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EFFECT OF TELEPHONE COUNSELING ON PHYSICAL ACTIVITY
AMONG OLDER ADULT CANCER SURVIVORS

By

ELLEN C. MULLEN

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Nursing

Barbara K. Haas, PhD., Committee Chair

College of Nursing and Health Sciences

The University of Texas at Tyler
November 2012

The University of Texas at Tyler

Tyler, Texas

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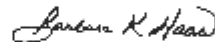
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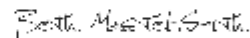
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Abstract

EFFECT OF TELEPHONE COUNSELING ON PHYSICAL ACTIVITY AMONG OLDER ADULT CANCER SURVIVORS

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The elderly population, especially those with cancer coupled with low health literacy, is at high risk for poor health outcomes. Telephone counseling has been shown to be effective in improving health behaviors among other populations, but it has not been studied for older adult cancer survivors. The purpose of this mixed methods study was to examine the effectiveness of telephone counseling on physical activity among older adult cancer survivors (n=50). The relationship between health literacy level and perceived changes in physical activity was assessed. Based on existing literature and Orem's Theory of Self-care, the following hypotheses were tested: H1: Telephone counseling intervention will improve physical activity of elderly cancer survivors. H2: Among

older adult cancer survivors, there will be an inverse relationship between health literacy level and improved physical activity. A one-way paired *t*-test was used to test pre- and post-intervention activity levels. The relationship between level of health literacy and improved physical activity was evaluated using Spearman's rho. Elderly cancer survivors' perceptions of the challenges, barriers, and beneficial elements of being physically active were assessed using content analysis. One-way paired *t*-test revealed no significant improvement in older cancer survivors' physical activity level after telephone counseling. Spearman's rho also revealed no significant improvement in the physical activity levels of older cancer survivors with limited health literacy. Although the quantitative data analysis did not reach significance, the open-ended questions revealed that the telephone counseling was beneficial. It provided education and information about physical activity in cancer recovery, provided motivation and promoted accountability, self-encouragement and sustainability.

Key Words: Physical Activity, Health Literacy, Older Cancer Survivors, Telephone Counseling

Chapter One. Overview of the Study

Although it is gratifying that cancer is becoming a chronic illness rather than the fatal diagnosis it once was considered, the natural outcome has been a proliferation of aging persons who are cancer survivors. Being a cancer survivor has physical, mental, emotional, and financial outcomes which must be managed for the rest of the cancer survivor's life. The advancement of technology and sophisticated treatment options have contributed greatly to the increased number of post-treatment cancer survivors (Parry, Morningstar, Kendall & Coleman, 2011). It is estimated that the number of cancer survivors exceeds 12 million in the U.S. (National Cancer Institute [NCI]/SEER 2009). An individual is considered a cancer survivor from the moment the cancer diagnosis is made through the balance of remaining life (National Cancer Institute of Cancer Survivorship, 2011). Mullan's (1985) seminal work in the 80's viewed cancer from a more optimistic lens and began the focus on actually surviving the disease. Mullan defined three phases of survivorship: acute, extended, and permanent. This study will focus on the extended phase of survivorship, the time when patients have concluded acute treatment and moved into a state of remission. This phase can include specific phases which are described as maintenance, consolidation, or watchful monitoring (Mullan, 1985). As cancer patients transition from the acute phase to the extended phase of survivorship, they are faced with many uncertainties including concerns about diet, physical activity, disease recurrence, fatigue, anxiety/depression, and a sense of loss related to decreased contact with and support from health care providers (Allen, Savadatti, & Levy, 2009; Geffen, Blaustein, Amir & Cohen, 2003; Kantsiper, et al., 2009).

The intervention for this study revolved around improvement of physical activity in cancer survivors. An important health behavior for the prevention and management of illnesses, acute or chronic, is physical activity (Courneya, 2009). However, physical activity is particularly challenging for elderly cancer survivors. Bellizzi, Rowland, Jeffery & McNeel (2005) reports that only 29.6% of cancer survivors met recommended physical activity guidelines and that only 10% in the study identified exercising as a desired behavior change. Cancer survivorship is associated with disability and poorer health in older adults; and older cancer survivors identify more mobility and instrumental activity of daily living limitations than non-cancer patients (Hewitt, Rowland & Yancik., 2003; Pinto, Trunzo, Reiss & Shiu, 2002). Older adult cancer survivors often have to deal with other chronic illnesses as well as the normative aging process (Penedo. Schneiderman, Dahn & Gonzalez, 2004). The effects of physical activity or exercise before, during, or after anti-cancer treatment have resulted in overall reduction in symptoms such as fatigue, depression, anxiety and distress (Battaglini, 2011). In addition, physical activity also has other positive outcomes such as improvement in aerobic capacity and overall muscle function. Practice initiatives should be geared toward improving health behaviors and outcomes in this vulnerable population including the benefits of increased physical activity.

Understanding the benefits of positive behaviors on health outcomes depends on a person's ability to consume health information. Older adult cancer survivors with low health literacy face difficulties in understanding health conditions in order to make sound decisions. They are challenged by the physical and mental issues of their chronic condition at the same time they struggle from a lack of understanding health information

to help manage their conditions (DeWalt, Boone & Pignone, 2007). Low health literacy can lead to failure to attend appointments and participate in health promotion programs, difficulty following medication instructions, problems in managing chronic illnesses, increased emergency room utilization and hospitalizations, higher mortality rates, and poor quality of life (Cho, Lee, Arozullah, & Crittenden, 2008; Shen et al., 2006; Sudore, et al., 2006). Chapter 2 provides an integrative review of the literature of health literacy challenges in the aging population who must integrate into their communities as they manage their health issues.

As the patients transition back to the community after dealing with the physical and psychological stress of cancer, they need continued support from clinicians. The end-of-treatment transition is often a source of distress (Ganz, et al., 2004; Stanton, 2006). Patients who no longer have frequent and focused support from the specialty providers find themselves on their own in health planning and decisions. Telephone counseling has been shown to be an effective means of improving health behaviors of adult populations with chronic illnesses such as coronary artery disease (Bambauer, et al., 2005; Dougherty, Thompson & Lewis, 2005), diabetes (Walker, et al., 2010), and cancer (Chan, et al., 2006; Kimman, et al, 2011; Lynch, Marcone & King, 2010; Marcus, et al., 2009; Salonen, et al., 2009). Telephone counseling has been used as part of a program to help community dwelling seniors understand and adopt health promoting behaviors such as increased physical activity (Lee et al., 2010). However, its effectiveness on older adult cancer survivors with limited health literacy has not been examined.

The purpose of this concurrent mixed methods study, utilizing a randomized controlled trial and open-ended questions, was to examine the effectiveness of telephone

counseling on physical activity of older adult cancer survivors. This study also examined the relationship between health literacy and change in physical activity in this population. Open-ended questions assessed participants' overall perspective of the intervention and its effect on their physical activity. A mixed methods design enhanced understanding of this problem by converging quantitative and qualitative data. A randomized controlled trial was selected to establish the cause and effect of the intervention. If effective, telephone intervention may be used to help initiate other health behavior changes and potentially replace face-to-face visits as a cost-effective way to improve the health and lives of people with cancer. It may also offer guidance to providers counseling those with limited health literacy. The result of this randomized controlled trial is reported in Chapter 3.

Orem's Self-Care Deficit Nursing Theory

This program of research focused on promoting health behavior and was guided by Orem's Self-Care Deficit Nursing Theory. The main concepts adapted from Orem's theory included self-care agency, self-care, and the nursing system. The concept of self-care agency refers to human ability for engaging in self-care. This ability is conditioned by age, developmental state, life experience, socio-cultural orientation, and available resources. These are considered conditioning factors that can affect the characteristics of nurse-patient relationships and interactions (Orem, 2001). Health literacy, demographic variables, cognitive ability, and health characteristics are conditioning factors that influence self-care practices.

The concept of self-care refers to practices that individuals initiate and perform to maintain life, stay healthy, continue personal development, and promote well-being (Orem, 2001). These include health promotion behaviors such as diet, physical activity,

medication adherence, and cancer screenings. In the randomized controlled study, physical activity represents self-care.

Lastly, the concept of nursing system describes how patients' self-care needs are met by nurses, the patient, or both. In the randomized controlled study, telephone counseling represented the nursing system. Orem's theory recognizes that normal life and human development warrant adjustments on the part of the person. Nurses help improve these adjustments by acting in a supportive-educative role. Appendix A depicts the relationships among the major concepts in Orem's theory and the study variables representing each concept.

Conceptual/Operational Definitions of Study Variables

Self-care agency is conceptually defined as the ability to engage in self-care. It is conditioned by demographic variables, experience, socio-cultural factors, and resources. Self-care agency was operationalized by the demographic variables including gender, race/ethnicity, education, family income, age, health literacy and cognitive ability. Health characteristics included cancer diagnosis, treatment received (chemotherapy, bio-immunotherapy and/or radiation), number of medications, smoking status, height, weight, and co-morbidities. Demographic variables, including health characteristics, were collected on a researcher-developed demographic data sheet (Appendix B). Cognitive ability was assessed by using the Short Portable Mental Status Questionnaire (SPMSQ) developed by Pfeiffer (1975) which is provided in Appendix C. Health literacy was assessed using the Newest Vital Sign (NVS) instrument. A copy of NVS is provided in Appendix D, and permission to administer the instrument via telephone is found in Appendix E.

Self-care practices included health behaviors which are conceptually defined as "those personal attributes such as beliefs, expectations, motives, values, perceptions, and other cognitive elements; personality characteristics, including affective and emotional states and traits; and overt behavior patterns, actions, and habits that relate to health maintenance, to health restoration, and to health improvement" (Gochman, 1988, p. 3). For the purpose of this study, self-care practices were operationalized as the level of physical activity reported by the subject. Physical activity is defined as any bodily movement produced by skeletal muscles; such movement results in an expenditure of energy (National Cancer Institute, n.d.). The Physical Activity Scale for the Elderly (PASE) was used to operationally define physical activity (Washburn, Smith, Jette & Janney, 1993). A copy of the instrument is provided in Appendix F, and the permission to use the scale from the New England Research Inc. is provided in Appendix G.

According to Orem (2001), nursing system is conceptually defined as the series and sequences of deliberate practical actions of nurses in coordination with the actions of their patients. There are three types of nursing systems; the one that was applied in this study is the supportive-educative system. This is the system in which a "patient's requirements for help are confined to decision making, behavior control, and acquiring knowledge and skills" (Orem, 2001, p. 354). The nursing system for this study was operationalized by a telephone counseling intervention, a service that is provided by telephone instead of face-to-face counseling or clinic counseling. In the reported study, a total of four weekly sessions were conducted. The initial session consisted of acknowledgement of subjects' participation and a brief synopsis about the study. In addition, the initial telephone counseling intervention included short and long-term

effects of cancer treatments, signs and symptoms of disease relapse, and discussion of physical activities and goal setting (Appendix H). A script of the telephone counseling (Appendix I) and checklist for subsequent telephone sessions (Appendix J) provided consistency and added rigor to the study. Subsequent telephone sessions covered physical activity goals, barriers to meeting goals, and potential solutions to barriers.

Two articles were prepared for the dissertation portfolio. The first article titled “Health Literacy Challenges in the Aging Population” which has been accepted for publication in Nursing Forum (Appendices K & L) provides an overview of the health literacy literature. The second article is a report of the findings of the randomized control trial testing a telephone counseling intervention on the physical activity levels of elderly cancer survivors. The intent of the telephone counseling intervention was to improve the behavior of older cancer survivors towards physical activity. Results of this study were prepared in manuscript form for submission for consideration of publication under the title, *Effect of Telephone Counseling on Physical Activity among Older Adult Cancer Survivors*. The target journal was Oncology Nursing Forum, and journal guidelines are provided (Appendix M). The following two chapters contain these articles and will be followed with a summary of findings and recommendations for future research.

Chapter 2. Health Literacy Challenges in the Aging Population

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Abstract

Purpose: The purpose of this paper is to discuss the impact of low health literacy and discuss interventions to minimize its effect on the elderly population.

Conclusion: Low health literacy combined with the physiological changes of aging put the elderly in a vulnerable position. It can negatively affect health behaviors and health outcomes and can lead to economic burden, not just on the individual, but on society as a whole.

Practice Implication: Clinicians need to recognize the indicators of low health literacy and utilize the available assessments tools. To improve clinician-patient communication, interventions must be tailored to the patients' literacy level.

