Nutrition Education to Improve Health Outcomes in Community Dwelling Older Adults

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Nutrition Education to Improve Health Outcomes in Community Dwelling Older Adults

Sara Giessinger

University of San Francisco
Abstract

The proportion of people age 60 and over is growing faster than other age group, and will double by 2050 from approximately 605 million to 2 billion worldwide, in addition to the 80 and over population quadrupling by the same time. Non-communicable diseases such as obesity, cancer, coronary heart and lung disease, diabetes, hypertension, insulin resistance, and hyperlipidemia, represent 63% of deaths annually worldwide. Due to the immense contact nurses have with clients, they play a key role in screening, referrals and education to guide this demographic to improved health outcomes through nutrition and physical activity interventions (Xiaoyue, Parker, Ferguson, & Hickman, 2017). The purpose of the CNL-lead nutrition education initiative at a community senior center in the Bay Area, was to address these gaps in health literacy among community dwelling older adults 65 and older, and empower them to make dietary decisions that will positively impact their health, improve health outcomes, and decrease healthcare associated costs that may also limit their independence in the community and quality of life. The CNL conducted nutritional education seminars and measured the outcomes by providing clients with pre and post self-assessment tools to gauge improvement in health literacy, and determine if clients felt more empowered and knowledgeable about how to improve their health through nutrition and dietary modifications. The results proved favorable and clients expressed a desire to understand the link between nutrition and non-communicable disease, and exhibited increased knowledge and empowerment to make good nutritional choices that will improve their health outcomes, decrease healthcare associated costs, and allow them to remain active and independent in the community for longer.
NUTRITION AND OLDER ADULT HEALTH

Introduction

According to the Centers for Medicare and Medicaid Services (CMS), Medicare spending grew 3.6% to $672.1 billion in 2016 from $562 billion in 2012 (NHE Factsheet, 2018). More than 50% of these expenditures are attributed to inpatient hospital care, managed care, and prescription drugs for our older adult population (Getty, Mueller, Amella, & Fraser, 2016). As the cost of healthcare rises, the focus in geriatric care has shifted to helping community dwelling older adults “age in place,” and remain healthy and independent in the community as long as possible, thereby possibly decreasing costs and improving quality of life (Getty, Mueller, Amella, & Fraser, 2016).

One often overlooked component influencing the ability of community dwelling older adults’ ability to age in place, is the link between nutrition, chronic illness and metabolic disorders. A multinational study of older adults reported that 22.8% were experiencing malnutrition, and 46.2% were facing increased risk for malnutrition (Getty, Mueller, Amella, & Fraser, 2016). Community dwelling older adults suffering from malnutrition are less likely to be able to age independently, and are more likely to need long term health or home health care (Getty, Mueller, Amella, & Fraser, 2016). Risk factors for malnutrition have been linked to chronic and acute conditions such as medication side effects, dementia, immobilization, anorexia, poor dentition, and, issues with food preparation, and poverty. In addition to risk factors, poor nutrition is associated with increased morbidity and mortality, increased hospital admissions, longer hospital stays, impaired cognition, and diminished physical and social function, falls, infection, reduced quality of life, and increased health care costs (Win, Ceresa, Arnold & Allison, 2017). Due to social isolation, frailty, cognitive decline, reduced
mobility, polypharmacy, and financial instability, community dwelling older adults are at an increased risk for poor nutrition (Astrup & O’Connor, 2018).

Not only is malnutrition a serious concern impacting the health outcomes of community dwelling older adults, poor nutrition and dietary choices, in addition to a sedentary lifestyle, directly contribute to the development and poor management of chronic and metabolic disease. Ivery et al. (2017) reveal that 27% of people 65 and older have diabetes and 70% of people 60 and older are suffering from hypertension, and that both of these conditions can be prevented and managed through dietary modifications. Maintaining a healthy diet is essential in the prevention of obesity, cancer, coronary heart and lung disease, diabetes, hypertension, insulin resistance, and hyperlipidemia (Patience, 2016).

