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Undiagnosed Depression in the Elderly and Healthcare Education

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ABSTRACT

This descriptive study examined undiagnosed depression in the elderly and how it affects the elderly from retaining healthcare education. It is estimated by 2029, 20% of the United States population will be age 65 and older (Colby & Ortman, 2014). Depression in the elderly who have chronic diseases, is estimated to be undiagnosed up to 40% (Chaoyang et al., 2009). A hallmark symptom of depression is the inability to concentrate. It is unknown if undiagnosed depression will affect the older adult from retaining pertinent healthcare education. The 30 point Geriatric Depression Scale (GDS) was administered to a class of elderly individuals, aged 65 years and older. A nutrition class was subsequently taught to the participants. Following the nutrition class, a quiz on the class material was administered to measure retention of the nutritional information. The aim of the study was to determine if higher scores on the GDS, or a positive screening for the risk of depression, would result in lower scores on the nutrition quiz. The scores analyzed as a two tailed Person's correlation, were discovered to be statistically significant at the 0.01 level. The sigma of depression in the setting site contributed to a small sample size. This project has shown the need for increased screening for the risk of depression in the elderly as the elderly cannot retain healthcare education if they are depressed.

Undiagnosed Depression in the Elderly and Healthcare Education

by

Nancy J. Wynn-Grundy

A project

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APPROVED

For the California State University, Northern Consortium
Doctor of Nursing Practice:

We, the undersigned, certify that the project of the following student meets the required standards of scholarship, format, and style of the university and the student's graduate degree program for the awarding of the master's degree.

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CHAPTER 1: INTRODUCTION

Undiagnosed depression in the elderly has long lasting negative effects on the delivery of healthcare. The elderly are often depressed and are not routinely screened for the risk of depression in a healthcare setting. Undiagnosed depression in the elderly and the impact it has on the retention of healthcare education was examined in this descriptive study.

The World Health Organization (WHO), 2016 states depression is one of the most debilitating and crippling conditions in the United States, and globally, more than 350 million people suffer from depression ("Depression fact sheet," 2016). The Center for Disease Control and Prevention (CDC) estimates that seven million Americans, aged 65 and older, are affected by depression (Benson, 2009). It is estimated that depression in the elderly with chronic diseases, may be undiagnosed as high as 40 % (Chaoyang et al., 2009).

Undiagnosed depression is a major concern for healthcare providers and for our society. Depressed older adults have higher healthcare costs: they visit the emergency room more frequently, have more hospitalizations and primary care visits, and take more medications than older adults without depression (Center of Disease Control [CDC], 2009). The National Institute of Mental Health (NIMH) cites a study conducted in 2009 which found that older participants diagnosed with depression incurred about $22,960 in total healthcare cost, while those without depression incurred costs of about $11,956. Those with possible depression, based on depression screening or reported antidepressant use, incurred $14,365 in healthcare cost (as cited in NIMH, 2009). The NIMH reports the healthcare costs of both recognized and unrecognized depressed

patients exceeded the healthcare costs of non-depressed patients by as much as 35 %.

Healthcare expenditures will only increase as the Baby Boomers age (Individuals born between 1946 and 1964). The Baby Boomer generation is the fasting growing segment of the population in the United States. It is estimated by 2029, 20 % of the U.S. population will be age 65 and older (Colby & Ortman, 2014). Inadequate recognition of depression in the elderly continues to represent a serious threat the older adult's quality of life (Fiske, Wetherell, & Gatz, 2005). More efforts to determine the risk of depression in the elderly and specific treatment of depression for our seniors will improve their depressive symptomology and may positively impact healthcare costs.

Research has shown that the problem of undiagnosed depression in the elderly is quite extensive (Fiske, Wetherell, & Gatz, 2005). The elderly suffer from chronic diseases, financial concerns, and multiple issues that come from aging (Bennett & Flaherty-Robb, 2003). There is also disparity in the diagnosis of depression depending on the ethnicity and socioeconomic status of the older person. The NIMH (2012) quotes a study conducted by Ayse Akincigil of Rutgers University, which found that racial disparity affected the diagnosis and treatment of depression (as cited in NIMH, 2012). The study was a survey of adults in a local community and found that 6.4 % of whites, 4.2 % of African Americans, and 7.2 % of Hispanics were diagnosed with depression. Among those diagnosed 73 % of whites received treatment (either with antidepressants, psychotherapy or both); while only 60 % of African Americans and 63.4 % of Hispanics received treatment. The findings are consistent with the notion that

depression continues to be under-recognized and undertreated among older minorities (NIMH, 2012).

The authors, Horton and Johnson (2010), conducted a study that examined the general population and found further problems with health disparities in the elderly, aged 65 and over. Although the study provided an assessment of the barriers that limit access to general healthcare by the uninsured elderly population, it did not designate race or cultural aspects of the older person. Lack of transportation was cited as a major obstacle to regular healthcare. Fixed incomes caused issues with co-pays and out-of-pocket expenses. The complexity of navigating the healthcare system was also mentioned as a barrier (Horton & Johnson, 2010). Park and Unützer (2011) reported neighborhood environment, availability of transportation, and economic characteristics of communities were important determinants of depression among older adults (Park & Unützer, 2011).

Additionally, the elderly might not be able to access resources to obtain routine screening for depression. This is especially true if the older adult is computer illiterate. The elderly are a vulnerable population who are at risk for inadequate health literacy (Eghert & Nanna, 2009). This unique problem is discussed by Austin (2012) who stated that without proper computer skills, the elderly are limited in their ability to access essential health information and thus preventing them from applying this knowledge to their health problems. The elderly also have problems with limited vision, financial constraints, and higher levels of anxiety and self-efficacy associated with computer usage (Austin, 2012). The changing world of technology can alienate the elderly from healthcare resources, thus compounding the problem of undiagnosed depression.

There are many possible reasons that the elderly population is not being diagnosed and treated effectively for depression. One possibility is their mental health symptoms are overlooked due to "professional limitations" by the healthcare providers (Teng, Blackmore, & Stewart, 2007). This idea of professional limitations is further discussed by Teng et al. who stated providers have a fear of incompetence, inadequate assessment tools, and possible cultural differences between themselves and their patients. Teng et al. also reported the depressed person might fear a stigma of being diagnosed with a mental health disorder. The healthcare provider acknowledging and understanding the challenges of treating the elderly is the first step in remedying the lack of screening for the risk of depression.

The use of an evidenced based assessment tool to screen for the risk of depression is recommended, such as the Geriatric Depression Scale (GDS), long or short form (Yesavage et al., 1982). The geriatric assessment is suited for this age group as it emphasizes functional status and quality of life, focuses on elderly individuals with complex problems, and takes advantage of an interdisciplinary team of providers (Elsawy & Higgins, 2011). The need for a geriatric depression scale specific to this age group is further illustrated by the authors, Fiske, Wetherell & Gatz (2005), who reported depressed elderly are less likely to endorse typical affective symptoms of depression, and more likely to display cognitive changes, somatic symptoms, and loss of interest than younger adults (Fiske et al., 2005). The question remains whether undiagnosed depression will affect the retention of healthcare education. Thus the results of this study will add to the current research on known problems in healthcare of undiagnosed depression in the elderly by exploring this question.

Assumptions

Depression is not a part of aging. Depression might be overlooked in the elderly as many people believe that being "melancholy" is a normal part of aging. The Center of for Disease Control and Prevention (CDC) reports that depression is a true and treatable medical condition (The Center of Disease Control and Prevention [CDC], 2009). The CDC also states that 80 % of older adults have at least one chronic health condition and 50 % have two or more chronic health conditions. The CDC also reports that depression is more common in the elderly with chronic diseases and those with limited function. Having multiple chronic diseases can place the older adult for the risk of depression (CDC, 2009). However, despite these increased percentages for chronic diseases in the elderly, the risk for depression in this group is not routinely or consistently screened. It is often, but incorrectly, thought the depressed elderly individual is expressing a normal reaction to chronic illness, loss and unplanned social transitions and thus are not clinically depressed (Fiske, Wetherell, & Gatz, 2005). The screening of depression in all elderly should be conducted in all healthcare settings, and this is especially true for the elderly with multiple chronic diseases.

Definition of Terms

For the purpose of this project the following terms have been defined.

Depression: The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) states that a common symptom of depression is the diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others) (American Psychiatric Association [APA], 2013, p. 161).

Elderly: For the purpose of this project, the elderly will be defined as those individuals who are aged 65 years and older ("Depression fact sheet," 2016).