Keywords: health literacy, elderly, older adults, communication

Health Literacy Challenges in the Aging Population

Health literacy is vital for individuals to manage their health effectively. The concept of health literacy was popularized by the National Adult Literacy Survey (NALS) in 1992, and the awareness increased in 2004 as a result of the Institute of Medicine's (IOM) published report on "Health Literacy – A Prescription to End Confusion". NALS revealed that out of 191 million American adults in 1992, 44 million were classified as functionally illiterate and 53.5 million adults were found to have marginally better functional literacy skills (Lee, Arozullah & Cho, 2004). The most recent survey conducted by the National Assessment of Adult Literacy (NAAL) in 2003 revealed 36% of American adults have limited health literacy, (Nielsen-Bohlman, Panzer & Kindig, 2004). Most notable is the rate among people over 65, with 59% scoring at the basic or below-basic level. Furthermore, the rate of hospitalization and use of emergency services among patients with limited health literacy is higher. In 2007, the reported annual cost of low health literacy was \$106 - \$236 billion (Vernon, 2007). IOM recommends that health care systems develop and support programs to minimize the negative effects of limited health literacy.

Definition of Health Literacy

Health literacy is variously defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (Ratzan & Parker, p. 32), "a constellation of skills, including the ability to perform basic reading and numerical tasks, required to function in the health care environment" (American Medical Association, 1999), or "the cognitive

and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health” (World Health Organization, 1998, p. 10). Nutbeam’s (2008) Model of Health Literacy further describes health literacy as consisting of three levels. Functional health literacy is the basic level of reading and writing skills needed to function effectively in every situation while communicative literacy is the advanced skills that an individual needs “to extract information, derive meaning from different forms of communication, and apply new information to changing circumstances” (Nutbeam, 2008, p. 263-264). The third level of the model is critical literacy which is the more advanced skills needed “to critically analyze information and use information to exert greater control over life events and situations“(p. 264).

Prevalence of Health Literacy

The highest prevalence of limited health literacy is in people with limited education, minority status, the elderly, and persons with lower cognitive ability (Sparks & Nussbaum, 2008). The most vulnerable group is the elderly population (age 65 and older) as the physiological and psychological changes of aging, along with social and cognitive issues, can affect literacy level (Sparks & Nussbaum, 2008). It is estimated that adults aged 65 will constitute 17% of the total U.S. population by the year 2020, thereby resulting in an assumed correlated increase in the prevalence of limited health literacy (Berger, et al., 2006). The impact of limited health literacy coupled with the increasing number of older adults makes it imperative that health care providers understand the negative impact of limited health literacy in older adults. This paper will discuss factors

associated with health literacy, health literacy screening tools, and interventions that can minimize the negative effect of health literacy.

Factors Influencing Health Literacy

Age and reading. Reading is a required skill to comprehend disease processes and health-related information. Gazmarian et al. (1999), in a cross-sectional study on Medicare-managed program enrollees, found a negative association between reading skills and age. Baker et al. (2000), in a cross-sectional study among community-dwelling elderly persons, reported functional health literacy was markedly lower among older age groups even after adjustments were made for other explanatory variables such as sex, race, ethnicity, and education. They explained that “age-related declines in cognitive function, even in the absence of dementing illness, may explain the association between increasing age and lower functional health literacy,” (Baker, et al., 2000, p. S371-S372). Visual acuity, chronic medical conditions, and health status did not explain low literacy levels among older adults. Cordasco and Franco (2009) also noted a direct relationship between health literacy and age in chronically-ill inpatients. In a study of 120 breast cancer patients, Brown et al. (2011) found education and numeracy were significantly associated with accurate graph interpretation. The authors suggest being able to read and interpret graphs enables patients to understand risks for breast cancer.

Socioeconomic status. A second factor associated with health literacy is lower socioeconomic status. Wiltshire, et al., (2009) found those with higher education levels were more likely to seek health information than those with less education and lower socio-economic status. The impact on health has been demonstrated by several investigators including lower vaccination rates, decreased access to preventive services,

and low participation in assessment risk of prostate cancer screening (Friedman, et al., 2009; Howard, Sentell, & Gazmararian, 2006; Ishikawa, Takeluchi & Yano, 2008; Meghana, 2009; Sudore, Mehta, Simonsick, et al., 2006). All investigators reported individuals without a high school education had worse physical and mental health and worse self-reported health status than those with higher education.

Health belief. The elderly rely heavily on communication media such as radio or television for sources of information regarding medication preferences, particularly in regard to brand name versus generic medications (Iosifescu, et al., (2008). They also tend to follow their physicians' preferences for particular brand names. Iosifescu, et al. (2008) examined the relationships among seniors' beliefs about generic drugs, health literacy, physician communication skills, and demographic variables. Non-white race, less education, lower income, and having Medicaid coverage were associated with negative beliefs about generic drugs (Iosifescu, et al., 2008). Black race and inadequate health literacy were persistently associated with negative views about generic drugs in the multivariate analysis.

Assessing for Health Literacy

Several instruments are available to screen for low health literacy levels. The two most common tools used for assessing health literacy are Test of Functional Health Literacy in Adults (TOFHLA) and Rapid Estimate of Adult Literacy in Medicine (REALM) which have been shown to be valid and reliable tools for use in older adults (Parker, Baker, Williams & Nurss, 2005; Arozullah, et al., 2007). The Newest Vital Sign (NVS) is the most recent test of health literacy and tests for general literacy, numeracy, and comprehension skills (Weiss, et al., 2005). It takes three minutes to administer, is

available in Spanish and English, and has been shown to be valid and reliable. Table 1 lists and describes screening instruments for health literacy.

Observing patients' behavior is another way to assess the possibility an individual may have limited health literacy. Cornett (2009) cited examples of such behaviors:

- making excuses such as “I don't have my eyeglasses”, or “I will read it at home” when asked to read or fill out forms
- missed appointments
- avoiding eye contact and avoiding answering questions
- asking family members to read or fill out forms for them
- referring to medications by color or shape

It is important that clinicians are aware of these behaviors or indicators of limited health literacy during assessment and before giving health instructions based on written materials.

Health literacy Impact on Health Behaviors and Outcomes

Health promotion and prevention. Several studies have demonstrated the impact of low health literacy on health promotion or prevention including colorectal screening, mammography and vaccination (Bennet et al., 2009; Miller et al., 2007; Peterson et al., 2008; Von Wagner et al., 2009). Von Wagner et al., (2009) documented lower health literacy was associated with less information-seeking, greater effort in reading, and less self-efficacy for colorectal cancer (CRC) screening. Peterson et al. (2007) found limited or inadequate health literacy was significantly associated with less knowledge about CRC and CRC screening. Similar findings were noted by Miller and colleagues (2007). Patients with limited health literacy were much less likely to be able

to name CRC screening tests. Bennet et al., (2009) identified outcome measures of self-rated health status and preventive health behaviors such as receipt of influenza vaccination, mammography, and dental care. Health-related print literacy, one component of health literacy measured by the NAAL “significantly mediates racial/ethnic (black vs. white) disparities in self-rated health status and receiving an influenza vaccination, as well as contributes to the education-related disparities in self-rated health status and utilization of influenza vaccination, mammography, and dental care services” (Bennett, et al., 2009).

Medical decision-making. Limited health literacy can affect a patient’s ability to participate in health care activities and make medical decisions, and it may negatively impact personal health management. It has also been associated with adverse health outcomes and behaviors (Gazmararian, Baker, Williams, et al., 1999). DeWalt, Boone, and Pignone (2007) examined the relationship between health literacy and trust, self-efficacy, and participation in medical decision-making in 268 adults with diabetes. Although they did not find a relationship between literacy and trust or self-efficacy, patients with low literacy had less desire to participate in medical decision-making and less diabetes-related knowledge.

Health care utilization. A number of identified studies examine the effects of health literacy on health utilization outcomes such as mortality rate, access to care, and hospital admissions. Persons with limited health literacy had a higher risk of death, even after adjusting for confounding variables such as demographics, socioeconomic status, co-morbidities, self-rated health, health-related behaviors, access to health care, and psychosocial status (Sudore, Yaffe, Satterfield, et al., 2006) Patients with limited health

literacy have difficulty managing their chronic illness and are also more likely to be hospitalized (Amalraj, Starkweather, Nguyen, & Naeim, 2009). Baker et al., (2002) reported individuals with inadequate literacy and marginal literacy have higher admission rate than those with adequate literacy. Limited health literacy may lead to decreased awareness about available programs or resources. Federman, et al., (2009) examined whether older adults' awareness of two major state and federal pharmaceutical cost-assistance programs was associated with the seniors' ability to access and process information. They found those with inadequate health literacy were less aware of programs, leading to poor utilization of such assistance programs.

Interventions for Health Literacy

A fairly recent trend in the health literacy literature focuses on interventions to improve health literacy. The focus of these interventions generally revolves around improving communication and patient education (1) by improving readability and comprehension of written health materials, (2) using multi-media forms and (3) training and education of health professionals.

Improving readability and comprehension. Health literacy research today is more geared towards interventions designed to provide solutions than describing the problem. Patient education is one of the areas of focus for intervention studies. The major finding is that older adults with chronic illnesses need to have their instructions tailored to their knowledge level or cognitive process. Elderly patients with chronic illness, such as congestive heart failure or cancer, often have difficulty understanding their medications or treatments due to the complexity of information and instructions (Morrow, Weiner, Steinley & Murray, 2007; Sparks & Nussbaum, 2008). As a result,

they stop taking their medications or refuse treatments. Morrow and colleagues conducted a randomized controlled trial in which they evaluated a pharmacist-based patient education intervention. They examined whether the subjects (community-dwelling older adults) preferred the pharmacist-based instructions (patient-centered instructions) over the standard pharmacy instruction. The patient-centered instructions had larger font (12-14 vs. 8-10 point), better readability scores (grade level = 7.4 vs. 9.3 using Flesch-Kincaid readability formula), and less words used (251 vs. 558 words). In addition, the patient-centered instructions also included verbal counseling and schema (identify medications → how to take the medication → possible outcomes). The standard instructions contained more information about drugs interactions and side effects. Participants with lower health literacy preferred the patient-centered instructions. When learning about adherence information, the patient-centered instructions were preferred while standard instructions were preferred for learning about drug interaction (Morrow, Weiner, Steinley & Murray, 2007)

Using multi-media forms. Smith, et al. (2005) tested a videotape intervention designed to improve self-management of heart failure. The study was conducted with pre-test and post-test questionnaires and re-hospitalization rates during a 60-day follow-up. The data indicated that subjects showed improvement in both their disease knowledge and health status, and none of the study participants were re-hospitalized during the follow-up period. Videotape education is effective among the elderly and those with poor literacy (Smith, et al., 2005). The use of an illustrated medication schedule is another intervention that is effective. Kripalani, et al., (2007) evaluated the use of an illustrated medication schedule (a “pill card”) that depicts a patient's daily medication regimen using

pill images and icons on individuals with limited health literacy. The results showed that patients with inadequate or marginal literacy skills, less than high school education, or cognitive impairment were most likely to refer to the card on a regular basis initially and at 3 months. In addition, most pill card users (92%) reported the tool as very easy to understand, and 94% found it helpful for remembering important medication information, such as the name, purpose, or time of administration.

As for verbal communication, the "Ask Me 3" program was found to be a practical tool that creates awareness and reinforces principles of clear health communication (Miller, et al, 2008). Participants in the program had inadequate to marginal health literacy and were required to attend 12 "Ask Me 3" program educational sessions. Participants were expected to ask health care professionals three questions. The overall finding indicates that after participating in the program, a significantly higher proportion of participants reported planning to or actively bringing a list of current medications when visiting the pharmacist.

Training and education of health professionals. Because routinely screening patients for health literacy in the clinic setting is not required, health care providers have no way of knowing in advance about their patients' literacy levels. Seligman et al. (2005) conducted a study to determine whether notifying physicians of their patients' limited health literacy affects physician behavior, physician satisfaction, or patients' efficacy. The results showed that the physicians in the intervention group were more likely than control group to use management strategies recommended for patients with limited health literacy. Surprisingly, however, the post visit self-efficacy score among patients remained the same. Regardless of the results, the study was worthwhile as it increased the

awareness of the need for a screening tool for health literacy in the clinic setting. Clinicians should also utilize the “teach back” method, which involves providing information to the patient and then asking the patient to explain it back to the health care professional. This process of verbalizing understanding helps reinforce patient comprehension. In their study of 408 patients with coronary heart disease, Kripalani, et al. (2008) used the “teach back” method to ensure participants’ understanding of the consent forms and the Health Insurance Portability and Accountability Act (HIPAA), demonstrating the feasibility of using “teach back” in research settings to assess participant comprehension prior to study enrollment.

