - Later undergraduate (years 3 or 4)
 - Graduate
 - Both undergraduate and graduate
 - Not sure
 - Such a class is not needed
-

Are you the instructor of a class that deals with nutrition for older adults, including life cycle nutrition?

- No
- Yes
- Prefer to not answer

Which types of resources would you find helpful for a class on the nutritional needs of older adults?

Lab instructions for preparing pureed food and assessing texture using the International Dysphagia Diet Standardization Initiative methods?

Tips for performing the Nutrition-Focused Physical Examination with older adults?

swallowing evaluation

Role-playing script for practicing counseling with older adults

Sample lesson plans

Tips for using Senior Commodity Food Boxes

Information on dietary supplement/food/medication interactions

None needed

Other _____

Could you please tell us which range of years includes your age?

- 18-20
 - 21-30
 - 31-40
 - 41-50
 - 51-60
 - 61-70
 - 71 or older
 - Prefer to not answer
-

Please select your gender identity.

- Male (cis or trans)
 - Female (cis or trans)
 - Non-binary / third gender
 - Prefer not to say
-

Do you have any thoughts on teaching students about the nutritional care of older adults that you would like to share with us?

Please provide your email address if you would like to receive a copy of the results of this survey.

End of Block: Block 1

APPENDIX E: IRB APPROVAL

APPLICATION COVER PAGE

- KEEP THIS PAGE AS ONE PAGE - DO NOT CHANGE MARGINS/FONTS!!!!!!!
PLEASE SUBMIT THIS PAGE AS WORD DOCUMENT

APPLICATION FOR APPROVAL OF RESEARCH WITH HUMAN SUBJECTS
Protection of Human Subjects Review Board, 311 Alumni Hall

(Type inside gray areas)

PRINCIPAL INVESTIGATOR: Lily Brickman EMAIL: lily.brickman@maine.edu
CO-INVESTIGATOR: EMAIL:
CO-INVESTIGATOR: EMAIL:
FACULTY SPONSOR: Mary Ellen Camire EMAIL: camire@maine.edu
(Required if PI is a student):
TITLE OF PROJECT: Increasing dietetics students' confidence in working with older adults
START DATE: 06/06/2022 PI DEPARTMENT: SFA

STATUS OF PI: FACULTY/STAFF/GRADUATE/UNDERGRADUATE G (F,S,G,U)

If PI is a student, is this research to be performed:

- for an honors thesis/senior thesis/capstone?
for a doctoral dissertation?
other (specify)
for a master's thesis?
for a course project?

Submitting the application indicates the principal investigator's agreement to abide by the responsibilities outlined in Section I.E. of the Policies and Procedures for the Protection of Human Subjects.

Faculty Sponsors are responsible for oversight of research conducted by their students. The Faculty Sponsor ensures that he/she has read the application and that the conduct of such research will be in accordance with the University of Maine's Policies and Procedures for the Protection of Human Subjects of Research. REMINDER: if the principal investigator is an undergraduate student, the Faculty Sponsor MUST submit the application to the IRB.

Email this cover page and complete application to umric@maine.edu.

FOR IRB USE ONLY Application # 2022_05_11 Review (F/E): E Expedited Category:
ACTION TAKEN:

- Judged Exempt; category 2 Modifications required? YES Accepted (date) 06/06/2022
Approved as submitted. Date of next review: by Degree of Risk:
Approved pending modifications. Date of next review: by Degree of Risk:
Modifications accepted (date):
Not approved (see attached statement)
Judged not research with human subjects

FINAL APPROVAL TO BEGIN 06/06/2022
Date

APPENDIX F: FSN 406 STUDENT SURVEY ANALYSIS WITH COLLAPSED AGE GROUPS

Table A.1. History Working with Older Adults by Collapsed Age Range

Age Range	Worked or Volunteered with Older Adults			Total (#)	Total (%)
	Yes	No	Not sure		
18-21	4	6	0	10	58.82%
22 or older	4	3	0	7	41.18%
Total	8	9	0	17	$\chi^2 = 0.486$; $p = 0.4858$

Table A.2. COVID-19 Pandemic Influence on Student Interest in Working with Older Adults by Collapsed Age Range

Age Range	How the COVID-19 pandemic influenced interest in working with older adults			Total (#)	Total (%)
	Less	More	No change		
18-21	1	2	7	10	58.82%
22 or older	1	2	4	6	41.18%
Total	2	4	11	17	$\chi^2 = 0.298$; $p = 0.8615$

Table A.3. FSN 406 Enrollment by Collapsed Age Range

Age Range	FSN 406 Enrollment History			Total (#)	Total (%)
	Yes	No	Not sure/ Prefer not to answer		
18-21	2	8	0	10	58.82%
22 or older	1	4	2	7	41.18%
Total	3	12	2	17	$\chi^2 = 3.238$; $p = 0.1981$

APPENDIX G: NDEP SURVEY PARTICIPANT THOUGHTS ON TEACHING STUDENTS ABOUT NUTRITIONAL CARE OF OLDER ADULTS

Table A.4. NDEP Survey Participant Comments on Teaching Nutritional Care of Older Adults

<p>Survey Participant:</p>	<p>Geriatric nutrition is more complex than infant nutrition. Dietitians are need trying in all aspect of the care- nutrition is just on layer. You have to be able help with resource for food. Recognize elderly abuse/neglect. Recognize psych issues vs loneliness and how it effects the overall health and well-being of the geriatric individual</p>
<p>Survey Participant:</p>	<p>There are so many topics that could be explored in a class such as mental health, end of life care and nutrition, ADLs and how they impact nutrition status. My PHD is in gerontology - one of the best courses I have ever taken is one that focused on aging and the environment - it went over design for long term care facilities (colors, layout etc.) design for plates/silverware, navigating spaces for older adults that have trouble ambulating (a lot of info was also focused on universal design for everyone!). I think that aging courses should be taught at every institution, not just a module in a lifecycle course!</p>
<p>Survey Participant:</p>	<p>Our university include nutritional care of older adults in a lifecycle nutrition and MNT course (undergrad). There is also content about nutrition programs for older adults in a community nutrition course (undergrad). At the graduate level, there is also inclusion of nutritional care for older adults in the same courses, plus pureed diet content included in a food systems course. However,</p>

