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## Evaluation of a Health Newsletter Intended for SagePlus Participants

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EVALUATION OF A HEALTH NEWSLETTER INTENDED FOR  
SAGEPLUS PARTICIPANTS

A thesis submitted In  
Partial Fulfillment of the Requirements  
For the Degree of  
Master of Science  
at Minnesota State University, Mankato

by  
KAREN ANDERSON, RN, BSN

MAY, 2011

EVALUATION OF A HEALTH NEWSLETTER INTENDED FOR SAGEPLUS  
PARTICIPANTS

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This thesis has been examined and approved by the following members of the thesis committee.

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## ABSTRACT

### EVALUATION OF A HEALTH NEWSLETTER INTENDED FOR SAGEPLUS PARTICIPANTS

Little is known about the effectiveness of the *SagePlus* newsletter as a motivational tool for influencing behavior change. The purpose of this study was to determine the reading level of the *SagePlus* newsletter and to evaluate the effectiveness of the *SagePlus* newsletter as a communication and motivational tool for *SagePlus* participants. A nonexperimental, descriptive correlational design was used in this study. Forty English speaking participants were contacted and agreed to participate in the telephone survey from a potential list of 190 participants. A modified questionnaire containing 20 multiple choice and open-ended questions was used in a telephone survey. Data was analyzed using the Statistical Package for Social Sciences, Flesch-Kincaid Grade Level Readability Formula, and the Flesch Reading Ease Test. Findings showed that the newsletter is written at a U.S. grade level of 3.5 and has a readability of 79.5. Findings showed that participants read the newsletter and felt that it was written clearly. Participants (87.5%) receiving the newsletter thought the newsletter motivated healthy behavior changes. Intake of fruits and vegetables made the most changes with fruits increasing by 62.5% and vegetables by 56.4%. Close to 70% of the sample surveyed either did not make improvements or actually declined in activity levels. The study supports use of newsletters as an effective educational motivational tool for dietary changes when written clearly and at a reading level the reader can comprehend. Providers can positively promote healthy lifestyle changes by the use of newsletters

## TABLE OF CONTENTS

	Page
LIST OF TABLES .....	vi
Chapter	
I. INTRODUCTION.....	1
Statement of the Problem .....	6
Statement of the Purpose .....	6
Research Questions .....	6
Definition of Terms .....	7
Assumptions .....	7
Limitations.....	8
Summary .....	8
II. REVIEW OF RELEVANT LITERATURE AND THEORETICAL FRAMEWORK .....	9
Behavior Modification .....	9
Healthcare Literacy .....	11
Newsletters .....	14
Theoretical Framework .....	16
Summary .....	18
III. METHODOLOGY .....	20
Design.....	20
Sample .....	21

Chapter	Page
Ethical Considerations.....	21
Instrument.....	23
Data Collection.....	24
Data Analysis .....	25
Limitations.....	25
Summary .....	26
IV. RESULTS OF ANALYSIS.....	27
Sample.....	27
Data Analysis .....	29
Research Question One .....	29
Research Question Two.....	31
Research Question Three.....	31
Research Question Four .....	33
Summary .....	39
V. DISCUSSION AND CONCLUSIONS.....	41
Research Question One.....	41
Research Question Two .....	42
Research Question Three .....	43
Research Question Four.....	44
Pender’s Model of Health Promotion .....	46
Scope and Limitations.....	47

Chapter	Page
Implications for Practice .....	48
Implications for Research.....	49
Summary .....	50
REFERENCES .....	52
APPENDICES	
A. IRB APPROVAL LETTERS.....	58
B. CONSENT FORM.....	61
C. MODIFIED MINNESOTA WOMEN’S HEALTHY HEART PROGRAM QUESTIONNAIRE .....	64
D. DEMOGRAPHIC QUESTIONNAIRE .....	68
E. DEMOGRAPHIC STATISTICS .....	70

## LIST OF TABLES

Table	Page
1. Percent of Newsletter Read.....	29
2. Number of Articles Read .....	30
3. Read Recipe .....	30
4. Flesch Reading Ease and Flesch-Kincaid Grade Level .....	32
5. Has Reading Newsletter Motivated You to Make Healthy Changes.....	33
6. Does Newsletter Motivate You to Work on Dietary Goals .....	34
7. Does Newsletter Motivate You to Work on Exercise Goals .....	34
8. Change in Fruit Intake .....	35
9. Change in Vegetable Intake .....	36
10. Change in the Number of Days of Moderate Activity .....	37
11. Change in the Number Days Per Week Walked 10 Minutes.....	38