Nursing Considerations and Practice Implications

Low health literacy presents a circular problem. In order to fix this problem, both the individual and health care provider must work together. Inadequate health literacy has been shown to lead to poor health outcomes, especially among the elderly as they already suffer from chronic illness and the physiological changes of aging. Therefore, it is necessary for healthcare providers to understand the factors associated with limited health literacy and learn what interventions are effective. Also it is important that clinicians consider using the health literacy screening tools. These tools are easy to use and most of them are quick to administer. If a clinician has advance knowledge that the patient has limited health literacy, instructions or education efforts can be tailored to the individual’s health literacy level which will improve clinician-patient communication.

Caring for older adults with chronic illness and low health literacy can be complicated. Poor clinician-patient communication can lead to poor quality care. Therefore, clinicians, patients, and caregivers must all take part in creating an

environment that fosters better communication. It is important that clinicians slow down and take the time to listen to patients' concerns. Clinicians should be careful using medical terms or jargons because patients may not understand them especially if they have limited health literacy. Furthermore, clinicians must consider age-related communication barriers such as presbyopia, presbycusis, and memory loss when providing patient education on older adults with limited health literacy. Nurses and other clinicians should develop partnership with other disciplines, institutions and organizations in developing easy-to-read educational brochures, clinic handouts, and consent documents. Health information materials written at a fifth grade level is preferable. The use of pictures in the written materials will enhance understanding and subsequent recall. It is important to construct and tailor communication in a systematic, understandable way for each patient. Clinicians should be mindful of teaching strategies, such as using variety of information formats, involving family members and utilizing the "teach back" method.

Older adults with low health literacy should be informed about available resources. It is imperative that patients have access to accurate health information from a variety of sources including their healthcare provider and the internet. Healthcare providers must be able to direct patients to credible websites. The American College of Physicians Foundation is a credible site where patients can find easy-to-understand information on how to manage their health. Local libraries are good resources as well, and some libraries offer assistance on how to use a computer and navigate online resources.

Conclusion

The literature provides valuable information about health literacy and its impact on the lives of older adults. Though there is some progress made in dealing with the impact of low health literacy, it still remains a major public health problem of the 21st century. It is known that having limited health literacy not only affects the individual person but also the health care system and the society as a whole. Therefore, it is imperative that clinicians have skills and knowledge in dealing with patients with limited health literacy. Research-based best practices must be considered and implemented in the practice setting. Clinicians must continue to find ways to improve patient-clinician communication through practice, education and research. Consideration of the patient's health literacy level and implementing appropriate interventions is a basic step in improving health outcomes for older adults.

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Chapter 3. Effect of Telephone Counseling on Physical Activity among
Older Adult Cancer Survivors

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Abstract

Purpose: To examine the effectiveness of telephone counseling on physical activity of older adult cancer survivors.

Methods: Concurrent mixed methods of a randomized clinical trial and open-ended questions with participants (n=50) randomly assigned to control and intervention group. The intervention group received four weekly telephone sessions, and the control group received written education information on physical activity.

Findings: One-way unmatched *t*-test of pre- and post-test scores revealed no significant improvement in older cancer survivors' physical activity level after four telephone counseling sessions. Spearman's rho revealed no significant relationship between physical activity in older cancer survivors and limited health literacy. The open-ended questions revealed that the telephone counseling was beneficial in providing information about physical activity and promoted accountability as well as self-management.

Conclusions: Cancer survivorship care requires continued support from health care professionals after completion of cancer treatment. Nurses can provide continued support via telephone counseling.

Implications for Nursing: Providing patients with written instructions is inadequate to promote healthy behaviors, especially in the older adult cancer survivors, because health literacy is a problem among the older population. Telephone counseling is one way to incorporate non-print media to facilitate learning and understanding of the importance of physical activity in the recovery from cancer treatments.

Knowledge Translation: 1. Telephone counseling is an effective means of improving health behaviors. 2. An important health behavior for the prevention and management of illnesses, acute or chronic, is physical activity. 3. Health literacy might impact cancer survivors' ability to understand the importance of health promotion after cancer treatment.

Effect of Telephone Counseling on Physical Activity among Older Adult Cancer Survivors

Overview

In the past fifty years, cancer has moved from a fatal diagnosis to a manageable chronic disease in many cases. The advancement of technology and development of new cancer treatments have contributed greatly to the increased number of post-treatment survivors (Parry, Morningstar, Kendall & Coleman, 2011). It is estimated that the number of cancer survivors exceeds 12 million in the U.S. (National Cancer Institute [NCI]/SEER 2009). An individual is considered a cancer survivor from the time of diagnosis through the remainder of life (National Cancer Institute of Cancer Survivorship, 2011). Mullan's (1985) seminal work defined three phases of survivorship: acute, extended and permanent. This study focused on the extended phase of survivorship, the time when patients reach remission after having concluded acute treatment. This phase can include maintenance, consolidation, or watchful monitoring (Mullan, 1985). As cancer patients transition from the acute phase to the extended phase of survivorship, they are faced with many uncertainties. Survivors are concerned about diet, physical activity, disease recurrence, fatigue, anxiety/depression, and a sense of loss related to decreased contact with and support from health care providers (Allen, Savadatti, & Levy, 2009; Geffen, Blaustein, Amir & Cohen, 2003; Kantsiper, et al., 2009).

An important health behavior for the prevention and management of acute or chronic illness is physical activity (Courneya, 2009). Physical activity is particularly challenging for elderly cancer survivors. Cancer survivorship is associated with

disability and poorer health in older adults and older cancer survivors identify more mobility and instrumental activity of daily living limitations than non-cancer patients (Hewitt, Rowland & Yancik., 2003; Pinto, Trunzo, Reiss & Shiu, 2002). Older adult cancer survivors with other chronic illnesses not only have to face normative aging processes, they also face the demands of managing multiple illnesses (Penedo, Schneiderman, Dahn & Gonzalez, 2004). Physical activity before, during or after anticancer treatment of patients with solid tumors and hematological malignancies has resulted in overall reduction in symptoms such as fatigue, depression, anxiety and distress (Battaglini, 2011). Physical activity also improves fitness parameters such as aerobic capacity and overall muscle function. Practice initiatives should be geared toward improving health behaviors and outcomes in this vulnerable population through physical activity.

Understanding the benefits of positive behaviors on health outcomes depends on a person's ability to consume health information. Older adult cancer survivors with low health literacy face difficulties in understanding health conditions in order to make sound decisions. Not only do they suffer from the physiological changes of aging, they lack understanding of health information to help manage their conditions (DeWalt, Boone & Pignone, 2007). Low health literacy can lead to failure to attend appointments, participate in health promotion programs, difficulty following medication instructions (Shen et al., 2006), missteps managing chronic illnesses, increased emergency room visits and hospitalizations, higher mortality rates, and poor quality of life (Cho, Lee, Arozullah, & Crittenden, 2008;; Sudore, et al., 2006).

A survey conducted by the National Assessment of Adult Literacy (NAAL) in 2003 revealed that 36% of American adults have limited health literacy (HL). Most notable is the rate among people over 65, with 59% scoring at the basic or below-basic levels (Kutner, Greenberg, Jin & Paulsen, 2006). Health literacy is defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (Ratzan & Parker, 2000, p. 32). In 2007, the reported annual cost of low health literacy is \$106 - \$236 billion annually (Vernon, 2007). Health literacy remains one of the priorities of *Healthy People 2020* as noted in Objective HC/HIT-1: *Improve the health literacy of the population*, and is a vital component of successful management of chronic diseases, including cancer (Healthy People 2020).

As patients transition back to the community after dealing with the physical and psychological stress of cancer, continued support from clinicians is needed. At the completion of cancer treatment, patients are often faced with the, “Now what?” question. The end-of-treatment transition is often a source of distress (Ganz, et al., 2004; Stanton, 2006). Patients who no longer have support from the specialty clinic are faced with many uncertainties as they find themselves on their own in health planning and decisions. Telephone counseling, one form of support from health care providers, has been examined as an effective means of improving health behaviors of adult populations with chronic illnesses such as coronary artery disease (Bambauer, et al., 2005; Dougherty, Thompson & Lewis, 2005), diabetes (Walker, et al., 2011), hypertension (Bosworth, et al., 2005), and cancer (Chan, et al., 2006; Kimman, et al, 2011; Lynch, Marcone & King, 2010; Marcus, et al., 2009; Salonen, et al., 2009). Telephone counseling has been used as

part of a program to help community dwelling seniors understand and adopt health promoting behaviors such as increased physical activity (Lee et al., 2010). The effectiveness of a 12-week home-based postal and telephone physical activity and nutrition program for seniors was evaluated. Paired t-test showed post-intervention walking for exercise/recreation an average gain of 27 minutes ($t = 136.58$; $p < .02$) per week for the intervention group whereas the control group showed an average drop of 5 minutes ($t = 85.49$; $p = .54$). Additionally, several studies examined the use of telephone counseling with older adults (Bosworth et al., 2004; Blixen, Bramstedt, Hammel, & Tilley, 2004; Castro, King & Brassington, 2001; Eakin, Lawler, Vandelanotte, & Owen, 2007; Lee, et al., 2010; Pariser, O’Hanlon, & Espinoza, 2005). These studies measured health outcomes, including stress, depression management, pain, and fatigue rather than health behaviors. Other authors have examined the effectiveness of telephone counseling on health behaviors (Chan, et al., 2007; Resnick, King, Riebe, & Ory, 2008; Wilcox, et al., 2006). These studies examined older adults’ knowledge and practice of preventive measures during the severe acute respiratory syndrome (SARS) epidemic (Chan, et al., 2006), physical activity in older adults (Resnick, et al., 2008), and diet habits and physical activity in older adults (Wilcox, et al., 2008). None of the studies focused on cancer survivors. The effectiveness of telephone counseling in increasing physical activity among older adult cancer survivors has not been examined. It is also unclear how telephone counseling affects those with varying levels of health literacy.

The purpose of this concurrent mixed methods study, utilizing a randomized controlled trial and open-ended questions was to examine the effectiveness of telephone counseling on physical activity of older adult cancer survivors. The study also examined

the relationship between health literacy and change in physical activity in older adult cancer survivors. Open-ended questions assessed participants' overall perspective of the intervention and their engagement in physical activity.

Theoretical Framework

Orem's Self-Care Deficit Nursing Theory (Orem, 2001) was used to guide this study which focused on promoting exercise after cancer treatment as a means of supporting the subjects' self-care needs. Orem's theory contains three nested sub-theories which are self-care agency, self-care, and the nursing system. Focusing on these sub-theories offers a way for nurses to know when care is needed and the extent and desired outcomes of that care. The concept of self-care agency refers to human ability for engaging in self-care. This ability is conditioned by age, developmental state, life experience, socio-cultural orientation, and available resources. These are considered conditioning factors that can affect the characteristics of nurse-patient relationships and interactions (Orem, 2001). Health literacy, demographic variables, cognitive ability, and health characteristics are conditioning factors that influence self-care practices.

The concept of self-care refers to practices that individuals initiate and perform to maintain life, stay healthy, continue personal development, and promote well-being (Orem, 2001). These include health promotion behaviors such as diet, physical activity, medication adherence, and cancer screenings. In the proposed study, physical activity represented self-care.

Lastly, the concept of nursing system describes how patients' self-care needs are met by nurses, the patient, or both. Orem's theory recognizes that normal life and human development warrant adjustments. Nurses help improve these adjustments by acting in a

supportive-educative role, represented by telephone counseling in the current study. Orem's theory has been used for decades as a basis for initiating health promotion activities aimed at returning the patient to the highest possible level of self-care (Bernier, 2002; Velsor-Friedrich, Pigott, & Srof, 2005).

Methods

Design

A mixed method design was selected to enhance understanding of this problem by converging quantitative and qualitative data. A randomized controlled trial was selected as a mean to establish cause and effect of the intervention. Open-ended questions were asked to help explain the health behavior changes. Orem's Self-care Deficit Nursing Theory (Appendix A) posits that actions within the nursing system can impact the process of self-care ability manifestations toward a goal based on improved self-care. Based on this theoretical premise and previous studies, the following hypotheses and research questions were tested: H1: Telephone counseling intervention will improve physical activity of older adult cancer survivors, and H2: Among older adult cancer survivors, there will be an inverse relationship between health literacy level and improved physical activity. RQ1. What are older adult cancer survivors' perceptions of the challenges, barriers, and resources needed to engage in physical activity? RQ2. What benefits do older adult cancer survivors report related to physical activity and telephone counseling during cancer recovery?