The Geriatric Depression Scale Long Form: The 30-item Geriatric Depression Scale (GDS) (Yesavage et al., 1983) is a common scale for screening depression in the elderly. The advantage of the GDS is the yes/no choice response format that requires very little cognitive involvement; which is especially helpful for those with a cognitive dysfunction (Wancata, Alexandrowicz, Marquart, Weiss, & Friedrich, 2006).

Statement of the problem

Due to the changing healthcare environment, and the push for preventive care, education is a key element in keeping down health care costs. Also, the lack of primary care providers necessitates more people will need to manage their own disease symptoms. Educating our older population on disease prevention and self-care takes a paramount role as our society ages (Grady, 2011).

A few of the common symptoms of depression are fatigue, decreased energy, feelings of guilt, insomnia and a loss of concentration. As stated previously, undiagnosed depression in the elderly is estimated to be as high as 40 % in the elderly population with chronic diseases (Chaoyang et al., 2009). The problem statement, and the premise of this research, is to investigate if undiagnosed depression in the elderly causes a lack of concentration which leads to the inability to retain healthcare education.

Research Question

The research question for this project can be stated as, "Is there a correlation between a positive screening for the risk of depression and the inability to retain nutrition related education"? To investigate the depressive symptom of poor concentration, a correlation study was conducted and the scores of the GDS were correlated to the results of a post quiz from a nutritional class conducted by this author.

Theoretical Framework

To strengthen the study findings, the theoretical framework of andragogy was used (Ward, Furber, Tierney, & Swallow, 2013). The theory of andragogy is built on a set of principles that can apply to all adult learning situations. The central theme of the theory can be described as the learner being a responsible, biologically mature adult who has the ability for decision making (Knowles et al., 2015). The theory of andragogy is based on six assumptions about the adult learner: their readiness to learn, their orientation to learning, learning being self-directed, their need to know, their motivation to learn, and their prior experience (Leigh, Whitted, & Hamilton, 2015).

The assumption of the adult learner's readiness to learn is a desire to learn those things the adult needs to know to apply to his or her life (Knowles et al., 2015). The readiness to learn assumption falls under a similar idea as self-direction; the class is voluntary and those who attend will have a readiness to learn the topic of healthy eating for seniors.

The assumption of the adult learner's orientation to learning is explained as adults are motivated to learn only what they need to help them perform tasks. This assumption was addressed by keeping the class material relevant to an older person's

lifestyle and activity level.

The central role of self-directed learning can be described as the learner being a responsible, biologically mature adult who has the ability for decision making. The learner's self-concept also involves self-direction especially in the area of learning. The adult learner will resist situations in which they feel others are imposing their wills on them and will flee this type of instruction (Knowles et al., 2015). Because of this, the planned nutrition class was voluntary, allowing the participant to choose to attend the class on his or her own volition.

The assumption of the learner's need to know is the incentive of the adult learner to retain information that is pertinent to his or her lives. The assumption of their need to know will be met as the class's PowerPoint presentation is comprehensive, lecturing to all food groups as well as diets and weight loss.

The assumption of motivation to learn is adults will respond to external motivators, such as job promotions, higher salaries, and other advantageous situations (Knowles et al., 2015). A motivator for participation in the nutrition class in this study is people's interest in weight loss and helpful nutrition hints. The class discussed a person's BMI and the fat and carbohydrate content of food.

The assumption of the adult learner's prior experience is they have lived longer than a child and thus will have more knowledge to build upon. While educating an adult learner, teaching strategies should place emphasis upon the individual's life experiences. The assumption of readiness to learn is an ability to learn those things the adult needs to know to apply his or her life (Knowles et al., 2015). In the nutrition class, the adult experience assumption will be met by tying the material to the elderly's lifetime of diet

experiences. This author, who is teaching the class, will recognize the audience's experiences in life pertaining to nutrition and diet control. Frequent references will be inserted in the lecture regarding the manner diets have changed, how the "newer generations" have "super-sized" food portions, and now obesity has become a national epidemic with nearly 78 million adults and 13 million children considered obese ("Understanding the American obesity epidemic", 2015). By incorporating these references and providing these alarming facts, the older adult's nutrition experience will be recognized.

The learning theory of andragogy provided consistency to this author's DNP project so that its final results can be reliable and reproducible. The six assumptions in the theory of andragogy were incorporated in the key points of the presentation in order to keep the topic interesting and relevant for the elders attending the class and to aid in retention of nutritional education.

CHAPTER 2: LITERATURE REVIEW

The premise of this project is undiagnosed depression in the elderly and how it affects the ability to retain healthcare related education. The literature reviewed for this project focuses on the problem of undiagnosed depression in the elderly and the negative consequences for healthcare services.

A quantitative study conducted by Luppa, Heinrich, Angermeyer, Konig, and Riedel-Heller (2008) set out to analyze how healthcare costs are impacted by unrecognized depression in the primary care setting. More specifically, the aim of the study was to determine total healthcare costs of depressed primary care patients aged 75 years and older, and whether the depression was recognized or not by the healthcare provider.

The results of the study found that 63 of the 451 participants in the study were diagnosed as depressed. Thirty-eight of these patients had not been identified as depressed by their healthcare provider, and the rate of unrecognized depression was much higher in men (87% vs. 59% in women) (Luppa et al., 2008). Total healthcare costs for unrecognized depression was also higher. The increase in total healthcare costs of provider undiagnosed cases compared to diagnosed cases was 6.5%.

The conclusion of the Luppa et al. (2008) study identified that healthcare costs by depressed patients recognized by the provider were much lower than the costs of healthcare by an unrecognized depressed elderly adult. The authors also found that elderly patient with unrecognized depression tended to use more outpatient physician and medical services.

The authors Lu and Hsieh (2012) studied depression in the country of Taiwan. The study used a qualitative format to discuss healthcare providers' views on depression and the prevention of depression in older people. The study's purpose was to enhance the field of knowledge concerning diagnosis and treatment of depression in older people. This study also confirmed that family, the Chinese culture, and socio-economic circumstances influence the participant's account of depression. This perception might be one of the causes of why an older adult is not diagnosed for depression or treated appropriately in a healthcare setting.

A qualitative study, which used semi structured interviews, was conducted in Northwest England. The authors, Burroughs et al. (2006), found that primary care providers conceptualized late life depression as a problem in their everyday work, but not as a treatable diagnostic category. The primary providers interviewed stated depression was part of a spectrum that included loneliness, lack of social network, and reduction of function but was "understandable" and "justifiable" as a normal part of aging (Burroughs et al., 2006).

No research was located regarding the provider's view of depression affecting the screening and diagnosis of the elderly in the United States. However, the literature reviewed did consistently report that the medical provider often did not screen for depression as the older adults' depressive symptoms were attributed to the aging process and common medical pathologies (Weaver, 2007).

The next article reviewed was conducted by Ani et al. (2008). The aim of this study was to examine the agreement between depression symptoms using an assessment tool, physician documentation of the same symptoms during a clinic visit, and how these

symptoms affected the diagnosis of depression in a primary care setting. The study was conducted in two large urban primary care community settings. The results of the study showed a total of 304 out of 2,321 patients screened positive for depression with the Patient Health Questionnaire (PHQ-9). The clinical finding for the depression diagnosis was 75.3% were depressed by PHQ-9 criteria, and out of this percentage, only 31 % had been diagnosed by a physician as depressed. The study results show depression remains underdiagnosed in most primary health care settings (Ani et al., 2008).

The next article for review is a quantitative study that set out to explore the factor structure of the 30-item Geriatric Depression Scale (GDS) obtained from a sample of elderly adults diagnosed with a low level of cognitive impairment. The sample was obtained from a database of 177 elderly people, 121 females and 56 males. The population is described as community dwelling patients, with a mean age of 79.2 years, and all had been screened for dementia and levels of cognitive impairment at an outpatient clinic.

The findings of the study suggested an additional utility for the GDS; it can be used for clarification of the relationship between affective experience and cognitive function. Further, particular item endorsement patterns could provide validation for distinguishing between an older adult's depressive symptoms, the onset of dementia, or a combination of these two items (Hall & Tommy, 2009).

The next study to be reviewed was conducted by Drageset, Espehaug, and Krikevold (2012). This study was a cross-sectional, descriptive, correlational design to analyze the relationships between depressive symptoms, sense of coherence and emotional and social loneliness among nursing home residents without cognitive

impairment. The study instrumentation consisted of a Social Provision Scale (SPS) and a Geriatric Depression Scale (GDS) (Drageset et al., 2012). The results of this study showed depressive symptoms contribute to emotional and social loneliness.