## CHAPTER I

### INTRODUCTION

Heart disease is a condition that affects blood flow and functioning of the heart. The most common type of heart disease is coronary artery disease (CAD). In Minnesota more than 20% of all deaths are related to heart disease (Minnesota Department of Health [MDH], 2010). CAD accounts for more deaths in women than all cancers combined and is the leading cause of death in women throughout the United States [U.S.] (Villablanca et al., 2010). Mortality rates from CAD in postmenopausal women are virtually equal to those of men (Shirato & Swan, 2010).

In the U.S., healthcare costs related to CAD exceeded \$177 billion in 2008 (MDH, 2010). In Minnesota, healthcare costs for inpatient hospitalizations in 2008 were over \$1.85 billion due to heart disease (MDH, 2010). Programs that promote health and work to decrease the incidence of CAD reduce these costs. The World Health Organization defined health promotion as a process which enables people to increase control over and improve their health (1998). The mission of health promotion according to the Centers for Disease Control and Prevention [CDC] (2010) is to prevent disease, improve health, and enhance human potential through evidence-based interventions.

*SagePlus* is a program which was established in 2004 as part of the Well-integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) program developed by the CDC. The WISEWOMAN program was initially funded by Congress in 1995 and currently includes programs in 19 states and two tribal organizations (CDC, 2010). The primary focus is on cardiovascular health and operates

as a sister program to The National Breast and Cervical Cancer Early Detection Program [NBCCEDP] (CDC, 2010).

Eligibility for the *SagePlus* program is determined by previous screening for breast or cervical cancer through the SAGE program, having no insurance or being underinsured, and meeting age and income guidelines. Women enrolled must agree to learn about healthy lifestyle changes and consider making changes toward a healthier lifestyle. They are required to participate in cardiovascular screening and are encouraged to return for follow-up and annual screenings (MDH, 2009).

Women who agree to be part of the *SagePlus* program receive free lifestyle coaching in the areas of diet, exercise, and smoking cessation. Additionally, they receive a monthly newsletter offering guidance and advice on cardiovascular health and smart choices that is mailed the first month of enrollment and continues for the next 11 months. Participants are offered enrollment in both the “steps program” which includes use of a pedometer with weekly tracking and reporting of the steps they take in a day and the “fruits and vegetable program” which requires weekly tracking and reporting of fruits and vegetable servings. Both programs offer performance-based incentives for participation (MDH, 2009).

Healthcare professionals are constantly struggling to find ways to provide information to influence behavior and encourage people to maintain healthy lifestyles. Multiple methods of health promotion need to be employed to reach a variety of people with different cultural and socioeconomic backgrounds. Health education has traditionally been a key element of health promotion. The monthly newsletters sent to the participants in the *SagePlus* program are one way to provide health education.

A newsletter as a means of communication is not a new idea. In the first half of the 17th century throughout Western Europe, newsletters or posts were a way to distribute printed information to the community. Readers were interested in the business, political, and medical news that the newsletters offered (Arblaster, 2005). Initially news could be printed as quickly as it was obtained, but delivery of the news to the general public was irregular. Postal and carrier services that would bring the written word to the general public improved throughout the 17th century starting in Germany (Arblaster, 2005).

In the U.S. the first newsletter was in 1704 and was called the Boston Newsletter which later became a newspaper (“A Short History of Newsletters,” n.d.). The 1700s saw many newsletters until the 1800s when newspapers became the mainstay (“A Short History of Newsletters,” n.d.). In the early 1900s newsletters made a return because businesses and industries needed specialized information. All types of newsletters ranging from corporate, farming, and fashion became common in the mid-1900s (“A Short History of Newsletters,” n.d.). When personal computers emerged in the mid-1980s, creating newsletters became easier with the use of desktop publishing. Electronic newsletters made their way into the 21st century and continue to be a source for advertisers to market materials. “By 1998, more than one million newsletters have been estimated to be published in the US” (“A Short History of Newsletters,” n.d., para. 10).