Sample

The sample for this study was cancer survivors. Inclusion criteria were (1) age 60 or above, (2) cancer diagnosis, (3) able to speak, write and read English, (4) corrected

vision and hearing, (5) telephone access, (6) post-treatment cancer survivors, (7) community dwelling, and (8) live in the United States. Exclusion criteria were (1) nursing home resident, (2) bedbound, and (3) moderate to severe cognitive impairment as measured by a score greater than 4 on the Short Portable Mental Status Questionnaire (SPMSQ), (Pfeiffer, 1975). Using G-Power 3.1 (Anderung, 2011), for an alpha level of .05, a power of .80, and moderate effect size of .50, a sample size of 51 participants per group was required. A moderate effect size was assumed based on previous telephone counseling for health promotion study by Bombardier, et al (2008). The researchers had a medium (0.5) effect size for their telephone counseling intervention.

Data collection

Following Institutional Review Board (IRB) approval from The University of Texas at Tyler, the principal investigator (PI) recruited and trained two registered nurses to assist with data collection and data entry. Training sessions included review of demographic survey, pre-test and post-test survey, and review of the telephone intervention. A second one-hour training session was dedicated to data entry.

Recruitment was conducted from October 2011 to September 2012. Flyers were distributed at a local church, community centers, and local organizations. Advertisement about the study was placed in *Senior News, Texas* which advertises to the Baby Boomer demographic and is distributed throughout Texas. The majority of participants lived in southeast Texas. Contact phone number and email address of the PI were included in all of the flyers. Interested participants were asked to contact the PI. If the participant agreed to be in the study, the PI or research staff screened the potential participants for eligibility.

Following consent, participants were randomized to the intervention or control group using coin flip. Each participant was assigned a unique identification number not related to name, telephone number, date of birth, or address. Completion of health literacy assessment, consent forms, demographic/health characteristics surveys, and the pre-test survey for physical activity were conducted in person or by phone. Upon receipt of the PASE pre-test survey and demographic survey, data were entered into SPSS 18.0 by research assistants and reviewed by the PI to ensure accuracy. The PASE post-test survey and open-ended questions were obtained by phone one week after the fourth telephone session. The responses to the open-ended questions were recorded and transcribed. Upon completion of the final survey and open-ended questionnaires, a thank you card with a \$10 gift card was mailed to each participant.

Study variables and measurement considerations are summarized in Table 1. An additional measure, The Newest Vital Sign (NVS), was used to measure health literacy. Self care was measured by the Physical Activity Scale for the Elderly (PASE). Both the NVS scale and PASE scale are discussed below.

Newest Vital Sign (NVS).

Health literacy was assessed using the Newest Vital Sign scale. It measures reading and quantitative skills, and it also includes a scenario with six follow-up questions based on the ice cream nutrition label (Weiss, et al., 2005). There is only one correct answer to each question on the tool. The tool is scored based on the number of correct items which can range from 0 – 6. Scores ≥ 4 indicates adequate health literacy while scores <4 indicate possible limited health literacy of the respondent (Weiss et al., 2005). Previous study has supported the NVS's reliability ($\alpha = .76$), and validity has

been established ($r = 0.59$, $P < .001$); NVS can be administered in approximately three minutes (Weiss et al., 2005). For older adults, it may take longer to administer, with times up to approximately 11 minutes reported (Patel, et al., 2011). The NVS is also found to be correlated with the S-TOFHLA ($r = 0.61$) as reported by Osborn and colleagues (2007) which lends concurrent validity support.

Physical Activity Scale for the Elderly (PASE).

The PASE was designed to assess activities common to the elderly population. It is a brief survey, easily administered (5 minutes) and scored, and can be performed by phone, mail, or in person (Washburn, Smith, Jette & Janney, 1993). The 10-item PASE contains six leisure time activity items scored on a 4-point scale with 0 = “never” and 3 = “always”, three dichotomous (yes/no) items that assess household activity, and one work-related question. If respondents answer ‘yes’ to questions, additional questions explore the activity in more depth. The scores are calculated from weight and frequency for each of the 12 types of activity. Responses to the first question about sitting activities are not scored, and item nine lists four activities resulting in the 12 types of activities. The scores are obtained by first determining the frequency value (hours per day in the one-week reporting period) for each activity. An activity time to hours per day conversion table is provided for each of 12 activities. The activity weight is then multiplied by the frequency for each item. The final score is obtained by summing the activity weight by the activity frequency products for all 12 items. The PASE scores range from zero to 400. Higher numbers reflect higher levels of activity.

Washburn and colleagues (1993) established the PASE’s reliability and construct validity in a random sample of community-dwelling older adults ($N = 222$) that were at

least 65 years of age. Test-retest reliability, assessed over a 3-7 week period, was 0.75 (95% CI = 0.69 – 0.80). Reliability for mail administration ($r = 0.84$) was higher than the telephone administration ($r = 0.68$). Convergent validity was established by correlating PASE scores with health status and physiologic measures. The PASE scores were positively associated with grip strength ($r = 0.37$), static balance ($r = 0.33$), and leg strength ($r = 0.25$). Convergent validity of was also reported by Washburn and Ficker, (1999) who found PASE scores were significantly associated ($p < 0.05$) with peak oxygen uptake ($r = 0.20$), systolic blood pressure ($r = -0.18$), and balance score ($r = 0.20$).

Intervention

The intervention for this study consisted of four-week telephone counseling sessions delivered one time per week. For those randomized to the intervention group, the initial telephone counseling session was conducted after the consent form and pre-test survey was completed. To assure consistency, the PI and RNs conducting the telephone counseling followed a standardized protocol and covered the same information using the “Script for Telephone Intervention on Physical Activity” developed by the PI (Appendices H & I). Each telephone session was entered in a telephone call log and reviewed by the PI weekly to ensure consistency in the frequency of calls. In addition, the PI observed two telephone counseling session with each of the RNs to ensure reliability of the delivery of the interview instrument. Previous studies noted behavioral changes at four, six, and twelve weeks and longer following telephone counseling (Castro, et al., 2001; Cinar, et al., 2010; Lee, et al., 2010). Frequency of calls in previous studies of elderly patients without cancer ranged from weekly (King, et al. 2002; Resnick,

et al., 2002) to monthly (Bennett, et al., 2009). In this study, four weekly telephone counseling sessions were conducted to encourage behavioral change in physical activity of older adult cancer survivors.

Calls were conducted at a mutually convenient time for the research staff and participant. Follow-up phone calls were made the next day for any missed sessions. To help build a therapeutic relationship, the same research staff person conducted the weekly telephone sessions with an individual participant. The initial telephone counseling session included an introduction to the study, discussions of long-term effects of cancer treatments on physical activity, benefits of physical activity, and examples of physical activity for each level (mild, moderate or high intensity). The initial phone call took 15-20 minutes and subsequent phone calls took approximately 10 minutes to complete. Emphasis was placed on gradual progression of exercise (short-term goals) with a long-term goal of 30 minutes or more of moderate intensity aerobic exercise five times per week. The physical activity recommendations followed the guidelines from the American College of Sports Medicine (ACSM), the Center for Disease Control and Prevention (CDC), and the National Institutes of Health (NIH). The physical activity checklists, script, and recommended guidelines were compiled in a binder distributed to research staff. The participant's preferred types of activity and anticipated barriers to exercise (e.g. pain, fatigue, and fear of falling) were explored. Potential solutions to barriers (e.g. taking pain medication 30 minutes before exercising) were discussed. The call ended with establishment of a short-term, individualized physical activity goal for the upcoming week. Participant goals, barriers, and potential solutions were documented.

Subsequent telephone sessions began with review of the physical activity goal set during the previous week. Positive reinforcement was provided. Challenges to meeting the goal and potential solutions were discussed. A revised physical activity goal was established prior to completing the call. A follow-up call one week after the fourth telephone counseling session was conducted to collect the post-test data and the qualitative data.

The control group did not receive any telephone counseling. Participants assigned to the control group were provided brochures from the American College of Sports Medicine (ACSM) regarding the benefits of physical activity for older adults and suggestions to increase daily physical activity. These brochures were available at no cost. While the control group was invited to ask questions at the time of recruitment which were fully answered, no further contact was made with the control group until the final data collection point.

Analysis

Quantitative data were entered into a database using SPSS 18.0 software. Descriptive statistics were used to describe the sample. Baseline data for the intervention and control groups were compared to determine equivalency between groups. Based on a continuous dependent variable, hypothesis one, which evaluates the effect of the telephone counseling intervention on physical activity, was assessed using a one-way paired *t*-test comparing the control group with the intervention group. Hypothesis two, which examined the relationship between level of health literacy and improved physical activity, was tested for differences between the health literacy levels. Since level of health literacy was categorized into three groups (high likelihood of limited literacy [0-1],

possibility of limited literacy [2-3], and adequate literacy [4-6]), differences were evaluated using Spearman's rho. Alpha levels for all analyses were .05.

Findings

Participants

A total of 55 participants were screened but only 50 met the inclusion criteria to participate in the study. All 50 participants were able to complete the study and all the participants in the intervention group participated in all 4 weekly intervention sessions. Participants were randomly assigned to the intervention ($n = 20$) or control group ($n = 30$). The majority of the participants were Caucasian ($n = 44$), mostly female ($n = 37$), with mean age of 69.3 (SD 8.03) for the control group, and 71.8 (SD 8.53) for the intervention group. Most participants had some college education and annual income ranged from \$15,000 to \$50,000. All participants were non-smokers, and the majority rated their health as "good". Assessment of health literacy level revealed only one participant had a high likelihood of limited literacy and 13 demonstrated possible limited literacy. There were no statistical differences between the two groups on any demographic characteristics. Demographic characteristics are summarized in Table 2.

Hypothesis and Research Question Findings

Hypothesis one, which predicted telephone counseling would improve physical activity of older cancer survivors, was not supported (Table 3). A one-way paired t -test indicated no difference between the pre-intervention ($M = 137.60$; $SD = 54.06$) and post intervention scores ($M = 137.50$, $SD = 65.94$) of the intervention group. The control group showed a follow-up mean score of ($M = 135.86$; $SD = 67.77$), which was lower

than the pre-test score ($M = 140.53$; $SD = 64.79$). The telephone intervention did not have an impact on physical activity levels using a telephone counseling intervention.

Hypothesis two predicted that participants with lower health literacy levels would have higher physical activity scores following telephone counseling. This hypothesis was not supported. The pre-test correlation coefficient using Spearman's rho was 0.972 and post-test was 0.962 (NS). Level of health literacy had no relationship to changes in activity levels.

There were four open-ended questions that were asked to the participants to help explore subjects' feelings about physical activity and the telephone counseling intervention during cancer recovery. Questions 1 to 3 asked older adult cancer survivors their perceptions of the challenges or barriers, resources needed to engage in physical activity, and their perceptions of physical activity in cancer recovery. The fourth question which explored the benefits of telephone counseling intervention on physical activity during cancer recovery was directed to the intervention group only. Responses were assessed using content analysis. Participants' responses were analyzed to look for recurrent themes. Inter-rater reliability was established by two coders. The major themes derived from the two open-ended questions reported as challenges and barriers to physical activity participation (Table 4), resources needed to overcome barriers (Table 5), benefits of physical activity during cancer recovery (Table 6), and benefits of telephone counseling during cancer recovery (Table 7).

In response to the first question, which asked participants about their challenges and barriers to participating in any physical activities, responses were classified into four major themes: physical, emotional, individual, and psychosocial characteristics. The

majority of participants identified physical limitations as their biggest challenge. The physical limitations were due to aging process, “I’m not as flexible as I used to”, co-morbidities, “I have arthritis and it hurts to exercise”, and treatment side effects and/or adverse effects, “Since chemotherapy my feet and hands are numb”. Emotional factors included fear, lack of motivation, and inability to adhere to exercise programs or goals. Individual characteristics included lack of time, inadequate space (housing), low interest, and lack of knowledge about long term effects of cancer treatments. Psychosocial factors included lack of social support and current events in life such as family death or family illness.

Participants were asked what resources or services older adult cancer survivors need to overcome challenges or barriers when participating in any physical activity (Table 5). The individuals who reported not having any barriers or challenges did not identify any need for resources or services. The ones who had barriers or challenges identified the need for financial support, instrumental support such as transportation or housing, health promotion programs such as nutrition and exercise programs, community or governmental support, and social support.

Participants were asked about their perceptions of physical activity in relation to cancer recovery. The majority of the participants view physical activity as beneficial in their recovery after cancer treatments (Table 6). Physical activity not only helped them physically but also mentally and spiritually. Some recognized physical activity promoted self-management and some mentioned the importance of having a social support. Social support not only provided them motivation but also the feeling of purpose.