Given the inadequacies of the American diet, and the prevalence of nutrition-related chronic disease among US adults, the need for nutrition education is essential to combating the high human and financial costs associated with these adverse health conditions. He CNL is uniquely qualified to address this public health issue, by providing basic nutrition counseling to older adults residing in the community and helping to connect clients with specialized needs such as those with conditions such as diabetes, obesity, cardiovascular disease, and renal disease with nutritionists that can further direct specialized nutritional interventions (Wright & Zelman, 2018). These types of diseases are referred to as non-communicable diseases, and they are strongly associated with modifiable risk factors such as physical inactivity, tobacco use, diet, and alcohol consumption. The proportion of people age 60 and over is growing faster than other age group, and will double by 2050 from approximately 605 million to 2 billion worldwide, in addition to the 80 and over population quadrupling by the same time. Non-communicable diseases represent 63% of deaths
annually worldwide, and due to the immense contact nurses have with clients, they play a key role in screening, referrals and education to guide this demographic to improved health outcomes through nutrition and physical activity interventions (Xiaoyue, Parker, Ferguson, & Hickman, 2017).

In the context of this literature, the PICO (Patient, Intervention, Comparison, Outcome) question that will be addressed focuses on community dwelling older adults (P), receiving nutritional education to empower healthy nutritional and dietary decision making (I), in an effort to combat malnutrition and chronic disease, due to an absence of nutritional education available to this demographic (C), and improve health outcomes, decrease associated healthcare costs, and improve literacy in the community dwelling older adult population, so they can make dietary modifications and decrease risk associated with chronic, non-communicable disease (O). This nutrition education initiative aims to improve health, wellness, and increase nutritional education and health literacy among community dwelling older adults in an effort to combat the personal and financial impact of non-communicable diseases, and improve health outcomes among the population. There is strong evidence to support this initiative as evidenced in a recent randomized controlled trial supporting the idea that nutrition education for clients and caregivers halts the tendency towards nutritional decline, and improve dietary habits and nutritional intake (Fernández-Barrés, García-Barco, Basora, Martínez, Pedret, & Arija, 2017).

Methods

This quality improvement project is in line with the Institute for Healthcare Improvement’s (IHI) Science of Improvement Approach to improve the quality and cost of care, while improving the experience of the patient (Science of Improvement, n.d.). This quality improvement project will be implemented from May-July 2018 as depicted by a Gantt chart.
project timeline (Appendix A) by the CNL with in-house nutritional seminars at a Bay Area community Senior Center, addressing nutrition and healthy dietary choices in addition to exercise to combat chronic and non-communicable diseases impacting this population such as diabetes, hypertension and coronary artery disease. Clients attending seminars will be given a pre and post self-evaluation test to determine if information presented was effective in providing nutritional education and whether clients felt empowered to make better dietary choices to combat chronic disease as depicted in Appendix E. Much of this nutritional education will focus on the benefits of fresh produce and protein provided by the Food Bank to the Food Pantry event every Thursday morning, where qualified clients can access groceries free of charge for the week. A staff debriefing will also occur to determine the success of the teaching module, and propose ways to improve such nutritional education classes in the future. These nutritional education seminars will empower clients to make healthier choices, thus combatting chronic ailments, and improving overall health and wellness to reduce the impact of chronic disease, adverse events, hospital admissions, and result in improved quality of life and decreased healthcare costs.

A SWOT (strengths, weaknesses, opportunities and threats) analysis was conducted by the CNL to assess and identify aspects that could positively or negatively influence the nutritional education project within the microsystem (Appendix B). Overall, the microsystem appears ready to implement the nutrition education initiative and positively impact health outcomes in the microsystem and decrease health related expenditures from a patient and provider perspective. A fishbone diagram (Appendix D) was also created to assess the causes for malnutrition and lack of health literacy among community dwelling older adults. The return on Investment (ROI) will be experienced individually and on a national scale, reducing individual
healthcare costs, in addition to decreasing healthcare expenditures treating non-communicable disease, and the associated costs of hospital admissions, prescription drug costs, long-term care and home health care costs. The Senior Center will also benefit by being able to retain independent participating members for longer periods of time, the possibility of increased membership due to nutrition classes offered, and a possible partnership with government agencies to procure funding to finance the initiative. Finally, a Plan, Do, Study, Act diagram was done to set goals and milestones at various stages in the project as depicted in Appendix C.