In the 21st century there are many other means of communicating with people such as television, radio, and computers. Despite newer technology, the use of newsletters for communication continues to be used. Giving people written information is thought to be imperative in reinforcing verbal communication. With attempts to

control healthcare costs, patients are granted more responsibility in disease management and prevention (Badarudeen & Sabharwal, 2010). Newsletters can be an effective way to enable healthcare promotion and disease prevention.

Newsletters have been described “as the road to communication,” a way to initiate interactive communication (Jensen, 2006, p. 186). Newsletters provide a way to gather and synthesize information and offer a means to accurately and creatively communicate that information (Shackelford & Griffis, 2006). Kedem (2007) described newsletters as “powerful branding vehicles” that can promote public awareness, create and shape ideas, and foster relationships.

If a newsletter lacks useful content, it may be treated as junk mail. The newsletter must quickly and effectively capture the reader’s attention. Sentences and paragraphs should be short and easy to read, and the appearance should be professional and attractive to the reader. Articles within the newsletter need to communicate interest to the reader, and the writer should have a thorough understanding of the subject (Shackelford & Griffis, 2006). The assumption is made that the reader is able to read and comprehend what has been written. If healthcare intends to use newsletters as a communication tool to promote health, the tool must be written at a level the intended audience can comprehend.

The National Institute for Literacy (NIFL) defines literacy as “an individual’s ability to read, write, and speak in English; compute; and solve problems at levels of proficiency necessary to function on the job, in the family of the individual, and in society” (Cornett, 2009, para. 4). Health literacy is defined by the Institute of Medicine (IOM) 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” (Sarkar & Schillinger, 2010, para. 4).

In order for health newsletters to be an effective communication tool, the reader must understand the written material offered in the newsletter. Effective communication improves adherence, lowers patient’s anxiety, and improves clinical outcomes (Badarudeen & Sabharwal, 2010). Approximately one in five adults in the U.S. reads at or below the fifth-grade level. Close to 50% of the Hispanic and African American population in the U.S. do not have the reading and writing skills needed for everyday practical needs (Badarudeen & Sabharwal, 2010). Organizations such as the American Medical Association and National Institutes for Health recommend that patient information should be written at a level lower than the eighth-grade reading level (Badarudeen & Sabharwal, 2010). Current patient education material is written at a level that does not meet this standard and is too difficult for the reader to understand (Badarudeen & Sabharwal, 2010).

Communication requires a sender, a message, and an intended recipient. All parties involved must have a shared interest in what is being communicated. Written communication is a clear form of expression or ideas in writing. In order to have effective communication, the reader must have the capacity to interpret and understand the information provided. Poor communication in healthcare leads to increased patient anxiety, decreased adherence, and less than optimal clinical outcomes (Badarudeen & Sabharwal, 2010).

### **Statement of the Problem**

The *SagePlus* program utilizes a monthly newsletter to reinforce teaching that has been done and educate the participant to encourage behavior change. Participants receiving the newsletter must understand the concepts and information presented in order to make informed changes in their lifestyle. The reading level of the *SagePlus* newsletter has never been determined. Little is known about the effectiveness of the *SagePlus* newsletter in influencing behavior change as the newsletter has never been studied for its effectiveness. The intent of the newsletter is to continue motivation to achieve desired goals set for healthy lifestyle change. It is currently unknown whether or not the *SagePlus* newsletter successfully meets this objective.

### **Statement of the Purpose**

The purpose of this study is to determine the reading level of the *SagePlus* newsletter and to evaluate the effectiveness of the *SagePlus* newsletter as a communication and motivational tool for the *SagePlus* participants. The specific research variables to be studied are newsletters, behavior modification, and healthcare literacy to reinforce healthy lifestyle changes.

### **Research Questions**

The following questions are used to guide this research study.

1. Do the *SagePlus* participants read the monthly newsletter in its entirety or only specific articles of interest?
2. Is the English version of the *SagePlus* newsletter written clearly?
3. At what level is the *SagePlus* newsletter written?
4. Does the *SagePlus* newsletter motivate healthy behavior changes?

## **Definition of Terms**

*Behavior modification:* A way to reinforce desired behaviors is in the use of an interventional tool such as the newsletter used in the SagePlus program.

*Healthcare literacy:* The ability to identify, interpret, create, understand, and compute the written word in regard to health and healthcare, thereby enabling a person to enhance their knowledge and allow them the potential to achieve their goals (Badarudeen & Sabharwal, 2010).