The intervention group was asked about their perceptions regarding the benefits of the telephone counseling intervention. The majority of the participants provided positive feedback. The recurring themes derived from participants' responses about the telephone intervention are (1) motivation, "It motivated and reminded me that I can do more", "I'm glad I participated in it. You've got me going in the right direction, it definitely motivated me". (2) accountability, "You know exercise is good for you so instead of being lazy, you get up and do it", (3) educational or informative, "It points out the importance of exercise", "I learned a lot about physical activity after cancer", (4) self-encouragement, "I've learned to set up my goals for the next week", "I increased my activity each week", (5) and sustainability in regards to their level of activity, "I plan to continue riding my bike every morning even after you stop calling", "I'm not that motivated before, this really got me to do some significant amount of arm exercises and I plan to continue it". Negative responses were related to the lack of physical presence. Two participants commented that the study "would have been better if there is a face to face interaction" and that the researcher "should have physical presence of some sort to fully equate" what the study is about. Overall, 18 out of the 20 participants provided positive feedback about the telephone intervention.

Discussion

Sample:

The elderly population is at risk for limited health literacy (Sparks & Nussbaum, 2008). However, the sample in this study did not support this previous finding. The sample consisted of highly educated individuals, and only 28% had a possibility of limited health literacy. The sample lacks diversity as mostly were Caucasian; almost 90%

had some college or college degrees. Limited literacy is prevalent in other races, especially minorities (Sparks & Nussbaum, 2008). High literacy rates and the high educational achievement of the sample may explain why hypothesis two was not supported. The average weight of the participants suggests that the participants are not overweight, all are non-smokers, and the majority describe their health as “good”. These data suggest that participants are health conscious and probably were already near their pre-treatment physical activity level. Therefore, significant change in activity levels would not be expected. Social support plays a pivotal role in patients’ recovery from cancer (Kroenke, et al., 2006). In this study, 70% of the sample lives with someone. Supportive social environment and/or support from family have been shown to increase maintenance of behavior change (Kahn, et al., 2002). Participants in this study identified support from their spouses or friends was beneficial because it provided them motivation and encouragement. This also might have an effect on why hypothesis one is not supported regarding increasing activity levels as a result of the telephone intervention. Since there was no limitation on the extent of the remission status of the participants, it might be possible that participants who were in remission longer might have already been near or at their pre-treatment activity level.

Physical Activity in Elderly Cancer Survivors

Participants in the intervention group stated that the telephone counseling on physical activity motivated them and provided important information about the benefits of physical activity. However, their post-test scores did not demonstrate that they changed their behavior towards physical activity. Several explanations can be provided for why the participants’ scores did not improve. There is evidence in literature that

some health related behaviors such as diet or smoking improve after a cancer diagnosis but physical activity reduces significantly (Blanchard, et al., 2003; McTiernan, et al., 2004). The literature suggests that the decline in the engagement in physical activity of cancer survivors might be related to treatment side effects such as fatigue, pain, decreased lung capacity, decreased cardiac function, and poor nutrition (Wolin, Ruiz, Tuchman, & Lucia, 2010). Similar findings were identified in this study. Participants identified cancer treatments effects such as fatigue, neuropathy, and dyspnea related to pulmonary fibrosis, as barriers to participation in physical activity. Bellizzi, Rowland, Jeffery & McNeel (2005) found that only 10% of cancer survivors in their study identified exercising as a desired behavior change. One of the identified challenges or barriers to physical activity in this study is that participants did not see exercise as a desired behavior change because “exercise is boring” and “not interesting”.

Another explanation for the non-significant finding might be related to the instrument used to measure physical activity. PASE questionnaire only assesses the activity in the last seven days. The participants might have increased their activities during the first, second or third week of phone sessions, and the PASE questionnaire failed to capture these changes.

Environmental factors might have prevented the participants from exercising. For example, a participant might not have been able to engage in daily walks due to weather. In addition, life events may have limited their activities. A couple of participants in the intervention group went on vacation for a week and were not able to do their exercises.

Death in the family or illness is another life event that prevented the participants from performing their exercise routines. In studies involving elderly participants, health

issues of family and friends cannot be anticipated or ignored. Older adult cancer survivors often have to deal with other chronic illnesses (Penedo, Schneiderman, Dahn & Gonzalez, 2004). In this study, 66% of the participants have other chronic illness other than cancer. The participants mentioned that their emphysema, arthritis, and chronic pain limited their ability to engage in physical activity. Though the quantitative data did not support the improvement of physical activity as a result of a telephone counseling intervention, the qualitative data provided support that telephone counseling is an effective tool in improving participants' health behavior relating to physical activity. Participants reported incorporating exercise into their daily routines and planned to continue exercising even after the telephone intervention. The quantitative finding reveals that there was no change in the post-test score for the intervention group. This finding suggests that the telephone intervention might have prevented the decline on the participants' level of activity which is what did occur in the control group who had not counseling.

Health Literacy Impact on Physical Activity in Elderly Cancer Survivors

The non-significant correlation between health literacy and physical activity scores has several possible explanations. First, the lack of significant findings in the current study might be explained by the fact that the participants are well-educated with a majority of them having some college education indicating a lack of sample diversity. Over 70% of the participants had no health literacy limitation which was not consistent with the reported population norm (Kutner, Greenberg, Jin & Paulsen, 2006). The sample does not appear to be representative of the population group with limited health literacy (i.e. minority groups). Secondly, it is possible that current health literacy

assessment tools are unable to adequately measure literacy in this content area. In addition, the Newest Vital Sign was administered via telephone. The reliability and validity of the Newest Vital Sign being administered via phone has not been established. Finally, the small number of participants with limited literacy made it difficult to compare among the two groups. A larger sample is warranted to be able to test the correlation.

Strengths and Limitations

The use of a mixed method design, with both quantitative and qualitative data, is a strength of this study. The key feature of mixed methods research is its methodological pluralism. In this study, the qualitative data helped explain the non-significant findings in the quantitative analyses. An additional study strength is the random assignment of participants to groups which helped minimize threats to validity. This study is limited by the use of self-report data which are subjective and pose a threat to study validity. Another limitation is the use of convenience sampling and the small sample size, which limits generalizing the findings to similar groups.

Nursing Implications: Conclusions and Recommendations

Cancer is now considered a chronic disease. The increased number of cancer survivors is because of better identification of risk factors, earlier diagnosis, new technologies, and improved treatments of cancer (Phillips & Currow, 2010). Many cancer survivors, especially the older adult cancer survivors, are living with chronic illnesses and long term disabilities. Prolonging the lives of chronically ill persons can lead to increased burden, not just on the individual and caregivers, but also on the health care system. The aging chronically ill population will require ongoing care and support which

will consume time, energy and resources. Evidence suggests that physical activity improves the quality of life and physical functioning of cancer survivors (Courneya, 2009; Courneya, 2003; Courneya, et al., 2003). Nurses play a pivotal role in motivating patients to stay active after cancer treatments. Nurses must be mindful of patients' literacy level when developing and providing them with written educational health information. The standard of care today when discharging patients is to provide them with written instructions. However, this might not be an effective means of ensuring that patients can or will follow the instructions.

Nurses must consider telephone counseling as a method of promoting healthy behaviors, especially in the older adult cancer survivors. Providing patients with written instructions is not enough, because health literacy is also a problem among the older population. It is important to incorporate non-print media to facilitate learning and understanding of the importance of physical activity in the recovery from cancer treatments.

Living with chronic illness does not have to result in lowered quality of life or exhaustion of resources. Nurses who encourage self-care in elders can pave the way for healthy aging by persons who engage in managing and improving their own health. Research that explores nurse partnerships with aging clients can be the catalyst to the increasing concern about the future of healthcare and the healthy aging that every older person wants and deserves.

Table 1. Study Variables, Associated Measures, and Timing of Measures

Theoretical Concept	Study Variables	Description	Associated Measures	Timing of Measures
Self-Care Abilities	Descriptive: Demographic Variables	Age, gender, race, education, income	PI-designed demographic sheet	Baseline
	Health characteristics	cancer diagnosis, treatment received (chemotherapy, bioimmunotherapy or radiation), months since last treatment, and comorbidities, height, weight, smoking status, number of medications		
	Health Literacy	The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions	Newest Vital Sign (NVS)	Baseline
Self-Care	Physical Activity	Physical activity is any bodily movement produced by skeletal muscles; such movement results in an expenditure of energy.	Physical Activity Scale for Elderly (PASE).	Baseline and 1 week after the last telephone counseling session
Nursing System	Telephone counseling	Support provided by telephone instead of face-to-face counseling.	Number of calls made	Weekly calls X 4 beginning one week after baseline data is collected

Table 2. Demographic Characteristics of Participants ($N = 50$)

Patient Characteristics	n	%
Age		
Control: Mean = 69.3 SD = 8.03	30	60
Intervention: Mean = 71.8 SD = 8.53	20	40
Height		
Control: Mean = 64.93 SD = 4.67	30	60
Intervention: Mean = 65.75 SD = 4.18	20	40
Weight		
Control: Mean = 164.83 SD = 33.63	30	60
Intervention: Mean = 166.70 SD = 33.34	20	40
NVS		
Limited	1	2
Possible limitation	13	26
No limitation	36	72
Gender		
Female	37	74
Male	13	26
Race		
Caucasian	44	88
Black/African-American	3	6
Asian/Oriental or Pacific Islander	3	6
Ethnicity		
Hispanic	1	2
Non-Hispanic	49	98
Highest Grade Completed		
Some High School	1	2
High School Graduate	5	10
Some College	17	34
College Graduate	14	28
Doctorate or Post-graduate	13	26
Income Level (Annual)		
<\$15,000	5	10
\$15,000-30,000	12	24
\$31,000-50,000	13	26
\$51,000-75,000	7	14
>75,000	10	20
No response	2	4
Living with Anyone		
Yes	35	70
No	14	28
No response	1	2

Table 2. Demographic Characteristics of Participants (Continued)

Cancer diagnosis		
Lymphoma	6	12
Myeloma	2	4
Leukemia	1	2
Breast	20	40
Colon	4	8
Prostate	2	4
Bone	1	2
Lung	1	2
Other	13	26
Type of treatment		
Chemotherapy	19	38
Radiation therapy	8	16
Immunotherapy	2	4
Combination	21	42
Self-rated health		
Excellent	15	30
Good	29	58
Fair	6	12
Other Chronic Illness		
Yes	33	66
No	17	34
Smoker		
Yes	0	0
No	50	100
Number of Medications		
None	7	14
1-5	27	54
6-10	15	30
>10	1	2

Table 3. PASE scores Pre and Post Intervention

Group Assignment	Pre-Test Mean (SD)	Post-Test Mean (SD)	<i>t</i>-test	Significance
Intervention (<i>n</i> = 20)	137.60 (54.06)	137.50 (65.94)	.868	Not significant
Control (<i>n</i> = 30)	140.53 (64.79)	135.86 (67.77)	.933	Not significant

Table 4. Challenges and Barriers to Physical Activity Participation

<u>Challenges</u>
<i>Physical:</i>
- -Aging process
Lack of flexibility
Age
Female problems
Joint stiffness
Inability to concentrate, decrease attention span
Lack of strength
--Comorbidities
Emphysema
Arthritis
Migraine headache
Chronic pain—knee, hip, back, joints
--Treatment side effects/adverse effects
Fatigue, Lack of energy
Neuropathy
Inability to sweat
Pulmonary fibrosis due to radiation, dyspnea
<i>Emotional:</i>
--Fear
Fear of falling
Fear of dropping objects to head
--Lack of will power, motivation
--Inability to adhere to exercise program or goals due to anxiety, worries
<i>Individual Characteristics:</i>
--lack of time
--Environment: living arrangement
--Activity preference—exercise is boring; exercise is not interesting
--Lack of knowledge about the long term effects of treatment or cancer therapy
<i>Psychosocial:</i>
--lack of social support—exercise buddy, family support
--Events in life—death in the family, acute illness

Table 5. Resources Needed to Overcome Barriers to Engagement in Physical Activity

Resources or services needed by participants:

Financial support

- “insurance to pay for services such as membership to YMCA.”
- “monetary support needed to pay for massage therapy especially when it’s a part of my recovery”
- “somebody with a big check book that can give me money and I can just go exercise.”

Instrumental:

- transportation-“I need a driver. I can’t see well anymore. I will not drive, I have a license but I don’t drive especially at night. Friendswood does not have buses. We need public transportation.”
- housing-“I need more space in my house so I can do more things.”

Health Promotion Programs:

Nutrition programs:

- “Healthy diet, a dietician who can tell me and help me become a more healthier person.”
- “need more sleep and better nutrition, so I can feel good to exercise.”
- “I need to return to a healthier diet and begin exercising again.”