The study conducted by Leibold, Holm, Raina, Reynolds, & Rogers (2014) set out to examine daily life activities chosen by older adults during a depressive episode using an interactive qualitative assessment method. The authors report that previous research examined activity domain rather than how clients react and adapt to activities during a depressive episode. Earlier studies reported on limitations in basic activities of daily living (ADLs) but very little research had shown the engagement level of the older adult, a key component of retention in adult learning, during a depressive episode. The Leibold et al. study results demonstrated how participation in activities is diminished when the older adult was depressed and some participants deliberately stopped certain activities so as to direct limited energy to their highest priority activities. Practitioners are encouraged to use open-ended question to understand why the older adult's activities have changed and to intervene when necessary.

The last article reviewed is the study conducted by Suominen, Iaomwra, and Lonnqvist (2004). The research set out to investigate the pattern of healthcare contacts among elderly subjects who had attempted suicide. The authors compared elderly suicide attempters with younger attempters, before and after the attempted suicide, in the terms of healthcare contacts, clinical diagnosis of mental disorder, and characteristics predicting a lack of treatment contact after the index attempt (Suominen et al., 2004).

The results showed revealed that 81 of 1198 suicide attempts were older than age 60. The majority of elderly suicide attempters had contact with a primary healthcare

provider before their attempt. Only 20 of elderly suicide attempters had received a diagnosis of a mood disorder by a psychiatric health specialist in the 12 months prior to their attempt. Of the 49 elderly suicide attempters with a primary healthcare contact during the 12 months preceding the attempted suicide, only 2 (4%) were diagnosed with a mood disorder. The 12 months following the attempt, 28 elders received a mood disorder diagnosis.

The discussion of the study established that the major problem in the elderly population appears to be recognition and diagnosis of mood disorders prior to the suicide attempt. Furthermore, while older patients had received the diagnosis of cardiovascular disease or cancer, the diagnosis of a substance use disorder or a personality disorder, which places the older individual at a higher risk for suicide, was much less than compared to the attempters below age 60.

The authors suggest that mood disorders often remained undiagnosed before the suicide attempts among elderly patients in primary care. Screening for depression and further education on diagnosing and treating mood disorders among the elderly in primary care is greatly needed (Suominen et al., 2004).

Summary

All of the research studies chosen in the literature review discuss the problem of depression in the elderly. The chosen articles also discuss the financial burden of undiagnosed depression with the increased use of medical services. The literature also recommends using a screening instrument that has been tested for use in the elderly. It is also essential for the provider to educate him or herself about undiagnosed depression and to acknowledge any professional limitations when caring for a depressed elder. The

evidence found by this author supports the need for increased and consistent screening of the elderly for the risk of depression in all healthcare settings.

CHAPTER 3: METHODOLOGY

The 30 point GDS was used to measure the elderly's risk for depression. A nutritional class was given to provide pertinent healthcare information to the elderly participant. At the end of the class, a post quiz measured the retention of the nutrition material and was correlated with the GDS score.

Project design

The purpose of this study is to determine if undiagnosed depression affects retention of healthcare education. The project design is a descriptive correlation study as identified by the AP Psychology Commune (Heuristic, n.d.). The relationship between the scores of the GDS and the nutrition quiz was examined with the proposition that as the scores of the GDS increase, indicating depression, the number of missed questions on the nutrition quiz will also rise.

Sampling and Population

The quantitative sampling method used a convenience sampling of the target population, age 65 years and older. The setting is a local community church. The population of this study was church attendees from a Lutheran Church located in Northern California. The church attendees classify themselves as Lutherans. The Lutheran Church is part of a larger, national church membership of the Evangelical Lutheran Church of America (The Evangelical Lutheran Church of America, 2016). The Lutheran Church is considered a mainline Protestant Church in American and its congregation practices the religion of Christianity (Chaves, Anderson, & Byassee, 2007). The National Congregational Survey (2007) reports mainline Protestant congregations are largely filled with older people. It is estimated up to 56 % of adults in the mainline

congregation are over 60 years old, thus the setting is appropriate for a convenience sample of participants aged 65 years and older.

Those who attend church are not immune to depression. Mark Mounts, a pastor and a licensed counselor, found depression is far from unique among Christians, and often sees a great number of depressed "Christian" individuals in his practice (Mounts, 2010). The problem of depression within the church congregation is well known by most church leaders (Simpson, 2013). There is no culture, social economic status, or spiritual belief which can protect a person from depression. The WHO reports depression is the leading cause of disability worldwide, and is a major contributor to the global burden of disease ("Depression fact sheet," 2016). Due to the global occurrence of depression and the prevalence of the elderly in America's congregations, a representative sample population can be selected from this setting.

The exclusion criteria of the sample population are diagnosis of depression in the past or a current diagnosis of depression, any participant who is younger than 65 years old and the diagnosis of a cognitive disorder. Although the GDS has been found to be a reliable test for those with mild cognitive disorders (Hall & Tommy, 2009), the nutrition quiz has not been tested for reliability and validity for the use with the mildly cognitively impaired.

A convenience sample was used for the participants in this project. The sample population was attendees of a Lutheran Church located in Northern California. The WHO reports depression is a global crisis, affecting all populations ("Depression," 2016). Those suffering from depression are also found in America's churches (Simpson, 2013).

Instrumentation

To measure depression, the instrument used was the 30-point GDS. The GDS, first created by Yesavage et al. (as cited in Kurlowicz, 1999), has been tested and is used exclusively with the older population (Kurlowicz, 1999). The GDS is a 30-item questionnaire using a dichotomous (yes or no) response format. Its validity and reliability have been established in the elderly population. A Cronbach's alpha of 0.94 was obtained and the (GDS) was found to have 92% sensitivity and 89% specificity when evaluated against diagnostic criteria. Hall and Tommy (2009) also found the GDS a reliable test for the mildly cognitively impaired. The GDS was analyzed as the total score up to 30; a higher score indicates the severity of depression. The GDS is scaled as normal-0-9; mild depression-10-19; severe depression-20-30. The long standing use in clinical and long-term settings also supports the validity and reliability of the GDS.

To measure the information taught in the nutrition class, a quiz was found on MedicineNet.com website. The 15-item quiz was reviewed by Melissa Conrad Stoppler, MD. Dr. Stoppler is a U.S. board-certified anatomic pathologist with training in molecular pathology. This author was given permission to use the quiz in its entirety. The quiz was not tested for validity since it is typically not used for research. However, the quiz demonstrates face validity; it has been used consistently for 5 years on the MedicineNet.com website.

The PowerPoint presentation explicitly addressed the material in the nutrition quiz. The PowerPoint was timed for a 20 minute delivery, with each slide addressing one to two questions on the nutrition quiz. The material on the quiz was highlighted and repeated by this presenter. Also, some of the material on the quiz was emphasized by

using demonstration of actual food items and examples of portion sizes. The PowerPoint presentation and the quiz were reviewed by a licensed dietitian for accuracy for the use in this project.

Procedure and Data Collection

The topic of the educational series was determined by the results of a Confidential Interest Survey (CIS) given to the congregation by the church's health ministry's committee in 2014. Nutritional information was identified as a topic of interest by the congregation. An announcement in the electronic church bulletin about the class was made prior to each date. The class was held after the mid-morning service in two successive weeks in November of 2015. A nutritional lunch, buffet-style was provided. A healthy lunch is a reasonable and modest incentive to encourage participation in the project. This author had a volunteer who helped set up the meal and helped with clean-up, but all confidential material was handled by this author to guarantee confidentiality.

During the meal, the aim of the project was discussed and the consent form was passed out. The voluntary status of the study was emphasized so no participant felt coerced, and all attendees participated. There were a total of 22 participants in the after the study's parameters were explained and the consent was received. Anonymous names, age and any pre-existing diagnosis of depression were requested as a part of the guidelines for participation.

Prior to the start of the PowerPoint lecture and during the buffet lunch, the GDS was passed out, collected, and placed in a locked box. Pencils with erasers were provided for the class participants. After the GDS was collected, the nutrition class was started.

The nutritional material was administered by a PowerPoint presentation on a large screen using a projector. This author designed the PowerPoint for the nutrition class.