*Healthy lifestyle changes:* Changes made in a person's daily life that will improve their well-being on a permanent level.

*Newsletters:* A communication tool to “help clients gain knowledge, attitudes, and skills that will enable them to voluntarily engage in healthy lifestyle behaviors” (Tyrrell & Eyles, 1999, p. 341).

*SagePlus:* A health promotion program for eligible women ages 40 to 64 who are at risk for cardiovascular disease.

*Written communication:* Written communication is a clear form of expression or ideas in writing. In order to have effective communication, the reader must have the capacity to interpret and understand the information provided.

## **Assumptions**

For the purposes of this study, the following assumptions are made.

1. All study participants have truthfully answered the survey questions.
2. All study participants are receiving the SagePlus newsletter.
3. All study participants are at risk for heart disease.

4. All study participants are willing to learn about healthy lifestyles.
5. All study participants can read English at a minimum of a fifth grade level.

### **Limitations**

The limitations of this study are restricted to the sample population. The sample surveyed is age-specific and limited to women enrolled in the *SagePlus* program. Biological patterns vary with each participant so each intervention does not affect each person the same. Conclusions of this study will not be applicable to the general population; it is only pertinent to the population receiving the monthly *SagePlus* newsletter. Information on leveraging newsletters for healthcare promotion and education is inadequate in the literature review.

### **Summary**

The *SagePlus* program was established in 2004 as a way to provide cardiovascular screening to at-risk women ages 40 to 64. Participants in the program learn to make healthy lifestyle changes through coaching on diet, exercise, and smoking cessation. Participants receive a monthly newsletter intended to motivate and educate them on better heart health. Little is known about the effectiveness of this newsletter or if the newsletter fulfills its goal to motivate behavioral change. The purpose of this study is to determine the reading level of the *SagePlus* newsletter and to evaluate the effectiveness of the *SagePlus* newsletter as a communication and motivational tool for the *SagePlus* participants.



## **CHAPTER II**

### **REVIEW OF RELEVANT LITERATURE AND THEORETICAL FRAMEWORK**

The purpose of this study is to determine the reading level of the *SagePlus* newsletter and to evaluate the effectiveness of the *SagePlus* newsletter as a communication and motivational tool for the *SagePlus* participants. Although there is information and research on behavior modification, healthcare literacy, newsletters, and written communication, there are gaps in the current literature. The following literature review presents the major findings regarding behavior modification, healthcare literacy, newsletters, and concludes with the theoretical framework.

Literature was reviewed for the years 1999 to 2010 using the following data bases: Cumulative Index for Nursing and Allied Health Literature (CINAHL), ProQuest, Nursing & Allied Health Source, Medline (pubmed), dissertations, and theses. Search terms were “newsletters,” “healthcare literacy,” “written communications,” and “behavior modification.” The search resulted in 38 articles that were used for the purpose of examining the current literature regarding the effectiveness of health newsletters.

#### **Behavior Modification**

CAD is the leading cause of morbidity and mortality in the U.S.; one in every five deaths is linked to CAD (Chiou et al., 2009, p. 221). Reducing risk factors for CAD by behavior modification can improve patient outcomes and reduce morbidity and mortality thus reducing medical costs associated with CAD. Despite knowledge that maintaining

an ideal body weight, exercising at least 30 minutes per day, eating five servings of fruits and vegetables daily, and abstaining from smoking are all beneficial in cardiovascular health, only 6.3% of patients with CAD maintain these healthy habits (Chiou et al., 2009).

Chiou et al. (2009) conducted a study in northern Taiwan with 156 participants from cardiovascular clinics; data was collected over a 6-month period to determine the extent of risk factor awareness. A structured questionnaire was used to collect data pertaining to demographics, knowledge of cardiovascular risk factors including perceived and actual risk factors, modifying behaviors used, health beliefs, self-efficacy, and social support. Of the 156 participants, 74.4% were male and 82.1% were married. Self-efficacy or the person's perception of one's capability to accomplish certain performances was found to be the strongest predictor of modifying behavior for cardiovascular risk factors. Health beliefs proved to be a predictor of modifying behavior patterns (Chiou et al., 2009).

Behavior modification is a complex process that is used to modify an individual's current behavior to one that is more beneficial to their health. Implementing behavior interventions improves patients' understanding of themselves including their strengths and weaknesses as well as helps the patient develop strategies and goals for behavior improvements (Sebag, 2010).