Exercise programs:

- tailored programs-“I wish there is a program that provides flexibility exercise.”

Community and Governmental support:

Monetary-“I think government programs should have some programs for others that need the physical and monetary assistance- such as gyms or exercise machines.”

Physical training-“get training. We can get the government to offer more things like that so you don’t have to wait a year to get into one class. There are classes offered but only in one area but not a lot of people can get there, too far.”

Table 5. (Continued)

Social support-

“We need to get back to society look. So I would like to have a “make up” program or make-over programs offered even if just 1 hr or something like that.”

“There’s gotta be a way to find out how can we get this information that actually besides from getting that list of people or places to call for help or whatever maybe, because a lot of patients won’t do that, and I speak for myself too. I think a person, a phone call from a person or maybe even a visit to pitch things like this who are in recovery. If there’s one thing that we are learning is what to do with us who are in recovery.”

--“Well, I find that as I get older I sleep few more hours and so getting up early and going to exercise in the morning is not part of my my lifestyle. The YMCA helps me keep track of how much I exercise there, that’s the reason I think that the idea of phoning people that don’t have that advantage or husband that reminds them.”

--“The fact that I talk to you and you suggest things makes me want to go out and do things. So I think having someone to be there helps a lot. I don’t know anything that’s offered by government, no programs. I’m not familiar with that.”

Table 6. Benefits of Physical activity During Cancer Recovery

<p><u>Physical</u></p> <p>“Better activity the better health.”</p> <p>“Makes one stronger, strengthen my lung muscles to use oxygen more efficiently”</p> <p>“ Recover faster.”</p> <p>“Very important, when I exercise, I feel like I’m cleaning myself from toxins. It makes me feel better after sweating”</p> <p>“Builds stamina.”</p> <p>“Exercise makes you recover quicker and you have to be physically active.”</p> <p>“Lessens pain.”</p> <p>“Gets your strength back and also helps reduce some complications.”</p> <p>“Very important, not just for physical well being, but for your mental health.”</p> <p>“Exercise is very important because it makes my body, bones, and muscles strong. Exercise definitely helps in the recovery.”</p> <p>“Fatigue was the main problem but I recovered from it. I walked the dogs for exercise, gradually increasing the distance. As my cancer was colorectal, I could not do aerobics.”</p>
<p><u>Mental/Spiritual</u></p> <p>“Keep your minds off things, keeps your mind busy.”</p> <p>“Stimulates positive brain chemicals that help counteract the normal negative emotions of depressions and lethargy.”</p> <p>“It is very important; it should be part of your curriculum all the way through when God knocks on the door and take you.”</p> <p>“It is needed for good health and stress relief.”</p> <p>“If you could do it, it reduces the risk of developing depression. And it just gives you a better well being.”</p>
<p><u>Social Support</u></p> <p>“It’s a chore for me. I do these things with my family and that helps. It gives me motivation.”</p> <p>“It is mentally and physically difficult after surgery and during treatment, so regular encouragement from a support person or group is highly recommended to undertake and to keep up on active physical routine.”</p> <p>“Well, my cancer was a very small breast cancer to which they caught very early. So my treatment was not so traumatic. But I feel that anyone can or not needs exercise and I have the advantage that my husband hassles me just a little bit about it.”</p>

Table 6. (Continued)

Self-management

“You better get up and move. I just started moving and I was gonna puke. I just turned my head and keep going and it wasn’t that bad. Exercise is very important. It takes your mind off of it. I did not push myself too hard, but didn’t stop.”

“When I was on chemo I was so weak, then when I was off chemo it was hard to move around but I forced myself to walk. I went to my grandson’s baseball games even though I didn’t want to get out of bed. It is necessary, you got to move around a little bit.”

“It’s important particularly if not feeling well. It’s important to try it, making self get up and do it...such as taking a brisk walk, go to gym, and not just sit on chair.”

“It’s great. It gave me some goals to get out there to be able to walk efficiently and get back to running. First half mile then 3-4 miles. It gave me something to strive for and as I accomplished I felt better and help recover as well.”

“I think it’s absolutely positively, completely essential. I had 28 lymph nodes removed from under my left arm and I do not have lymphedema, which is really remarkable. I do it because I work on it and I keep trying and keep my arm elevated every possible minute. I’m talking on the phone now, sitting on the couch, I have my arm up on the couch holding the phone. I keep lymph fluids from going down that arm. All exercise is important. I’m 84 and I want to compete, be better than the 60 year olds.”

“I’ve been active all my life and when my chemotherapy was finished it made it easier to continue what I was doing. I’m just trying to pick it up a notch as far as the distance in my walk or distances that I pedal on the bicycle and to build stamina.”

“I think it’s important. My doctor had told me that I had to do water aerobics to help strengthen my muscles, it won’t be hard on them like walking or jogging. So I do the recumbent bike and I do the water aerobics and I lost 35 lbs in the last 8 months which has helped my joints and bones. I improved my level of endurance this last year and I wish I had done it sooner.”

“I’m able to take care of many different things that I wouldn’t be able to had I not done my physical activities.”

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Chapter 4. Summary and Conclusion

Summary of the Program of Research

This dissertation reports on the introductory work conducted in a program of research aimed at improving the health of older adult cancer survivors using Orem's Self Care Deficit Nursing Theory. The theory guided the study focused on promoting exercise after cancer treatment. This research is of interest because cancer survivors, most especially older adults, experience significant physical and psychological morbidity. Not only do they suffer from the burden of chronic illnesses, they also have to endure the invasion of the cancer itself and the effects of cancer treatments. The number of older cancer survivors is expected to grow. It is estimated that the number of cancer survivors exceeds 12 million in the U.S. (National Cancer Institute [NCI]/SEER 2009).

Survivorship care is an essential element of all cancer care, and ongoing monitoring throughout the survivor's life is essential in order to optimize their outcomes. According to Phillips & Currow (2010) "survivors require ongoing care that is well co-ordinated, focuses on prevention, provides ongoing surveillance whilst minimizing and managing the long term effects of cancer treatment and other co-morbidities" (p. 49). An important health behavior for the prevention and management of illnesses, acute or chronic, is physical activity (Courneya, 2009). Physical activity is particularly challenging for the elderly cancer survivors. Care of cancer survivors will become a growing chronic care management issue over the next decade with nursing assuming a greater role in ensuring positive health outcomes for this growing group.

In addition to the burden of increasing chronically-ill elderly, nurse will be faced with the challenges of improving the health literacy of an aging population. The rate of

hospitalization and use of emergency services among patients with limited health literacy is higher than for more health literate groups. In 2007, the reported annual cost of low health literacy was \$106 - \$236 billion (Vernon, 2007). Improving health literacy will become a national imperative for professional nursing in the immediate future.

Health literacy includes an understanding of prevention, management, and recovery from illness and injury. The literature suggests that cancer survivors do not go back to their pre-treatment physical activity level. This leads to the question of whether health literacy level has an impact on cancer survivors' health behaviors towards physical activity. The standard care for discharging patients back to the community is providing them with written education materials. Manuscript 1 discussed the health literacy challenges in the aging population. It should be noted that in the most recent survey conducted by the National Assessment of Adult Literacy (NAAL) in 2003 revealed 36% of American adults have limited health literacy, (Nielsen-Bohlman, Panzer & Kindig, 2004). Most notable is the rate among people over 65, with 59% scoring at the basic or below-basic level. The fact that health literacy can impact the health outcomes of cancer survivors created an imperative for its inclusion in the research designed to recruit older adult cancer survivors into the study and to address whether health literacy was related to their adoption of physical activity improvement behaviors..

A fairly recent trend in the health literacy literature focuses on interventions to improve health literacy. The focus of these interventions generally revolves around improving communication and patient education by the following actions: (1) improving readability and comprehension of written health materials, (2) using multi-media forms, and (3) training and education of health professionals. The telephone counseling

intervention on physical activity in this study was developed to address health literacy concerns. Patients are often handed written materials upon discharge without consideration of their literacy levels. According to Mayer (2001), “learners can better understand an explanation when it is presented in words and pictures than when it is presented in words alone” (p. 1). Though the telephone counseling does not include pictures, it was presented verbally at a fifth grade level. Verbal communication creates awareness and reinforces principles of clear health communication (Miller, et al, 2007). The telephone intervention was designed to facilitate learning and enhance older cancer survivors understanding of the importance of physical activity in the recovery from cancer treatments.

The article titled *Effect of Telephone Counseling on Physical Activity among Older Adult Cancer Survivor* included an assessment of a health literacy assessment. The telephone intervention was an alternative method of patient education and communication. The study was designed to test the effect of telephone counseling on physical activity among older cancer survivors. It also examined whether health literacy level has an impact on the survivors’ health behavior towards physical activity. Open-ended questions explored participants’ overall perspective of the intervention and physical activity.

Fifty community dwelling older cancer survivors of varying health literacy levels and formal education completed all requirements for inclusion in the final data analysis. The result from the quantitative analysis revealed no significant difference between the control and intervention group regarding physical activity improvement. However, when comparing the mean of the pre-test and post-test among the two groups, the intervention

group maintained the same level of activity whereas the control group showed a decreased in physical activity levels over the four weeks. This finding suggests that the telephone intervention may have prevented the decline in participants' physical activity. In terms of health literacy level and its impact on physical activity, the finding was not significant. This can be explained by the fact that the sample size was small, and the participants were highly educated. The qualitative analysis reveals that the participants found the telephone counseling very helpful, educational, and informative. It provided motivation and made them report feeling more accountable for their health. Overall, the results of the study support developing interventions for older cancer survivors which include verbal communication via telephone counseling. This is particularly helpful in the older adult population as they are among the groups with limited health literacy. Furthermore, many older adults live on fixed income, may not have means to participate in exercise programs or go for regular follow ups. Telephone counseling has been proven to be an effective method in changing health behaviors in the past and is also an inexpensive tool. Researchers should develop interventions that utilize telephone counseling among individuals with limited health literacy.

Next Steps in the Program of Research

The findings of the intervention study suggest that there is a need for continued research in the survivorship care of older adult cancer survivors. The results of the intervention study should be presented to lay and professional audiences. Future studies will be geared to five foci: 1) focus on a more diverse population and individuals with known limited literacy; 2) using another tool that measures physical activity of the older adult population; 3) longitudinal study to allow for behavioral change; 4) studies that

combines telephone intervention with multi-media interventions (videotapes, written educational materials with pictures, etc.) designed to improve older adult cancer survivors' behaviors on health prevention and health promotion; and 5) combining subjective and objective measurements of outcomes. Following publications and presentations of the research findings, external grant funding will be sought to further the program of research.

Conclusion

The telephone intervention study provides guidance on future research that looks at changing health behaviors. It is known that cancer survivors do not return to their pre-treatment physical activity level after cancer treatment. Cancer treatment has effect on the physical and psychological well-being of individuals. Nurses and other health care professionals should recognize that cancer survivors need continued care and guidance after cancer treatment. Intervention studies should focus on empowering cancer survivors to become engaged in self-care. It is also important that nurses and health care professionals consider patients' health literacy level when developing and providing education materials, especially among the older adult cancer survivors. Furthermore, continued support should be provided to cancer survivors, not just through follow up clinic visits, but also through co-ordinated telephone counseling. The future health of the growing aging population will be tied to the engagement of professional nurses in finding solutions to self care management. Studies which seek ways to improve health outcomes while considering the specific needs of elderly consumers will lead the way to improved health and quality of life for the nation's senior population.

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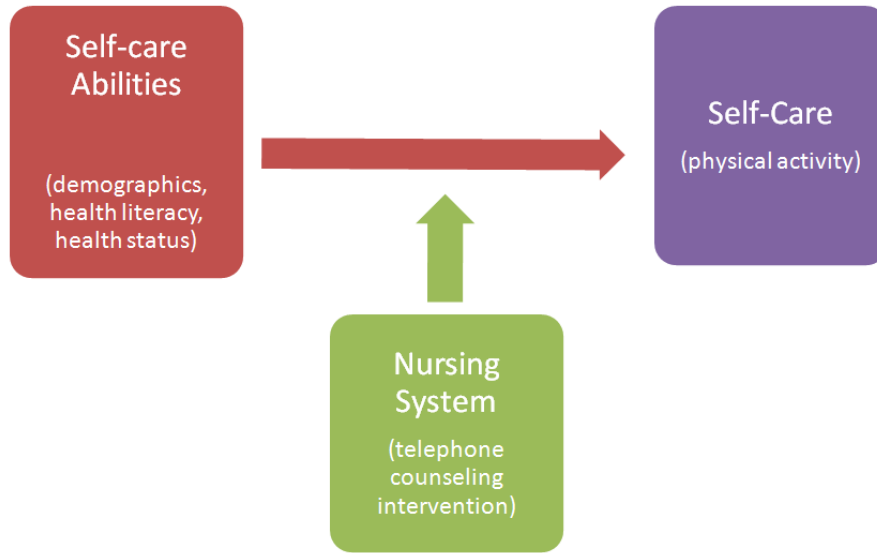
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Appendix A. Orem's Self-care Deficit Nursing Theory

Concepts Application of Orem's Self-care Deficit Nursing Theory



Appendix B. Demographic Instrument

Demographic Data

Personal Information

1. What is your age? ____
2. What is your gender?
 Male
 Female
3. Which of the following describes your race? (select one item)
 Caucasian
 Black/African-American
 American Indian or Alaskan Native
 Asian/Oriental or Pacific Islander

Which of the following describes your ethnicity?