The nutrition class lasted approximately 20 minutes and questions were allowed throughout and at the end to assure the nutritional material was understood by the participants. After the nutritional information and PowerPoint presentation, the 15-question nutritional quiz was administered.

The procedure and data collection occurred on two subsequent Sundays in November of 2015 following the 11:00 am service. The use of a volunteer was needed for set-up and the clean-up of the healthy lunch. All confidential data was handled by this author. The class, with data collection, lasted approximately one hour.

The decision to use nutritional education was a result of a survey given to the congregation from the Churches Health Ministry team. The procedure and data collection was done in accordance with the University's Institutional Review Board (IRB) recommendations. A total of 22 participants volunteered for the study after the consent was distributed and explained. A healthy lunch was provided to participants of the class. The following chapter is a discussion of the data results from the two nutrition classes called "Healthy Eating for Seniors".

CHAPTER 4: RESULTS

The statistical results of this project is discussed in the following chapter. Descriptive data as well as the correlation between the variables are analyzed and examined for the purpose of this study.

Data was collected through the use of the two tools, the GDS and the nutrition quiz. The data collection was uniform and adhered to the protection of confidentiality set by the IRB. This author placed the completed GDS and nutrition quizzes in a locked box. There were no lapses in the secure method of data collection and the convenience sampling was conducted as planned.

Data was collected in two parts. The first portion of the data collected was the scores of the GDS at the initiation of the class while the participants were eating a healthy lunch. After the lunch, a 20 minutes presentation was provided on healthy nutrition. The second portion of the data collected was the scores from a post quiz from the class on nutrition.

Within the 22 participants, one participant identified a pre-existing cognitive disorder and their data was excluded. Another participant completed only two answers of the nutrition quiz and the results were not valid. Lastly, a participant known to this researcher scored quite high on the nutrition quiz and also had significant score for depression on the GDS. The participant is a registered nurse with an extensive background of diet and nutrition. Due to the participant's pre-existing medical knowledge, the collected data was not evaluated. The remaining 19 participant's scores were analyzed.

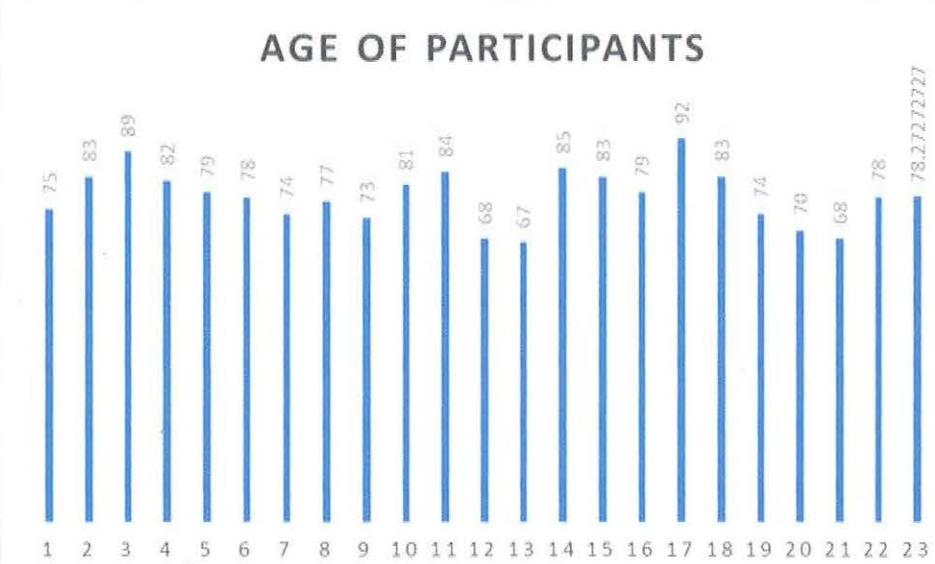
Descriptive Analysis

The names used on the GDS were written as either a female or male first name, but a few of the respondents used initials, so this data was coded as "none". There were 13 females, 7 males, and 2 participants coded as "none". (Figure 2). The average participant age was 78 years old (Figure 1).

The results of the GDS could range from 0 to 30. A normal score, or no depression, is considered to be from 0 to 9; mild or moderate depression is scored as 10 to 20 and lastly, severe depression is scored from 20 to 30. The total score, out of 30 points possible, was used in the correlation. For example, a person could score 23 points, or 7 points off of the total of 30 and would be considered to have screened as normal or negative for the risk of depression. In the 19 participant's scores, three participants were identified with mild depression (Figure 4). The percentage found for undiagnosed mild depression was 16% and 84% were identified as having no risk for depression (Figure 5

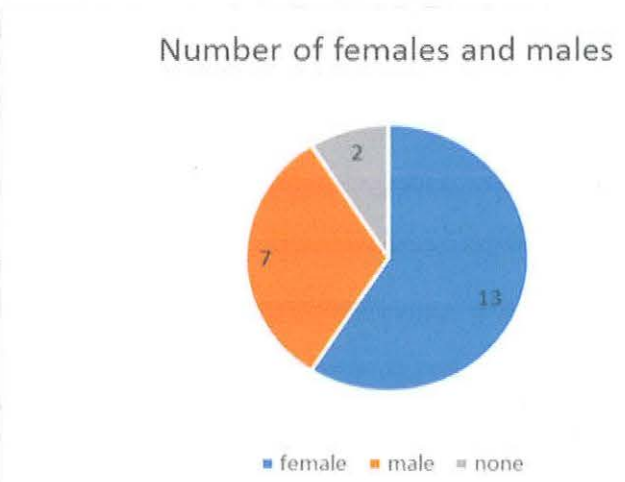
Figures

Figure 1. Age of Participants



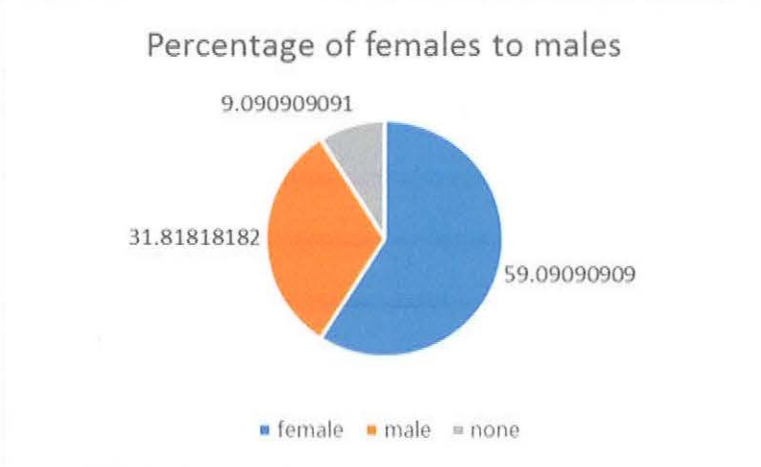
Average age of partipants, 78 years old (graft bar 23)

Figure 2. Gender of the Participants



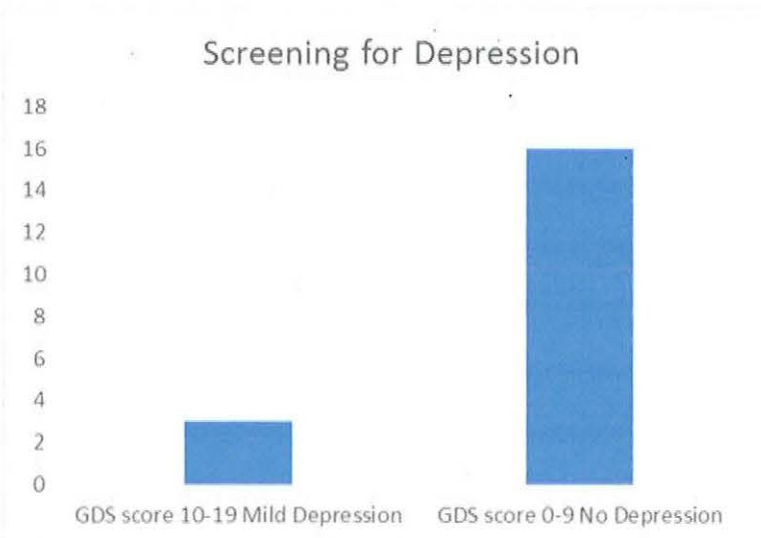
Females 13 participants, Males 7 participants, no gender identified by 2 participants