Researchers at the University of North Carolina at Chapel Hill combined newsletters with videotapes and customized them to the lifestyle and health status of their target audience (Williamson, 2004). Researchers compared whether the combined effect influenced colorectal cancer prevention behaviors among 587 African American

members of the 12 rural North Carolina churches versus the lay health advisors relaying this information (Williamson, 2004). In the group targeted with newsletters and videos, it was found that fruit and vegetable consumption increased by more than half a serving a day and participants increased their exercise habits 20% more than prior to the program. There was a 15% increase in the number of people over the age of 50 undergoing fecal occult blood tests to screen for colon cancer (Williamson, 2004). The researchers found no meaningful changes in the control group exercise or diet, and those participants were less likely to undergo colorectal screening (Williamson, 2004). The research was promising in showing that interventions such as newsletters can motivate behavior change.

### **Healthcare Literacy**

Increasing the health literacy skills of the nation is identified as a public health priority by the U.S. Department of Health and Human Services (USDHHS). 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” (Shipman, Kurtz-Rossi, & Funk, 2009, p. 293). Health educational materials, consent forms, and health histories are difficult to complete for people with good health literacy skills and can prove even more difficult for people with low health literacy skills. Medical terms and concepts used regarding health and medicine increase stress and anxiety limiting a person’s ability to “listen, learn and remember” (Cornett, 2009, para. 8).

In the 1992 Adult Literacy Survey, results showed that 90 million Americans may be at risk of medical complications due to low health literacy (Pfizer, 2003). Patients in

the survey had difficulty reading prescription bottles, understanding self-care directions, and navigating the healthcare system putting them at risk for complications (Howley, 2004). The healthcare industry generally believes that patients are able to understand the health explanations and instructions given to them (Cornett, 2009). This generalization places patients at risk of causing preventable complications and readmissions to the hospital (Charet, 2010).

Communicating effectively with patients who have low health literacy depends on healthcare professionals' ability to recognize the problem and create an environment that is patient-centered and shame-free. Patients are often ashamed to admit they cannot understand their instructions and at times are labeled noncompliant with their health when the real problem is low health literacy (Cornett, 2009).

Mumford (1997) conducted a descriptive study on the readability of patient information leaflets designed by nurses. The study sampled 24 leaflets collected from 12 broad specialties within a large teaching hospital. The leaflets were analyzed using the Flesch Reading Ease Formula and the Gunning Fog Index to determine readability (Mumford, 1997). It was found that the information leaflets were written at a grade 9 to 13 reading level with a mean level of 11.3 (Mumford, 1997, p. 987). Despite this small sample, the study showed that health materials are often written at a reading level that is difficult for the patient to comprehend.

In a 1994 study using the Test of Functional Health Literacy in Adults (TOFHLA), researchers found that patients with low literacy skills had 6% more hospital visits and stayed in the hospital two days longer than adults with higher literacy skills

(Pfizer, 2003). Annual health costs for patients with low health literacy skills are “four times higher than those with higher health literacy skills” (Pfizer, 2003, p. 8).

Current patient education is written at a level that is too difficult for the reader to understand (Badarudeen & Sabharwal, 2010). Pfizer (2003) identified that “written material for people with low health literacy should be aimed at the sixth grade reading level” (p. 8). The National Adult Literacy Survey (NALS) administered a survey in 1992 to 13,600 adults age 16 and older to assess health literacy in the U.S. (Dubow, 2004). Participants in the survey were assigned to one of five levels with the fifth level being the highest of proficiency. Twenty-one to 23% of those surveyed had only rudimentary level I skill, meaning they could write their name and add simple numbers. About one-third who met the level I criteria were ages 65 and older. Approximately 31% performed at the level III criteria in the study. Only 3 to 4% of the respondents performed at the highest level of literacy (Dubow, 2004). Level I represents about 40 million Americans who have difficulty reading, comprehending, writing, communicating, and problem-solving (Dubow, 2004). “An additional 50 million adults have marginal reading skills and read at a seventh-grade level” (Dubow, 2004, p. 2).