The CNL will prepare a nutrition module as depicted in Appendix F presented in English and Cantonese to the clients at the Senior Center with the intention to educate on the link between nutrition, non-communicable diseases, and health outcomes. This module will also explain the relationship between nutrition, diet, and physical activity, and how these are modifiable risk factors associated with non-communicable disease and prevention in the older adult population. Before the nutrition module is presented a pre presentation self-assessment will be provided (Appendix E) to test the knowledge of clients participating in the nutrition education initiative. After completion of the nutrition module, a post-test consisting of the same questions will be provided to test knowledge and determine improve nutritional and dietary health literacy. Upon reviewing the results of these self-assessment tools, results will indicate if the nutritional education initiative has provided valuable information for clients, and whether or not they feel empowered to improve their health through improved nutrition. While results are important, ethical considerations must always be prioritized when collecting information. The CNL will not collect any personal information from participants engaging in this initiative. All self-assessments will be anonymous, and no identifying information will be collected during the course of this project.
NUTRITION AND OLDER ADULT HEALTH

Results

Upon the completion and presentation of the nutritional education intervention module depicted in Appendix F, clients completed the post presentation self-assessment tool and the results of the pre and post-assessment were analyzed by the CNL. Out of 30 clients completing the pre self-assessment tool, only 10 were able to answer survey questions correctly. After the education module was presented 25 of 30 clients were able to successfully answer survey questions correctly. Results depicted in Appendix G demonstrated a 50% increase in clients’ ability to answer assessment questions correctly and depicted that learning took place. Additionally, based on question five on the survey, 83.3% of clients felt empowered to cook a new vegetable and expressed interest in more nutritional education modules. Creating a culturally competent teaching module and self-assessment tool allowed the primarily English and Chinese speaking population at the center to benefit from the presentation. Not only were the teaching and assessment materials bilingual, but also the presentation was translated in real time to clients at the seminar. Making sure to include cultural competence as a key cornerstone in the creation of quality improvement project materials ensured the broader participation and success of the nutritional education initiative improvement project.

Discussion

As our older adult population increases we must find ways to empower this population through education about modifiable risk factors for chronic and non-communicable disease that can be mitigated with dietary and lifestyle changes. Teaching about and encouraging such positive changes can inspire a positive view on aging and allow community dwelling older adults to maintain independence, prevent or delay disease, improve quality of life, and decrease the
NUTRITION AND OLDER ADULT HEALTH

financial burden on the patient and the healthcare system as a whole (Wallace, Lo, & Devine, 2016). The CNL has a unique obligation and capability to pave the way for these programs in our communities for our older adult population and our core competencies mirror this sentiment.

Creating this nutritional educational module to improve health literacy among community dwelling older adults, and empower them to make healthy dietary choices and adjustments was a positive exercise that has the ability to be improved and spread to other contexts. Sharing and socialization was also a positive side effect of the project and participants expressed genuine enjoyment and desire to learn and improve their health. Partnering with registered dieticians would only serve to strengthen the project and bring a different perspective to the information presented and pinpoint the nutritional education needs of the particular microsystem. Ultimately, government, healthcare professionals, and society as a whole must invest in this growing segment of the community as it continues to increase and make up a large percentage of our acute care and outpatient population.
NUTRITION AND OLDER ADULT HEALTH

References


NUTRITION AND OLDER ADULT HEALTH


# NUTRITION AND OLDER ADULT HEALTH

## Appendix A: Gantt Chart

### Project Timeline: Nutritional Education Initiative

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<thead>
<tr>
<th>TASK</th>
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Appendix B:

SWOT ANALYSIS: Strengths, Weaknesses, Opportunities, and Threats

**STRENGTHS**

- Highly intelligent and motivated team of Social Workers and full time bi-lingual staff
- Large number of senior Center members 65 and older utilizing services offered
- Space and resources to conduct educational seminars, projectors, microphones
- Commitment to quality improvement and health
- Relationships with important community resources such as the Food Bank

**WEAKNESSES**

- Staffing shortage
- Absence of nursing or healthcare staff
- Possible inability of staff to feel comfortable teaching the information and translating

**OPPORTUNITIES**

- Nutrition education seminars to help clients make better dietary choices and improve health
- Healthcare-related cost-saving opportunities for clients and healthcare organizations
- Keeping clients independent, healthier and safer in the community longer
- Helping clients accessing the Food Pantry event choose more fruits and vegetables and healthy proteins
- Empowering the older adult population with nutritional education so that they can make healthy choices for better health outcomes

**THREATS**

- Inability to implement nutrition education initiative
- Lack of financial ability to hire nutrition educator or employee ability to assume responsibilities post implementation
- Client non-compliance to use nutritional education provided to effect dietary modifications and improve health
Appendix C: Plan, Do, Study, Act Diagram

- Educational modules
- Nutrition education initiative
- Results from self evaluation tools.
- Research outlines educational needs