Figure 3. Percentage of Females to Males



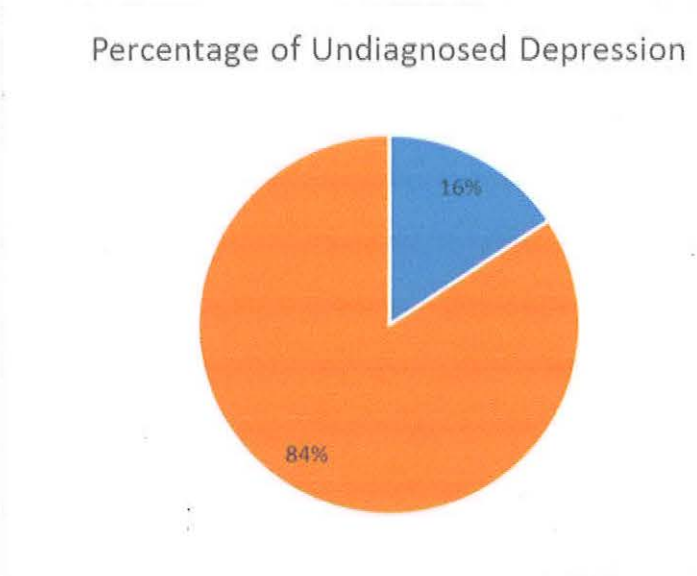
Rounded figures: Males 32 % Females 59 %

Figure 4. Numbers of individuals as identified as depressed



3 out of 19 participants screened as normal or negative for the risk of depression

Figure 5. Percentage of Undiagnosed Depression



16% screened positive for undiagnosed mild depression.

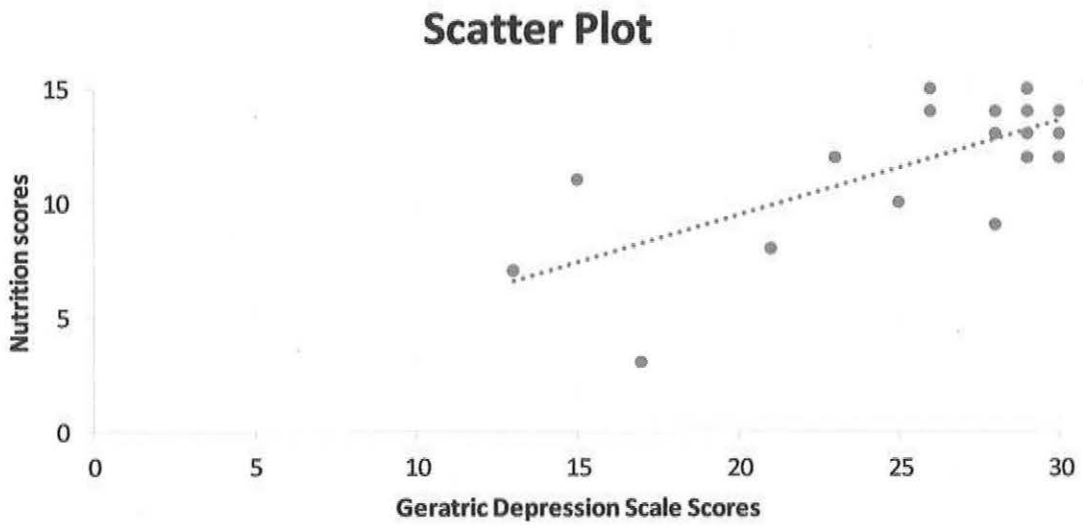
84% screened as normal or negative for the risk of depression

Statistical Analysis

The raw data was analyzed using SPSS statistical software as a two tailed Person's correlation. The two measured variables, the scores of the GDS and the scores of the nutrition quiz, once analyzed, indicated a strong positive relationship by Pearson's correlation coefficient of 0.70726. The corresponding scatter plot indicates the higher the scores on the GDS indicating no risk for depression, the higher the score were on the nutrition quiz (Figure 6). The data outcome also was discovered to be statistically significant at the 0.01 level using a two tailed test (Table 1).

The descriptive and statistical analysis used for the discussion of this project is provided in the corresponding figures and tables. The number of individuals who participated in the study, the number of participants who screened positive for the risk of depression and the statistical components of the Pearson's correlation, are also presented for this project's transparency and reproducibility (Nosek, et al., 2015)

Figure 6. Scatter Plot



Positive relationship as indicated by a Pearson's correlation coefficient of 0.70726

Table 1. Statistical Analysis

Data Analyzed

	Mean	Std. Deviation	N
GDS	25.3684	5.24098	19
Nutrition	11.7368	3.12414	19

Correlations

		GDS	Nutrition
GDS	Pearson Correlation	1	.698**
	Sig. (2-tailed)		.001
	N	19	19
Nutrition	Pearson Correlation	.698**	1
	Sig. (2-tailed)	.001	
	N	19	19

**.Correlation is significant at the 0.01 level (2-tailed)

Assessment of the Results

The assessment of the results of the data collection is discussed in the following paragraphs. The assessment of the results includes the age of the participants, the number of participants who screened positive for depression and the setting of the study. Also, the relevant literature to this project and the framework which supported the nutrition class is presented in the context of the outcome of this project's results.

The average age of the participants was 78 years old. This average age, is a trend which follows the national average of the aging of congregations throughout the United States. This trend is discussed in the National Congregational Study conducted in conjunction with Duke University in 2007 (Chaves, Anderson, & Byassee, 2007). In the National Congregational Study, it was found that 30% of regular attenders in the average congregation were older than age 60. The class was designated for those 65 years of age and older, and the convenience sample was appropriate for the setting of a church with an aging congregation. Also identified in this report was the higher population in church settings of females to males. The participants in this study also had more females to males of ratio of 2 to 1.

The authors Park and Unützer (2011) conducted research on rates of depression in community settings which found that about 5 % of adults aged 65 and older meet research diagnostic criteria for major depression, with rates of subsyndromal or mild depression estimated at 8% -16% (Park & Unützer, 2011). In the 19 participant's scores, three participants were identified with mild depression (Figure 4). The rate of depression in this study supported this previous research with a rate of undiagnosed mild depression of 16% (Figure5).

The setting of this study was conducted in a church located in Northern California. The United States census on facts regarding the project's setting is important to review when analyzing the results of this study. The 2014 United States Census estimates 51 % of this area's population as being persons 65 years and over, Caucasian population is estimated at 83 %, and the next highest population is Black or African American at 1.7 %.

The median household income (in 2014 dollars) in the settings County was $73.474.00 (United States Census Bureau, 2014). Rates of undiagnosed depression have been reported at much higher rates in ethnic groups and in less affluent areas. (Dunlop, Song, Lyons, Manheim, & Chang, 2003).

The theoretical framework of this study integrated six assumptions from the theory of andrology developed by Malcom Knowles into the educational content of this study (Knowles et al., 2015). The andragogy assumptions about an adult learner: their readiness to learn, their orientation to learning, learning being self-directed, their need to know, their motivation to learn, and their prior experience (Leigh, Whitted, & Hamilton, 2015) were integrated into the presentation on healthy nutrition. The PowerPoint presentation highlighted healthy nutrition, weight loss, portion size, and current evidenced-based nutrition recommendations. To mitigate questions on the studies design, the teaching instruction and the corresponding PowerPoint presentation were created to be interesting and relevant to its intended target audience.

The results of the study, indicated by those who did not screen positive for depression, were motivated and compelled to learn the topic of healthy nutrition indicated

by high scores on the nutrition quiz. Ten participants had a score of 13 points or higher on the quiz, correspondingly, these participants also had lower scores on the GDS.

The study conducted by Luppa, et al, (2008) found that the elderly with unrecognized depression used more outpatient services. The results of this study indicate that undiagnosed did affect the retention of healthcare education. If a depressed elder cannot retain healthcare education due to undiagnosed depression, there is a potential for increased use of outpatient services.

The literature reviewed consistently reported the medical provider did not screen for depression as the older adults symptoms were attributed to the aging process and common medical pathologies (Weaver, 2007). Also, as stated previously, no research was located which discussed the provider's personal view of depression in the United States. However, it was found in literature that the healthcare provider can incorrectly view the depressed individual as non-compliant. Depressed patients are three times more likely to be noncompliant with medical treatment recommendation than are non-depressed patients (Kleinsinger, 2010). If an elderly patient appears non-compliant with medical treatment, he or she should be screened for the risk of depression. Three people were found to screen positive for mild depression in this study. If the GDS had not been administered to these elderly individuals, one could incorrectly assume these individuals were not motivated to learn the topic of healthy nutrition.