Tailoring health newsletters is one way to communicate information to the individual or group of readers. The concept of tailoring is to customize the newsletter to an individual or group-specific health need. Tailoring the newsletter to the individual or group is one way we can improve health literacy and promote behavior change. Walker et al. (2010) compared the results of sending tailored newsletters or generic newsletters to 225 women ages 50 to 69. The study found that both categories of newsletters helped in maintaining healthy behaviors over a 12-month period (Walker et al., 2010). Women

who received the tailored newsletters were more successful in maintaining healthy behaviors after 12 months (Walker et al., 2010).

### **Newsletters**

Healthcare information is available in a variety of ways: television, internet, books, magazines, radio, newspapers, and newsletters. Newsletters as a form of health communication have existed since the 17th century, but studies regarding their effectiveness in health motivation are limited. Miller (1991) conducted a market research on five commercial health newsletters used in worksites. In a quantitative study decision-makers were asked to evaluate five newsletters and rate each one on 17 features. The decision-makers consisted of health/fitness professionals, human resource directors, and benefits managers. The research revealed newsletters that contained easy to read articles that were useful to the reader influenced decision-makers more. Decision-makers concluded that health newsletters are important in influencing positive health practices and providing motivation to their employees (Miller, 1991).

Baron and Houlihan (2009) conducted a study to evaluate the effectiveness of a newsletter to enhance communication among nurses in an ambulatory care setting. The newsletter consisted of articles of clinical, research, and educational interest and was mailed quarterly to nurses. An online survey of 375 nurses was conducted with 205 responding to the survey; 179 of those nurses read the newsletter. Of the nurses who read the newsletter 97% believed it enhanced communication and increased the nurse's professional skills.

Written health information can be a valuable communication tool for teaching and reinforcing the verbal message (Mumford, 1997). According to Rao and Fogarty (2007)

“40-80% of information provided by clinicians is forgotten immediately by patients. Furthermore, 50% of the information remembered is incorrect” (p. 479). To determine if a written discharge letter given to patients following day-case gynecological surgery was an effective communication tool, Rao and Fogarty (2007) gave 100 patients a questionnaire on whether the letter was helpful, informative, alarming, confusing, or reassuring. Seventy-eight of the 100 patients responded to the survey and 67 found the letter to be helpful; 65 patients found the letter to be informative. Ninety-five percent of the respondents preferred to have similar communication in the future (Rao & Fogarty, 2007).

Shepherd and Roker (2005) evaluated the use of newsletters as a support tool for parents of young adults. Four theme-based newsletters were distributed to over 4,000 parents across the U.K. Data collection was done using face-to-face interviews, telephone interviews, and self-completed questionnaires. The study showed that newsletters are an effective form of communication and support for a majority of the people with 95% reading the newsletter (Shepherd & Roker, 2005, p. 269).

Buijs, Ross-Kerr, O’Brian-Cousins, and Wilson (2003) evaluated the use of the newsletter as a motivational tool in a 10-month health promotion program for low income seniors. The program called Seniors Active Living in Vulnerable Elders (ALIVE) delivered exercise classes, health information sessions, and newsletters to promote the health of participants. Newsletters served as a communication tool between staff and seniors and contained information regarding times of classes, health-related topics, and healthy low cost recipes. Newsletters were distributed to the apartments of participants once per month (Buijs et al., 2003). Evaluation of the program determined that using

more than one intervention in the program was beneficial. The newsletter was found to support the other two interventions: exercise classes and health information sessions.

The study provided evidence that health promotion goals in elders can be achieved with use of interventions including newsletters (Buijs et al., 2003).

Health promotion strategies that influence individual behavior and encourage people to maintain healthy lifestyles are constantly challenging healthcare providers. Written communication in the form of newsletters is one way this can be accomplished. Although newsletters are a frequent intervention method that has been in place for many years, there continues to be a lack of research evaluating their effectiveness in healthy behavior changes. Most of the research that has been completed on newsletters involves their use as a marketing or promotional tool, consumer interest and satisfaction, or other non-health-related purposes (Taylor-Davis et al., 2000). This leaves many gaps to be explored for further research.

### **Theoretical Framework**

The theoretical framework for this study was built on the Health Promotion Model developed by Pender. Health promotion is defined as behavior motivated by the desire to increase well-being and actualize human health potential (Kozier, Erb, Berman, & Snyder, 2004). The model presents a belief that people are capable of “introspection and personal change” (McCullagh, 2009, p. 297). Examples of health promotion activities include healthy nutrition, physical activity, stress management, and social support. Pender believed that health includes the disease process, but disease is not the principal element. Health encompasses the whole person and that person’s lifestyle



including the potential, capability, resources, and strengths of the person (McCullagh, 2009).