- Nutrition education and health literacy
- Create nutrition education module and self assessment tool
- Presented nutrition education module
- Provided Pre and Post self assessment tool for clients to complete
Appendix D: Fishbone Cause and Effect Diagram

**EFFECT:**
Malnutrition/Insufficient nutritional health literacy among community dwelling older adults

**Fishbone Diagram**

- **Resources**
  - Limited financial resources and access to healthy fresh foods
  - Mobility issues/transportation issues preventing access to community resources/information

- **Transportation**
  - Information accessed may not be in correct language/context to facilitate learning and answer questions

- **Materials**
  - Lack of simple straightforward literature explaining healthy dietary practices and link between diet and disease

- **Cultural Competency**
  - Unwillingness or inability to learn about nutrition
  - Lack of desire to modify diet
  - Issue with food preparation

- **People**
  - Lack of access to nutritional education classes in community

- **Environment**
  - Nurturance and older adult health

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**Appendix D:** Fishbone Cause and Effect Diagram

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**Appendix D:** Fishbone Cause and Effect Diagram

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---

**EFFECT:**
Malnutrition/Insufficient nutritional health literacy among community dwelling older adults
Appendix E: Pre/Post Self Assessment Tool

1. I know how to prepare spaghetti squash   T/F

2. Spaghetti squash has an abundance of vitamin A, C, fiber and potassium in addition to other minerals   T/F

3. Spaghetti squash is high in saturated fat and calories   T/F

4. I can use spaghetti squash as a low carb low calorie substitute for any meal that contains noodles   T/F

5. After this class I feel confident that I can prepare this vegetable at home successfully   T/F

調查

1. 我知道如何準備意大利南瓜(蔬菜麪條)   (知道/不知道)
2. 意大利南瓜含有豐富的維生素A，C纖維和鉀以及其他礦物質   (知道/不知道)
3. 意大利南瓜含極高飽和脂肪和卡路里   (知道/不知道)
4. 我可以用意大利南瓜(蔬菜麪條)，作為任何低卡路里的替代品   (知道/不知道)
5. 上課之後，我相信自己能夠成功地在家裡準備這種蔬菜   (知道/不知道)
Appendix F: Nutrition Education Module

Health Benefits
- Only 47 calories per cup
- High in vitamins and minerals—good for people on a low-calorie, low-carbohydrate diet
- The source of a gallic acid (3-deoxygalactone) and tannin that can help to combat both cancer and infections
- Helps prevent heart disease and cancer
- Contains fiber to keep the digestive system healthy
- Rich in potassium and antioxidants

How to Select a Spaghetti Squash
- Choose a squash that is firm and heavy for its size
- Look for a yellow or orange color
- The skin should be thick and unblemished

History
- Spaghetti squash is a type of winter squash
- It is a cross between a spaghetti squash and a round squash
- It was first cultivated in Italy and later introduced to the United States
- It gained popularity in the 1950s as a low-carbohydrate alternative to pasta

Health Benefits
- Low in fat and calories
- High in vitamins A, C, and B6
- Good source of dietary fiber
- Good source of potassium

Spaghetti Squash
- A nutrient-dense vegetable
- Contain a variety of vitamins and minerals
- A great source of dietary fiber
- Good source of potassium
- Low in fat and calories
- Good for a low-carbohydrate diet
Appendix F: Nutrition Education Module

How to Prepare Vegetable Noodles

Spaghetti squash is generally either boiled whole, with the skin on, or cut into rings or cubes and roasted. It may be baked whole, or cut in half and baked for 1 hour until soft. It can be peeled before cooking, but it is also delicious when cooked whole. The seeds can be saved and fried for another use. Many people like to eat it with traditional spaghetti sauce or with a stir-fry.

Ingredients
- Spaghetti squash (1 large)
- Olive oil (2 tablespoons)
- Salt (to taste)
- Ground black pepper
- Precooked soba noodles
- Fresh parsley (to taste)

Instructions
1. Preheat the oven to 375°F (190°C).
2. Cut the squash lengthwise into half, remove the seeds, and place it cut-side down on a baking sheet.
3. Bake for 30-40 minutes, until the skin is very soft and the flesh is tender when pierced with a fork.
4. While the squash is baking, prepare the soba noodles according to package instructions.
5. Once the squash is done baking, remove the skin with a spoon or a fork. Cut it into rings or cubes and serve with the soba noodles and your favorite sauce.

Thank You for Participating in my Health Education Course!

References
## Appendix G: Pre/Post Self-Assessment Results

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<th>Measures</th>
<th># Completed</th>
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