Current research has shown that depressed older adults are less likely to show typical symptoms of depression such as physical manifestations and rather show more cognitive changes as a part of the depressive symptomology (Fiske, Wetherell, & Gatz, 2005). The need for screening for the risk of depression using an evidenced based

geriatric assessment tool such as the GDS long or short form which has been validated for the use in mildly cognitively impaired adults (Hall & Tommy, 2009). The project's premise was to establish a correlation between undiagnosed depression in the elderly and an inability to retain healthcare education. The relationship between these two variables was supported by the data and the statistical analysis of a Pearson's correlation coefficient of 0.70726 (Field, 2013). The research question in this study, "Is there a correlation between a positive screening for depression and the inability to retain nutrition related education?" was answered through the statistically significant correlation between the GDS and the nutrition quiz. It can be stated that undiagnosed depression does affect the retention of nutritional healthcare education.

Limitations

The major limitations of this study is the small sample size. The foremost reason this study did not have the anticipated participants, the minimum of 30, was due to the inability to advertise properly for the class. The class was originally planned to take place after the monthly luncheon for the congregation's seniors which has an average attendance of 40. The board of directors, after meeting to discuss the study, decided not to allow the class to take place in this venue because of the "depressing subject." Another way to advertise the class was to have the pastors announce it in the community events section at the beginning of the 11:00amservice. However, earlier in the year, one of the pastors indicated he did not want the class to be promoted during the 11:00am service stating, it was "not appropriate" for the whole congregation to hear. The announcement of the class was provided to the church administrator indicating the time, date and the type of study focusing on undiagnosed depression in the elderly. The church

administrator edited the draft and took out the portion about undiagnosed depression prior to publication online. This editing was done so the topic of depression was not mentioned in the electronic newsletter.

The instrumentation of this study is another limitation. The use of the nutrition quiz by MedicineNet.com is a tool which is not tested for scientific rigor. To properly test retention of healthcare information in the elderly, a quiz is needed which has been tested for reliability and validity (Sullivan, 2011). The quiz should also be tested for use in the mildly cognitively impaired older adult.

Lastly, the study design itself has limitations. A correlation study cannot prove causation. It can only show a relationship between the two variables. Causality between two variables cannot be assumed, because there may be other measured or unmeasured variable affecting the study outcome (Field, 2013).

The most obvious limitations to this study, a small sample size and the instrumentation utilized in the study were presented and discussed. However, there might be unknown reasons that a participants scored low on the nutritional quiz due to unknown variables. The study design has internal validity treats for causality which must be taken into consideration when evaluating the results (Trochim, 2006).

CHAPTER 5: CONCLUSION

Implications for Nursing Practice

The following chapter is the conclusion of this project with a discussion of the ramifications of undiagnosed depression in the elderly for all healthcare providers. Undiagnosed depression in the elderly remains an important issue as it contributes to disease burden and it affects the retention of healthcare education. Lastly, the stigma of depression remains a barrier for future research.

Currently, there is no previous research which discusses the ramification of undiagnosed depression in the elderly and the inability to retain healthcare education. However, the implication for all areas of healthcare is enormous, as education is the basis for management of chronic diseases and promotion of healthy lifestyles (Adams, 2010).

The stigma of depression remains despite efforts to change the negative attitude prevalent in our society. This discussion goes as far back as 1999, when the U.S. Surgeon General labeled the stigma as one of the biggest barriers to mental health treatment (Friedman, 2014). The church leadership was very supportive regarding the opportunity to help with a project which dealt with issues concerning the elderly, yet when the topic of depression was introduced; it was not to be discussed openly. This type of stigma, states Dr. Freidman, is referred to as avoidance. Avoidance is the fear of the unknown and how and what to say to an elder who is suffering from depression. The membership in most churches in American is composed of elderly parishioners (Chaves et al., 2007). Simpson (2013) reports people in ministry positions can feel lost, intimidated, and fearful of the topic of depression and mental conditions. Discussion

about depression in the elderly must be a priority in all venues which serve the elderly. This applies to churches, hospitals and all healthcare settings. Medical professionals and church officials must become more aware and knowledgeable about the topic of depression in the elderly. The Office for Disease Prevention and Health Promotion (ODPHP) provides interventions for the clinician to reduce depression among the elderly through recommendations for clinic-based depression care management ("Interventions to Reduce Depression", 2008). Simpson (2013) recommends for church leadership to understand the phenomena of depression, obtain education about the stigma of depression and acknowledge one's own fears about topics concerning mental health.

This study supports the recommendation for the increased and consistent screening for depression in the elderly. Research conducted in 2002, indicated that 15% of the elderly had a significant depressive disorder. Currently, the "Baby Boomer" population will cause this number to increase significantly and it is estimated by 2030, the numbers of older adults with depression will double (The Center for Disease Control and Prevention [CDC], 2009). Despite these high prevalence rates, few older adults report seeking a mental health professional for treatment. In fact, older adults seek professional mental health treatment at a rate lower than any other adult age group and most alarmingly, older adults have the highest rate of completed suicide, which is associated with high rates of depression (Connor et al., 2010). The World Health Organization (WHO) estimates by 2020, depression will be the second leading cause of world disability and by 2030; it is expected to be the largest contributor to disease burden (The World Health Organization [WHO], 2010).

Future Research

Further research on undiagnosed depression in the elderly and how it affects the retention of healthcare education is needed and should be conducted in different settings. However, prior to any study, the potential for the stigma of depression must be addressed and methods to remove this barrier must be ascertained so successful research can be conducted. The stigma of depression was an unexpected finding for this author. The viewpoint of some of the congregation was "not to mention" or discuss depression openly. This attitude is discussed in a study conducted by Connor et al. (2010), which found that the stigma associated with having a mental illness has a negative influence on attitudes and intentions toward the treatment or the discussion of mental health (Connor et al., 2010). Katon and Livingston (as cited in Connor et al., 2010) identified the stigma of mental illness as the most fundamental reason why older adults chose not to seek mental health services and is a powerful obstacle to seeking care among the elderly who might be depressed (Connor et al., 2010). Simpson (2013) stated that depression is the most well-known and widely understood mental illness, yet it is still mostly hidden within America's churches. The stigma of mental illness continues to be a significant barrier for conducting a study on depression for the elderly (Connor et al., 2010). This barrier was present in the selected church setting and was a major contributing factor in the small sample size of this project.

The development of a standardized tool for measuring the retention of healthcare information in the elderly is needed. The use of a standardized tool is especially pertinent for areas in which nursing has a great impact on geriatric patient care. Nursing research must use assessment instruments which are both reliable and valid (Sullivan,

2011). Nurses can then apply the research as evidenced based practice when caring for the elderly.

Conclusion

Healthcare education focuses on both disease self-management and preventive health. The goal of most healthcare education is chronic disease self-management and preventive health programs that focus on healthy lifestyle choices (Adams, 2010). Learning pertinent and relevant health information promotes an elderly person's self-esteem and the older individual will be eager to apply what he or she has learned to become healthier. The more an older person learns to care for medical needs, the less the individual will need additional healthcare for existing and future medical problems. The significance of this project has shown the need for increased screening for the risk of depression in the elderly as the elderly cannot retain healthcare education if they are depressed.

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APPENDIX A CONSENT

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Undiagnosed Depression in the Elderly Consent

Nancy J. Wynn-Grundy,
Doctor of Nursing Practice Student
California State University, Northern California Consortium Doctor of Nursing Practice

You are invited to participate in a study conducted by the individual listed above. Through this study, I hope to show a correlation between undiagnosed depression and the inability to retain new healthcare information. This is an important issue in our healthcare system, as many elderly individuals are depressed, but are not routinely screened for the risk of depression. Educating our aging society on disease management and self-care is a key element for cost containment in our healthcare environment. The ability to learn new healthcare information might be inhibited due to the fact that depression causes concentration problems.

If you volunteer to participate in this study, you will be asked to

1) Complete the geriatric depression Scale
2) Attend the nutrition class "Healthy Eating for Seniors"
3) Take a quiz on the material presented in the class

Since participation is voluntary, a participant can choose to exit the study at any time without fear of repercussions.

Potential benefits of your participation are:

1) Highlighting the topic of undiagnosed depression in the elderly so that healthcare providers will screen for the risk of depression in his or her older patients.
2) Obtaining pertinent nutrition information
3) Obtaining resources for the treatment of depression in our church and throughout the community

Confidentiality will be maintained at all times. To ensure confidentiality, data will be secured in a locked box only accessible to the researcher and destroyed at the end of the data compilation. The information will be used within the researcher's doctorate of nursing practice study only.