Primary prevention is aimed at the prevention of health problems and disease before they occur. Health promotion and primary prevention often overlap in healthcare education and interventions. When healthy activities are encouraged for health promotion, those same activities have preventive effects. Adopting a low-fat diet and daily exercise are examples of health promotion activities that will also help lower cholesterol and prevent future cardiovascular problems. Pender promotes the positive aspects of health, looks at the whole person, and includes people who are ill, disabled, or healthy (McCullagh, 2009). These positive aspects of health promotion are also important in primary prevention.

Motivating people to adopt healthy behaviors has become increasingly important in health promotion. Pender based the model on two main theories of health behavior: social cognitive and expectancy value theory. Social cognitive theory includes the confidence a person has in their own ability to complete an action successfully. Expectancy theory believes that people are more likely to work toward goals that are of value or importance. Pender believed if a person has confidence and understands the value of the behavior they are trying to achieve, they are more likely to have success in meeting their goals (McCullagh, 2009).

The Health Promotion Model provides a way to assess a person's health needs and create a means for them to express their individual human potential. The model examines the person's self-efficacy, perceived barriers, benefits, interpersonal influences, and social influences in health behaviors. Areas of concern are isolated and interventions

are then created to help the person develop goals toward healthy behaviors. Tailoring the interventions to the unique characteristics of the person have been shown to “increase intervention effectiveness” (McCullagh, 2009, p. 297).

Pender’s model of health promotion helps guide the provider in helping people achieve a better quality of life based on their individual potential by tailoring interventions for that person. The model has been used in several clinical studies including schools, workplaces, treatment facilities, jails, and rehabilitation facilities. These areas included a diverse range of people in both age and gender (McCullagh, 2009). When evaluating an intervention tool such as the *SagePlus* newsletter, it is important to have a model that examines the total health of the person and tailors an intervention that is effective in behavior change for that person.

### **Summary**

Behavior modification is a process or method that is used to modify a person’s behavior to one that is beneficial for that person. Research was consistent in finding that involving a person in a behavior modification process improves self-advocacy and encourages self-awareness. Behavior modification can improve patient outcomes and reduce morbidity and mortality thus reducing medical costs associated with CAD.

The use of newsletters can be an effective tool in healthcare for teaching and reinforcing the verbal message (Mumford, 1997). Review of the literature supports the use of newsletters for behavior modification, providing the newsletter is written at a level the reader can comprehend. Pender’s model of health promotion believed that health includes the complete person, including that person’s strengths and potential. Behavior modification results from the desire to increase well-being and actualize human health

potential in the person (Kozier et al., 2004). Research of the literature reveals that healthcare has a responsibility to communicate at a level the reader can comprehend. If the reader is unable to comprehend the newsletter, then it will be difficult to optimize their potential and change behavior.

### CHAPTER III

#### METHODOLOGY

The purpose of this study is to determine the reading level of the *SagePlus* newsletter and to evaluate the effectiveness of the *SagePlus* newsletter as a communication and motivational tool for the *SagePlus* participants. The research questions for this study are: (a) Do the *SagePlus* participants read the monthly newsletter in its entirety or only specific articles of interest? (b) Is the English version of the *SagePlus* newsletter written clearly? (c) At what level is the *SagePlus* newsletter written? and (d) Does the *SagePlus* newsletter motivate healthy behavior changes? Although there is information and research that has been completed on behavior modification, healthcare literacy, newsletters, and written communication, there continue to be gaps in the current literature. This chapter describes the design, sample, ethical considerations, instrument, data collection, and data analysis.

#### Design

A nonexperimental, descriptive correlational design was used for this study. This method was chosen for several reasons. A nonexperimental design has no control variables. Descriptive studies are commonly used to obtain knowledge on a new research topic. Correlational methodology is used to examine interrelationships among variables obtained from a single group. The specific research variables to be studied are newsletters, behavior modification, and healthcare literacy to reinforce healthy lifestyle changes.

The researcher utilized this design to focus on relationships among the study's variables and to identify potential hypotheses for future studies. Advantages of nonexperimental, descriptive correlational designs or methods include the ability to demonstrate if a positive or negative correlation exists between two variables. The disadvantage is that one is not able to show that a cause and effect relationship exists.