- Hispanic
 Non-Hispanic
4. What is the highest grade you completed in school? (select one item)
 8th grade or less
 Some high school
 High school graduate
 Some college
 College graduate
 Doctorate or any post-graduate
 5. Do you currently live with anyone? (Select one)
 Yes
 No
 6. What is your income?
 Less than \$15,000
 \$15,000-\$30,000
 \$31,000-\$50,000
 \$51,000-\$75,000
 >\$75,000

Appendix B (Continued)

Health Assessment

7. What is your cancer diagnosis? Select one.

Lymphoma Myeloma Leukemia Breast Colon
 Prostate Bone Thyroid Lung Other: Specify

8. What type of treatment(s) did you receive? Select all that apply.

Chemotherapy Radiation Immunotherapy Combination

9. In general, would you say your health is:

Excellent Good Fair Poor

10. What is your height?_____ Weight?_____

11. Do you have any other chronic illnesses?

yes no

If yes, specify.

hypertension(high blood pressure)
 diabetes(sugar in the blood)
 arthritis(joint swelling and pain)
 osteoporosis(bone loss)
 hypothyroidism
 heart failure
 stroke
 asthma or any breathing problem
 kidney failure
 other (indicate)_____

12. Do you currently smoke?

yes no

13. How many medications do you currently take?

none 1-5 6-10 more than 10

Appendix C. Short Portable Mental Status Questionnaire (SPMSQ)

SHORT PORTABLE MENTAL STATUS QUESTIONNAIRE

Patient's Name: _____ Date: _____

Circle appropriate description: Sex: M F Race: White Black Other
Years of Education: Grade School High School Beyond High School

Instructions: Ask questions 1 to 10 on this list and record all answers. (Ask question 4a only if the subject does not have a telephone.) All responses must be given without references to calendar, newspaper, birth certificate, or other aid to memory. Record the total number of errors based on the answers to the 10 questions.

Question	Response	Incorrect Responses
1. What are the date, month, and year?		
2. What is the day of the week?		
3. What is the name of this place		
4. What is your phone number? 4a. What is your street address?		
5. How old are you?		
6. When were you born?		
7. Who is the current president?		
8. Who was the president before him?		
9. What was your mother's maiden name?		
10. Can you count backward from 20 by 3's?		

Appendix C. (Continued)

SHORT PORTABLE MENTAL STATUS QUESTIONNAIRE

SCORING:*

0-2 errors: normal mental functioning

3-4 errors: mild cognitive impairment

5-7 errors: moderate cognitive impairment

8 or more errors: severe cognitive impairment

*One more error is allowed in the scoring if a patient has had a grade school education or less.

*One less error is allowed if the patient has had education beyond the high school level.

Source: Pfeiffer, E. (1975). A short portable mental status questionnaire for the assessment of organic brain deficit in elderly patients. Journal of American Geriatrics Society. 23, 433-41.

Appendix D. Health Literacy Instrument: Newest Vital Sign (NVS)

THE NEWEST VITAL SIGN

Nutrition Facts		
Serving Size		½ cup
Servings per container		4
Amount per serving		
Calories	250	Fat Cal 120
		%DV
Total Fat	13g	20%
Sat Fat	9g	40%
Cholesterol	28mg	12%
Sodium	55mg	2%
Total Carbohydrate	30g	12%
Dietary Fiber	2g	
Sugars	23g	
Protein	4g	8%

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Ingredients: Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

Appendix E. Permission to Administer NVS via Telephone

February 23, 2012

Dear Ms. Mullen,

Thank you for contacting Pfizer for permission to use the Newest Vital Sign. Pfizer is pleased to grant permission for your request to reproduce, display and read the questions over the phone to patients as indicated in your attached request. When reproducing the Newest Vital Sign in print, please use the following attribution: Newest Vital Sign copyright Pfizer Inc. Used with permission.

Best regards,

Jane

Jane Ungaro
Senior Corporate Counsel - Trademarks
Pfizer Inc
150 East 42nd St, Second Floor
New York, NY 10017
212-733-5211 (office)
347-573-2203 (mobile)
212-573-2273 (facsimile)
jane.ungaro@pfizer.com

Appendix F. Activity Instrument
Physical Activity Scale for the Elderly (PASE)

INSTRUCTIONS:

Please complete this questionnaire by either circling the correct response or filling in the blank. Here is an example:

During the past 7 days, how often have you seen the sun?

[0.] NEVER	[1.] SELDOM (1-2 DAYS)	[2.] SOMETIMES (3-4 DAYS)	[3.] OFTEN (5-7 DAYS)
------------	---------------------------	------------------------------	--------------------------

Answer all items as accurately as possible. All information is strictly confidential.

Appendix F. (Continued)

LEISURE TIME ACTIVITY

1. Over the past 7 days, how often did you participate in sitting activities such as reading, watching TV or doing handcrafts?

[0.] NEVER ↓ GO TO Q.#2	[1.] SELDOM (1-2 DAYS) ↓	[2.] SOMETIMES (3-4 DAYS) ↓	[3.] OFTEN (5-7 DAYS) ↓
-------------------------------	--------------------------------	-----------------------------------	-------------------------------

1a. What were these activities? _____
1b. On average, how many hours per day did you engage in these sitting activities? [1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS [3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

2. Over the past 7 days, how often did you take a walk outside your home or yard for any reason? For example, for fun or exercise, walking to work, walking the dog, etc.?

[0.] NEVER ↓ GO TO Q.#3	[1.] SELDOM (1-2 DAYS) ↓	[2.] SOMETIMES (3-4 DAYS) ↓	[3.] OFTEN (5-7 DAYS) ↓
-------------------------------	--------------------------------	-----------------------------------	-------------------------------

2a. On average, how many hours per day did you spend walking? [1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS [3.] 2-4 HOURS [4.] MORE THAN 4 HOURS
--

Appendix F. (Continued)

3. Over the past 7 days, how often did you engage in light sport or recreational activities such as bowling, golf with a cart, shuffleboard, fishing from a boat or pier or other similar activities?

[0.] NEVER	[1.] SELDOM	[2.] SOMETIMES	[3.] OFTEN
↓	(1-2 DAYS)	(3-4 DAYS)	(5-7 DAYS)
GO TO Q.#4	↓	↓	↓

3a. What were these activities? _____
3b. On average, how many hours per day did you engage in these light sport or recreational activities? [1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS [3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

4. Over the past 7 days, how often did you engage in moderate sport and recreational activities such as doubles tennis, ballroom dancing, hunting, ice skating, golf without a cart, softball or other similar activities?

[0.] NEVER	[1.] SELDOM	[2.] SOMETIMES	[3.] OFTEN
↓	(1-2 DAYS)	(3-4 DAYS)	(5-7 DAYS)
GO TO Q.#5	↓	↓	↓

4a. What were these activities? _____
4b. On average, how many hours per day did you engage in these moderate sport and recreational activities? [1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS [3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

Appendix F. (Continued)

5. Over the past 7 days, how often did you engage in strenuous sport and recreational activities such as jogging, swimming, cycling, singles tennis, aerobic dance, skiing (downhill or cross-country) or other similar activities?

[0.] NEVER	[1.] SELDOM (1-2 DAYS)	[2.] SOMETIMES (3-4 DAYS)	[3.] OFTEN (5-7 DAYS)
↓	↓	↓	↓
GO TO Q.#6			

5a.	What were these activities? _____
5b.	On average, how many hours per day did you engage in these strenuous sport and recreational activities? [1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS [3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

6. Over the past 7 days, how often did you do any exercises specifically to increase muscle strength and endurance, such as lifting weights or pushups, etc.?

[0.] NEVER	[1.] SELDOM (1-2 DAYS)	[2.] SOMETIMES (3-4 DAYS)	[3.] OFTEN (5-7 DAYS)
↓	↓	↓	↓
GO TO Q.#7			

6a.	What were these activities? _____
6b.	On average, how many hours per day did you engage in exercises to increase muscle strength and endurance? [1.] LESS THAN 1 HOUR [2.] 1 BUT LESS THAN 2 HOURS [3.] 2-4 HOURS [4.] MORE THAN 4 HOURS

Appendix F. (Continued)

HOUSEHOLD ACTIVITY

7. During the past 7 days, have you done any light housework, such as dusting or washing dishes?

[1.] NO [2.] YES

8. During the past 7 days, have you done any heavy housework or chores, such as vacuuming, scrubbing floors, washing windows, or carrying wood?

[1.] NO [2.] YES

9. During the past 7 days, did you engage in any of the following activities?

Please answer YES or NO for each item.

	<u>NO</u>	<u>YES</u>
a. Home repairs like painting, wallpapering, electrical work, etc.	1	2
b. Lawn work or yard care, including snow or leaf removal, wood chopping, etc.	1	2
c. Outdoor gardening	1	2
d. Caring for an other person, such as children, dependent spouse, or an other adult	1	2

Appendix F. (Continued)

WORK-RELATED ACTIVITY

10. During the past 7 days, did you work for pay or as a volunteer?

[1.] NO [2.] YES

10a. How many hours per week did you work for pay and/or as a volunteer?

_____ HOURS

10b. Which of the following categories best describes the amount of physical activity required on your job and/or volunteer work?

- [1] Mainly sitting with slight arm movements.
[Examples: office worker, watchmaker, seated assembly line worker, bus driver, etc.]
- [2] Sitting or standing with some walking.
[Examples: cashier, general office worker, light tool and machinery worker.]
- [3] Walking, with some handling of materials generally weighing less than 50 pounds.
[Examples: mailman, waiter/waitress, construction worker, heavy tool and machinery worker.]
- [4] Walking and heavy manual work often requiring handling of materials weighing over 50 pounds.
[Examples: lumberjack, stone mason, farm or general laborer.]

Appendix G. Permission to Use PASE

License Agreement for PASE

Physical Activity Scale for the Elderly (PASE Instrument)

This agreement made this September 2nd, 2011 by and between New England Research Institutes, Inc. (herein after referred to as the "Licensor") with offices located at 9 Galen Street, Watertown, MA 02472 and Ellen Mullen at 3238 Millbrook Drive, Pearland, TX, 77584, USA (herein after referred to as the "Licensee").

WHEREAS, As outlined Ellen Mullen is requesting to administer the Physical Activity Scale for the Elderly (PASE Instrument) 100 times as part of a research project titled: The Effects of Telephone Counseling .

NOW THEREFORE THE PARTIES MUTUALLY AGREE AS FOLLOWS:

A fair use LICENSING AGREEMENT (one time fee) of \$125 (one hundred and twenty-five dollars) will be assessed for use of the instrument. This agreement would allow LICENSEE to duplicate and administer the questionnaire up to 100 times. LICENSEE'S payment must be received prior to use of the instrument.

Because the Physical Activity Scale for the Elderly (PASE Instrument) is copyright protected, the questionnaires must have copyright credit listed on the documents (i.e., © Copyright 1991 New England Research Institutes Inc, 9 Galen Street, Watertown, MA 02472).

1. This agreement represents the complete Agreement between the parties relative to the subject matter hereof. No waiver, modification, or amendment to this Agreement shall be effective unless in writing and signed by both parties.
2. The terms and conditions of this agreement shall be construed under the laws of the Commonwealth of Massachusetts in all respects.

Appendix. H. Telephone Intervention Protocol

Telephone Intervention Elements for Initial and Subsequent Sessions

1. Introduction.
 - a. Acknowledgement of participation
 - b. Brief synopses of the study
2. Review of common recovery experiences after cancer treatments (initial only).
3. Inquire about participants' current physical activity behavior (initial only).
4. Inquire about progress toward achieving goal (follow-up only)
5. Discussion of the main element—physical activity.
 - a. Physical activity
 - i. Discussion of current recommendations for physical activity among older adults
 - ii. Discussion of benefits of increased physical activity
 - iii. Provide examples of mild, moderate, and vigorous exercises
6. Provision of positive feedback for strategies that are working well and provision of alternative strategies for noted barriers.
7. Summarization; Goal setting and arranging next telephone session.