For your protection, this study has been reviewed and approved by the pastors at Resurrection Lutheran Church, the leadership committee and California State University, Fresno Institutional Review Board. If you have any questions or concerns regarding your participation in this study, please contact

Name of presenter, email and phone number was provided for the participants

If you feel that you are risk for depression you may contact the Stephen Ministry at LCR and they can refer you to a mental health specialist or you can contact a mental health specialist at any of the phone numbers listed below:

Placer County Mental Health Services 916-787-8860 or toll free 1-888-886-5401
Sierra Mental Wellness 916-783-5207

Your participation is this study is greatly appreciated. By participating in "Undiagnosed depression in the elderly, you are giving consent.

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APPENDIX B GERIATRIC DEPRESSION SCALE

Geriatric Depression Scale (Long Form)

Patient's Name:_____ Date:_____

Instructions: Choose the best answer for how you felt over the past week.

No.	Question	Answer	Score
1.	Are you basically satisfied with your life?	YES / NO	
2.	Have you dropped many of your activities and interests?	YES / NO	
3.	Do you feel that your life is empty?	YES / NO	
4.	Do you often get bored?	YES / NO	
5.	Are you hopeful about the future?	YES / NO	
6.	Are you bothered by thoughts you can t get out of your head?	YES / NO	
7.	Are you in good spirits most of the time?	YES / NO	
8.	Are you afraid that something bad is going to happen to you?	YES / NO	
9.	Do you feel happy most of the time?	YES / NO	
10.	Do you often feel helpless?	YES / NO	
11.	Do you often get restless and fidgety?	YES / NO	
12.	Do you prefer to stay at home, rather than going out and doing new things?	YES / NO	
13.	Do you frequently worry about the future?	YES / NO	
14.	Do you feel you have more problems with memory than most?	YES / NO	
15.	Do you think it is wonderful to be alive now?	YES / NO	
16.	Do you often feel downhearted and blue?	YES / NO	
17.	Do you feel pretty worthless the way you are now?	YES / NO	
18.	Do you worry a lot about the past?	YES / NO	
19.	Do you find life very exciting?	YES / NO	
20.	Is it hard for you to get started on new projects?	YES / NO	
21.	Do you feel full of energy?	YES / NO	
22.	Do you feel that your situation is hopeless?	YES / NO	
23.	Do you think that most people are better off than you are?	YES / NO	
24.	Do you frequently get upset over little things?	YES / NO	
25.	Do you frequently feel like crying?	YES / NO	
26.	Do you have trouble concentrating?	YES / NO	
27.	Do you enjoy getting up in the morning?	YES / NO	
28.	Do you prefer to avoid social gatherings?	YES / NO	
29.	Is it easy for you to make decisions?	YES / NO	
30.	Is your mind as clear as it used to be?	YES / NO	
		TOTAL	

This is the original scoring for the scale: One point for each of these answers.
Cutoff: normal-0-9; mild depressives-10-19; severe depressives-20-30.

1. NO	6. YES	11. YES	16. YES	21. NO	26. YES
2. YES	7. NO	12. YES	17. YES	22. YES	27. NO
3. YES	8. YES	13. YES	18. YES	23. YES	28. YES
4. YES	9. NO	14. YES	19. NO	24. YES	29. NO
5. NO	10. YES	15. NO	20. YES	25. YES	30. NO

Yesavage JA, Brink TL, Rose TL, et al. Development and validation of a geriatric depression screening scale: a preliminary report. *J Psychiatr Res* 1983; 17:37-49.

- THE SCORING OF THE GERIATRIC DEPRESSION SCALE WAS NOT PASSED OUT TO THE PARTICIPANTS

APPENDIX C NUTRITION QUIZ

Nutrition Quiz

Diet and Nutrition Quiz used in its entirety from Medicine.Net a division of WebMD.

Name_____ (Please match name to the previous scale)!

Instructions: Please circle the best answer

1. **According to the USDA, there is no difference between a "portion" and a "serving."**
   a. **True**
   b. **False**

2. **_____ should be the size of a baseball**
   a. **A serving of broccoli** b. **A serving of ice cream**

3. **From which foods can we get carbohydrates?**
   a. **Milk products and fruits**
   b. **While gain breads and cereals**
   c. **Table sugar, starchy vegetables, and legumes**
   d. **All of the above**

4. **Which has more calories?**
   a. **A plain bagel with cream cheese**
   b. A Toaster Waffle with Syrup

5. **Which of the following is NOT true about water?**
   a. **Drinking water boost metabolism**
   b. **85% of human brain tissue is water**
   c. **A good rule of thumb is to drink 10 to 12 glasses of water each day**
   d. **Water reduces kidney stones**

6. **According to the USDA's famous Food Pyramid, we need 2-3 servings of which food group every day?**
   a. **Milk, cheese, and yogurt products**
   b. **Vegetables**
   c. **Cereal, bread, rice, or pasta**
   d. **A & B only**

7. **One serving of peanut butter is about the size of:**
   a. **A Ping Pong Ball**
   b. **A stick of gum**

8. **Diet is a major contributor to overweight and obesity. How many U.S. adults would you guess are overweight or obese?**
   a. **Nearly 50% of all U.S. adults are overweight or obese**
   b. **Nearly 60% of all U.S. adults are overweight or obese**
   c. **Nearly 70% of all U.S. adults are overweight or obese**
   d. **Nearly 80% of all U.S. adults are overweight or obese**

9. **A serving of which of the two foods below should be the size of a checkbook?**
   a. **A chicken breast**
   b. **A Burrito**

10. **People with a body mass index (BMI) value of _____ or more are considered obese.**
    a. **20**
    b. **25**
    c. **29**
    d. **30**

11. ***According to the USDA, which of the following foods fall into the "grain" category?***
    a. ***Beans***
    b. **Pasta**

12. Think of an ordinary computer mouse. Which food listed below should be about the same size as the mouse?

a. Baked or sweet potato

b. A serving of olives

13. To keep your diet in check, a correct-sized portion of _____ should be near the size of a package of dental floss:

a. Chocolate

b. Butter

14. Three ounces of cooked, lean beef is nearly equivalent to the size of:

a. Folded Dinner Napkin

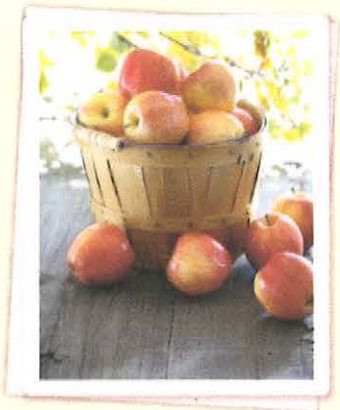
b. A deck of playing cards

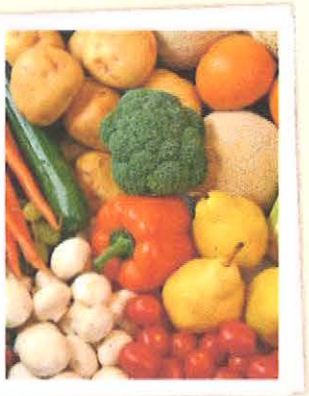
15. Most Americans consume the greatest amount of calcium from _____?