Table A.4. Continued

	<p>considering the growing aging population in the U.S. and the increase in comorbidities as adults age I do think a course fully devoted to nutritional care for older adults would be advantageous to students as future practitioners.</p>
<p>Survey Participant:</p>	<p>I feel a class devoted to Nutrition in the Aging is essential in a DPD</p>
<p>Survey Participant:</p>	<p>In my graduate program, I took a gerontology class where we utilized a kit to simulate what it's like for older adults with limited function. For example, we wore gloves and glasses to impair our vision and were asked to open a can of green beans. I felt this activity helped me relate to some of the struggles faced by this population</p>
<p>Survey Participant:</p>	<p>Role-playing may be unrealistic unless you use tools that put one student into an older adult's abilities of perception and mobility. The experience for students who use such tools and then try to do chores of daily life is very impressive. I've used that when I was teaching a class for which this is relevant - 1 leaf of experience is worth more than a whole tree full of good advice....</p>
<p>Survey Participant:</p>	<p>It's important to understand the chronic care model as well as acute care</p>
<p>Survey Participant:</p>	<p>I also teach about end-of-life ethics. I think this is an important topic for students to learn about, especially if they will be working with this population.</p>

Table A.4. Continued

Survey Participant:	An integrated approach across several classes that includes lecture with activity.
Survey Participant:	Liberalization of nutrition restrictions; understand life sustaining treatment and ethics for end-of-life care
Survey Participant:	Students needs to understand how the life cycle works. As one ages, metabolism slows down. Nutritional status is influenced by many factors- social, physical, psychological, financial etc. What is written in textbooks will not work per se. Students will need to understand empathy, compassion and given undue attention while evaluating and counseling older adults. needs will have to be based on the particular adult's needs. An older adult who is acutely ill or recovering from an illness might not want to eat three big meals, might prefer to drink nutritional supplements instead. The student should be capable of taking that into consideration and plan their eating pattern accordingly.
Survey Participant:	Many students are more interested in learning about younger patients/clients (i.e., pediatrics, sports).
Survey Participant:	This is an age group that is often overlooked, but there are many aging individuals out there!
Survey Participant:	There is always a need because you can't reverse aging. Care and compassion are key.
Survey Participant:	We touch on this in our Lifecycle undergrad course, but we have a full graduate course on it.

Table A.4. Continued

Survey Participant:	Since I couldn't check off multiple options for question #2, I thought I'd mention that we incorporate lifecycle nutrition into our undergraduate Community Nutrition course, and then we have a graduate level course that focuses totally on Nutrition and Healthy Aging.
Survey Participant:	My students either gravitate towards OR pull from older adults. Most just don't have a lot of experience being around them, especially if they are infirm/fragile or declining. Long term care rotations in internships help this a lot and this year we are finally putting our ISPP students back into LTC. Thank you!
Survey Participant:	I feel it's important, but difficult to add into undergrad MNT curriculum. There is a lot we have to cover in 2 semesters.
Survey Participant:	I find that when I receive clinical interns, they have little experience working with patients who are cognitively impaired and how to talk to them. I explain they may not get much from them, but they are still a person, and we should greet them and check in. In addition to other clinical monitoring. I also find students are not prepped in goals of care discussions and palliative care nutrition
Survey Participant:	We offer both undergrad and grad classes in this topic and you did not allow for both to be selected
Survey Participant:	In addition to the undergraduate nutrition in the lifecycle course our program offers an interprofessional geriatric assessment elective that can be taken by

Table A.4. Continued

<p>Survey Participant:</p>	<p>undergraduate and graduate students. This course incorporates standardized patients and OSCE. It has been well received by our students. I incorporate older adult nutrition into a variety of courses, but there is not a dedicated course about older adults.</p>
<p>Survey Participant:</p>	<p>Although we don't have a course that focuses on seniors, they are included in MNT, and our lifecycle course.</p>
<p>Survey Participant:</p>	<p>Our program has two lifecycle courses- pregnancy through adolescence and then middle to later years. I teach the middle to later years course, which is also a service-learning course. Our students do meals on wheels, congregate meals, etc. I also include an activity where they go grocery shopping with an older adult. We used to partner with an assisted living group before covid, but now they just go with a family member, friend, or neighbor. That has been a great addition to the course. The conversations alone are special. I also require them to shadow an RD in LTC. I feel having 2 lifecycle courses is unique to our program and prepares our students well.</p>

AUTHOR'S BIOGRAPHY

Lily Brickman was born in Fort Kent, Maine on March 19th, 1999. She was raised in Fort Kent, Maine and graduated from Community High School in 2017 as valedictorian of her class. She attended the University of Maine and graduated Summa Cum Laude with Highest Honors in 2021 with a bachelor's degree in Food Science and Human Nutrition. She completed her dietetic internship across the state of Maine with the University of Maine Dining Services in Orono, Maine; St. Joseph Hospital in Bangor, Maine; Northern Light A.R. Gould in Presque Isle, Maine; and the WIC Nutrition Program in Bangor, Maine. Lily is passionate about healthy aging and nutritional care for older adults and wants to share this passion with others through work as a Registered Dietitian Nutritionist. Lily is a candidate for the Master of Science degree in Food Science and Human Nutrition from the University of Maine in December of 2022.