Follow-up phone call (week 5)

1. Acknowledgement of subjects' participation.
2. Obtain post-test survey
1. Administer Open-ended Questions:
 - a. What do you see as the greatest challenge in participating in any physical activity?
 - b. Tell me what you think about physical activity or exercise and recovery from cancer treatment?
 - c. What type of resources or services do you need now to overcome any barriers that prevent you from changing your health behavior for physical activity?

For intervention group only:

- d. Tell me what you think about the telephone counseling program.

Thank you statement and reminder that their gift certificate will be mailed in one week.

Appendix I. Telephone Intervention Script

Script for Telephone Intervention on Physical Activity

Introduction

Thank you for agreeing to be in this study. Just to remind you, the reason for the study is to see if telephone calls will help older adults who were treated for cancer increase their physical activities. Most people who are treated for cancer do not do any kind of exercise.

I would like to remind you that anything you say is not shared others who are not part of the study. Our conversations will not be recorded. We will talk about the effect of cancer on physical activity, how physical activity can improve your health, your current activity level, the types of activity you enjoy, meeting challenges to physical activity, and goal setting. You are free to share your thoughts or ask questions at any time. Our call will take about 20 minutes.

Long-term effects of cancer treatments:

Some cancer treatments (drugs or radiation) can have long-term side effects that affect physical activity. These include heart failure, lung damage, nerve damage, anemia or low red blood count, and others. Older adults, even those with other chronic illness or disability can benefit from a moderate amount of daily physical activity. One does not need to do heavy or hard exercises to feel good. What is important is that you include regular activity in your daily routine. We will go over some examples of physical activities, but first I want to share with the benefits of staying active.

Before we talk about specific benefits and activities, do you have any questions about the side effects of cancer treatment on physical activity?

Physical Activity:

According to Center of Disease and Prevention, physical activity in older persons can lead to three types of health benefits:

1. It can lower the risk of getting chronic diseases such as heart disease and cancer. Even persons who have developed some cancers have a lower risk of having their cancer return if they are physically active.
2. It can help control high blood pressure, diabetes, obesity, or high cholesterol.
3. It can improve ability to work and care for yourself even if you have other problems like lung disease or arthritis.

There are other good things that physical activity can do to your health. It can help you sleep better, decrease risk of depression, prevent bone loss, and prevent falls or injury.

Do you have any questions about what physical activity can do to your health?

Appendix I. (Continued)

Next, I want to share the physical activities that older adults should try to do.

1. A moderate amount of activity (for example, 30 minutes of brisk walking) on 5 or more days of the week. If you can do more than that, it is even better.
2. If you are unable to walk for 30 minutes, shorter times, such as 10 minutes at a time, are also very good if repeated. If you have not been physically active, begin with shorter times and slowly increase the time or pace of activity.
3. Experts say older adults should do strength training at least 2 days a week. These activities improve muscular strength and endurance. Older adults should also do physical activities that help with flexibility, such as yoga or tai chi.
4. Moderate amounts of low-impact activities such as swimming, water exercises, or stretching are good for those who have difficulty with their ability to move around.
 - a. Chair exercises and games, muscle-strengthening activities, and lifting light weights are also very good, even for those with physical limitations.

Leisure activities such as gardening, or going to the mall are also physical activities. There are many other leisure activities that you can take part in. Would you like to hear about others? (refer to the list provided).

What questions do you have about physical activities?

Goal setting and overcoming barriers:

Now that we have talked about the benefits of staying active on your health, tell me how ready you are to start.

It is important to set goals and I would like that you start slowly if you have not been active. Think about some of the examples I told you and see if you can fit any of them in your daily schedule. It is important that before you try any hard activities that you get your doctor to approve them.

If you don't have any questions and if you think you are ready, what is/are your goal(s) for the coming week?

(after goal is set): What do you think will prevent you from reaching your goals?
(address possible concerns like pain, fear of falling)

Next week I will ask you to share with me whether you met the goals you set.

Again, thank you for taking part in the study and I look forward to talking with you next week (state the day) at same time if okay with you. Please call the phone number in the consent form if you need to change to another day or time.

Appendix J. Checklist for Subsequent Telephone Sessions

Elements covered:

- ___ 1. Did person meet goal from previous week?
- ___ 2. Positive reinforcement given
- ___ 3. Barriers to meeting / not meeting goal (recommend checklist of common barriers
for ease in using)
- ___ 4. Review what helped
- ___ 5. Identify solutions to overcome challenges
- ___ 6. Set goal for next week

Appendix K. Manuscript Acceptance for Publication from *Nursing Forum*

28-Mar-2012

Dear Ms. Mullen:

It is a pleasure to accept your manuscript entitled "Health Literacy Challenges in the Aging Population" in its current form for publication in *Nursing Forum*. The comments of the reviewer(s) who reviewed your manuscript are included at the foot of this letter.

Thank you for your fine contribution. On behalf of the Editors of *Nursing Forum*, we look forward to your continued contributions to the Journal.

Sincerely,

Dr. Patricia Yoder-Wise
Editor-in-Chief, *Nursing Forum*
psywrn@aol.com

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author

The revisions have been helpful in focusing the manuscript. Health literacy in the aging population is important; clinicians should find the information useful.

Appendix L. Permission Letter for Multi-paper Use for *Nursing Forum*

Dear Ellen

Thank you for your query. I am assuming from your email that your manuscript is not yet published. Please can I refer you to <http://media.wiley.com/assets/1540/87/ctaus.pdf> Section C for what you may do with your article before and after publication. I believe that the part that is relevant to your case is

3. Final Published Version. Wiley-Blackwell hereby licenses back to the Contributor the following rights with respect to the final published version of the Contribution:

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Appendix M. Author Guidelines for *Oncology Nursing Forum*

Author Information

The *Oncology Nursing Forum (ONF)* publishes manuscripts that focus on nursing achievements in the field of oncology including, but not limited to, clinical advances, research findings, educational developments, and role and theory development. We are also interested in integrated syntheses of the literature pertaining to oncology nursing.

Manuscripts are accepted for consideration with the understanding that they are contributed solely to this journal, that the material is original, and the articles have not been published previously. All manuscripts will be reviewed for originality by CrossRef's CrossCheck product. Manuscripts found to plagiarize the work of others will be prohibited from publication in the *Oncology Nursing Forum* or the *Clinical Journal of Oncology Nursing*.

If a work has multiple authors, the paper is reviewed on the assumption that all authors have granted approval for submission. All submitted papers are subject to blind peer review. Papers will be judged on the quality of the work and suitability for the audience. Questions should be sent directly to

ONF Editor
Anne Katz, RN, PhD
ONFEditor@ons.org

Online Manuscript Submission

All manuscripts must be submitted electronically. To get started, visit [Manuscript Central](#). Complete instructions are provided, and assistance is available by contacting Editorial Assistant Natalie Tooch (412-859-6303 or ntooch@ons.org).

All manuscript submissions (both original and revisions) should include the title page (including author names, credentials, titles, and affiliations), the abstract, text, references, and all tables and figures. DO NOT BLIND MANUSCRIPT. [Note: Even though the title and abstract are entered into the information pages, they must still be included with the manuscript files.]

Appendix M. (Continued)

Financial Disclosure

Information for ALL contributing authors must be entered into the Manuscript Central manuscript information pages. Author Understanding and Bio/Disclosure E-forms are accessible on the Manuscript Details page and, as soon as the article is submitted, each author will receive two automated e-mails, one for each form, providing links to the forms. All forms must be submitted before the manuscript can move into peer review.

Each author must disclose any financial interest in products mentioned in the manuscript or in the company that manufactures the products, as well as any compensation received for producing the manuscript. A submitted manuscript that is the result of funded research must cite the funding source on the title page. A manuscript that originated as a thesis or dissertation prepared by an author on an educational scholarship must cite the name of the scholarship. In general, this disclosure will not preclude publication in *ONF* providing that the manuscript meets the appropriate standards for acceptance. When appropriate, this information is shared with *ONF* reviewers and readers.

Manuscript Preparation

Papers should be prepared using standard manuscript form according to the *Publication Manual of the American Psychological Association* (APA), 6th edition (2009). (Visit www.apastyle.org for assistance.) Length should be 12-15 pages (4,000 words), exclusive of tables, figures, and references.

Appendix N. Eligibility Criteria

Criteria	Requirement	Participant Status	Eligible/Not Eligible
Age	60 or older		
Cancer diagnosis	Hematological or non-hematological		
Remission status	On remission		
Telephone access	Yes		
Speaks, write and read English	Yes		
Vision and Hearing	No impairment or has corrected vision/hearing		
Speech	No speech impairment		
Residence	Resides in U.S., Community dwelling		
Cognitive function	Score of <5 errors		

Appendix O. Recruitment Brochure

Invited: Older Cancer Survivors to Participate in a Nursing Research About Telephone Counseling and Physical Activity

The purpose of this research is to see if telephone counseling will improve older adult cancer survivors' physical activity. Most cancer survivors do not get enough physical activity, especially if they are older. The researcher is a geriatric nurse practitioner at a major cancer center and a current PhD student at The University of Texas at Tyler.

Persons eligible to participate:

- Age 60 and over
- Completed treatment for cancer
- Willing to talk with a nurse on the phone about their physical activity



Completing surveys at the beginning and end of the study will take about 10-15 minutes. Phone calls, for those assigned to receive telephone counseling, will take about 10 minutes each week for four weeks.

If you would like more information about this study, please contact:

Ellen C. Mullen, PhD(c), RN

emullen@patriots.uttyler.edu

or ellenmullen111@yahoo.com

713-404-4693 (pager)

281-660-1543 (cell)

713-859-9341(cell)

Participants will receive a gift card and a chance to win \$200.00

BIOGRAPHICAL SKETCH

NAME Ellen C. Mullen	POSITION TITLE Nurse Practitioner
ecatuiza@mdanderson.org	

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Texas-Houston Health Science Center	BS	1994	Nursing
University of Texas-Houston Health Science Center	MS	2004	Adult/Gerontological Nurse Practitioner
University of Texas at Tyler		2008-present	PhD in nursing

A.Positions and Honors

Positions and Employment

1995-2000	Registered Nurse, The University of Texas-MD Anderson Cancer Center
2000-present	Advanced Practice Nurse, The University of Texas-MD Anderson Cancer Center

Other Experience and Professional Memberships

1994- present	Sigma Theta-Tau International Nursing Honor
1999-present	Texas Nurse Practitioners
2004-present	Oncology Nursing Society
2008-2010	Philippine Nurses Association of Metropolitan
2008- 2010	Houston Area Nurse Practitioner

Honors

B. Publications

1. **Mullen, E. & Wang, M. (2007).** Recognizing Hyperviscosity Syndrome in Patients with Waldenstrom's Macroglobulinemia *Clinical Journal of Oncology Nursing, 11(1)*, 87-95.
2. **Mullen, E. & Zhong, Yazhen. (2007).** Hodgkin's Lymphoma: An update, *Journal for Nurse Practitioners, 3(6)*, 393-404.
3. **Mullen, E. & Mendez, N. (2008).** Hyperviscosity Syndrome in Patients with Multiple Myeloma, *Oncology Nursing Forum, 35(3)*, 350-352.
4. **Mullen, E. (2008).** Polyneuropathy, Organomegaly, Endocrinopathy, Monoclonal Gammopathy, and Skin Changes Syndrome (POEMS), *Oncology Nursing Forum, 35(5)*, 763-767.

Abstracts

1. **Mullen, E.** Hyperviscosity Syndrome: Nurses' role in the management and treatment of this oncologic emergency. ONS Annual Convention, Las Vegas, NV. Oncology Nursing Forum, 2007.
2. **Mullen, E.** POEMS Syndrome: What Nurses Need to Know, ONS Annual Convention, San Antonio, TX, Oncology Nursing Forum, 2009.
3. **Mullen, E. & Mendez, N.** Amyloidosis: What Nurses Need to Know ; ONS Annual Convention, San Diego, CA. Oncology Nursing Forum, 2010.
4. **Mullen, E.** Caring for the Elderly Cancer Patients: Meeting the Challenges Through Individual Empowerment. ONS Annual Convention, San Diego, CA. Oncology Nursing Forum, 2010.
5. **Mullen, E.** Assessing health literacy among the elderly cancer patients. ONS Annual Convention, Boston, Ma. Oncology Nursing Forum, 2011.