a. Whole Milk

b. Cheese

APPENDIX D POWERPOINT

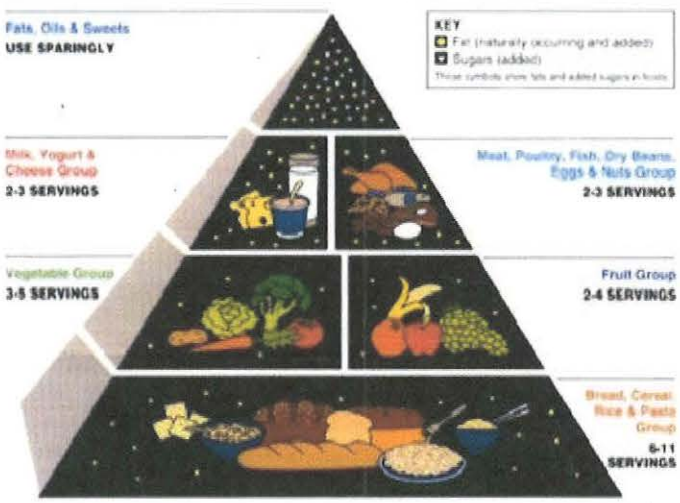


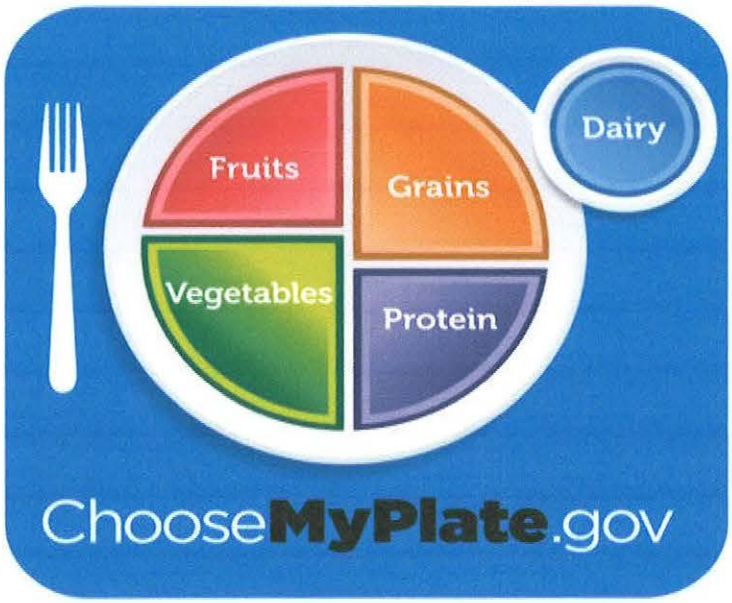


Healthy Eating for Seniors

Presented by the Health Ministry at the Lutheran Church of the Resurrection

USDA's Food Pyramid





United States Department of Agriculture (USDA), n.d.)

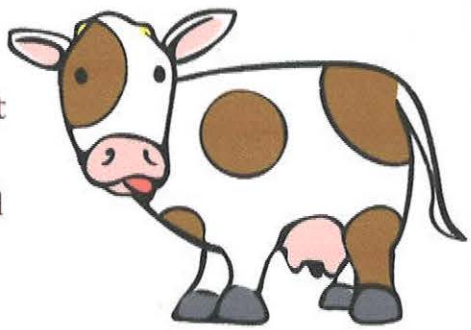
Nutrition for Seniors –The Benefits of Healthy Eating

- A healthy diet in later years reduces the risk of osteoporosis, high blood pressure and certain cancers
- A ***woman*** over the age of 50 that is not physically active needs about 1,600 calories, moderately active needs about 1,800 calories and a person who has an active lifestyle, needs about 2,000 to 2,200 calories.
- A ***man*** over the age of 50 that is not physically active needs 2,000 to 2,200 calories, moderately active needs about 2,200 to 2,400 calories daily, and a person who has an active lifestyle, needs about 2,400 to 2,800 calories daily if he has an active lifestyle.

(The National Institute of Aging [NIH], 2015)

Dairy

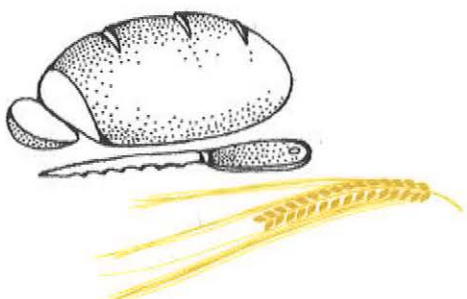
- The *food pyramid* recommended **2-3** daily servings from the milk, yogurt, and cheese group. *My plate* recommends **3** cups for men and women over 50
- Milk, yogurt, and cheese are rich natural sources of calcium and are the major food contributors of this nutrient to people in the United States
- Choose fat-free or low-fat milk, yogurt, and cheese. American's obtain the greatest amount of calcium from cheese.



(American Heart Association [AHA], 2015)

What is a Whole Grain verses a Refined Grain?

- **Whole grains** – contain the entire kernel, the bran, germ, and endosperm. This group includes whole-wheat flour and brown rice.
- **Refined grains** – have been milled, a process that removes the bran and germ. This group include pasta and flour.



United States Department of Agriculture (USDA), n.d.)

Eating Healthy Portions

- A portion is how much food you choose to eat at one time. On a food label, a serving size is the amount of food listed is based on a food's nutritional value.

Nutrition Facts

8 servings per container

Serving size 2/3 cup (55g)

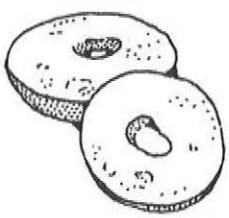
Amount per 2/3 cup	
Calories	**230**
% DV*	
12%	**Total Fat** 8g
5%	**Saturated Fat** 1g
	***Trans* Fat** 0g
0%	**Cholesterol** 0mg
7%	**Sodium** 160mg
12%	**Total Carbs** 37g
14%	**Dietary Fiber** 4g
	Sugars 1g
	Added Sugars 0g
	Protein 3g
10%	**Vitamin D** 2mcg
20%	**Calcium** 260mg
45%	**Iron** 8mg
5%	**Potassium** 235mg

* Footnote on Daily Values (DV) and calories reference to be inserted here.

(Test your diet IQ, 2010)

Fact or Fiction: Are All Carbohydrates Bad?

- Carbohydrates are available from all type of nutritious food. Carbohydrates are defined as simple or complex, depending how fast your body digests and absorbs the sugar.
- Complex carbohydrates and some simple carbohydrates provide vitamins, minerals, and fiber.
- Good food choices are complex carbohydrates with low calories such as a toaster size bagel, a slide of whole grain toast, and low fat yogurt.

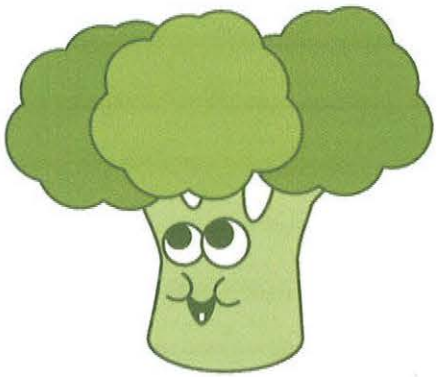


Toaster sized bagels only!

(Test your diet IQ, 2010)

Portion Sizes: A Good Rule to Follow

- A vegetable serving should be the size of a baseball or about one cup



(Test your diet IQ, 2010)

Portion Sizes: A Good Rule to Follow

- Fats and oils: Small portions, fats such as peanut butter should be the size of two tablespoon, which equals the size of a ping pong ball

(Test your diet IQ, 2010)

Portion Sizes: A Good Rule to Follow

- A Meat portion, such as a chicken breast should be the size of a deck of cards

- A starchy vegetable, such as a bake potato, should be no bigger than a computer mouse

(Test your diet IQ, 2010)

The facts About Water

- About 85% of our brain is made up off water
- Water reduces kidney stones
- When your body drinks a glass of icy cold water, it must work to warm the water up, and this process will burn a few extra calories!

A good rule of thumb is to drink eight 8-ounce glasses of water per day

(Test your diet IQ, 2010)

Dining out? Fast food? Watch those portions!

"Choose my plate" recommends these tip when dining out

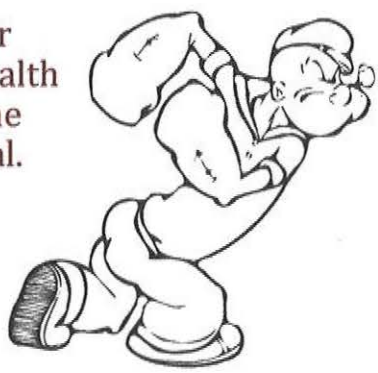
- Ask for whole-wheat bread for sandwiches
- Try to eat a salad packed with veggies
- Choose main dishes that include vegetables, such as stir fries,
- Choose small or at most a medium portions. Think of common items rather than ounces
  - Burritos no bigger than a **checkbook**, A desert, such as ice cream, should be no larger than the size of a **light bulb**, and piece of chocolate, no bigger than a package of **dental floss**

- Share a dish with a friend
- Resign from the "clean your plate club".

(United States Department of Agriculture [USDA], n.d.)

What is my BMI?

The Center of Disease Control in 2015 defines a Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. A high BMI can be an indicator of high body fatness. BMI can be used to screen for weight categories that may lead to health problems but it is not diagnostic of the body fatness or health of an individual.



(Center of Disease Control and Prevention [CDC], 2015)

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