### **Sample**

This study was conducted with a group of low-income, middle-aged women who are participants in the MDH Sage*Plus* program in Minnesota. This includes women who are between 40 and 64 years of age and have a monthly income of \$2,256 or less with an additional \$779 for each additional family member in the household. This study excluded non-English speaking participants in the Sage*Plus* program. The desired sample size for this study was a minimum of 35 participants.

### **Ethical Considerations**

Institutional Review Board approvals (see Appendix A) were obtained from the MDH and Minnesota State University, Mankato prior to data collection. At the beginning of the telephone conversation the informed consent statement was read to the potential participant (see Appendix B). The researcher successfully completed the web-based training course "Protecting Human Research Participants" by the National Institutes of Health (NIH) Office of Extramural Research.

The informed consent included an introduction regarding the research study and its purpose to evaluate the effectiveness of the newsletter. Participants were informed who was conducting the study and the purpose for the study. The procedure of the study was explained, and they were asked to take part in a 10 to 15-minute telephone survey

regarding their experience with the *SagePlus* newsletter. Participants were informed that the survey was completely voluntary and no portion of the conversation was recorded. The participants were assured that their choice to participate or not to participate in the study did not affect their participation in the *SagePlus* program.

Participants were assured that records of this study were kept private by assigning an alphanumeric code to each participant in the study to maintain confidentiality. Information shared with MDH did not have their name in it. MDH was not made aware of who participated in the study. Any information in any report or paper did not include any information that would make it possible to identify them. Research records were kept on a password protected computer and only researchers for the study had access to the records.

Upon completion of the study the alphanumeric list was saved for 2 years by the primary investigator in their office at MSU on a data disc. After 2 years the alphanumeric list will be destroyed. Completed questionnaires were identified with the alphanumeric code. The questionnaires were stored at the researcher's home until they were given to the principle investigator, to be stored in their office at MSU; this office is locked when it is vacant.

Participants who decide to participate were free to withdraw any time from the study and the interview will be stopped at their request. Contact information was given to the participants including names and phone numbers at Minnesota State University and the University's Institutional Review Board. Time for questions was allowed prior to verbal consent to the research study. Verbal informed consent was obtained prior to data collection.

### **Instrument**

This study used a modified version of a questionnaire that was initially developed for the Minnesota Women's Healthy Heart Program (MWHHP). The modified questionnaire contains 20 multiple choice and open-ended questions that were used to meet the objectives of the current study (see Appendix C). The questions focused on which part of the newsletter they liked best, if they felt the newsletter motivated them to make healthy changes, and if the participants thought the newsletter was clearly written. Questions were formatted to enable gathering information to evaluate the effectiveness, utilization, and motivational quality of the *SagePlus* newsletter. The reliability and validity of this tool has not been established.

To determine the readability of the *SagePlus* newsletter the Flesch-Kincaid Grade Level Readability Formula and the Flesch Reading Ease Test were used. The Flesch-Kincaid Grade Level Readability Formula bases its rating on the average number of syllables per word and words per sentence and rates text on a U.S. school grade level (Paz, Liu, Fongwa, Morales, & Hays, 2009). The Flesch Reading Ease Test rates text on a 100-point scale where the higher the score, the easier it is to understand the document (Paz et al., 2009). The Flesch Reading Ease Formula is considered as one of the oldest and most accurate readability formulas (Cranford, 2005). Developed in 1948 by Rudolph Flesch, it has become the standard readability formula used by many U.S. government agencies, including the Department of Defense (Cranford, 2005).

Demographic data was obtained from the MDH *SagePlus* enrollment forms. Data collected included race, level of education, activity level before enrolled in *SagePlus* program, and the intake of fruits and vegetables before enrollment in *SagePlus*

program. The participant's demographic data was entered into the Excel spreadsheet and identified with their alphanumeric code and linked with study participants (see Appendix D).

### **Data Collection**

A qualifying list of participants enrolled in both the steps and smart choices programs was obtained from the MDH from those enrolled in the *SagePlus* program. Data was collected and completed within 1 year after IRB approval has been received from MDH and MSU. Telephone calls were made by researchers evaluating the *SagePlus* newsletter program to potential participants.

For randomization purposes every third person on the list of potential participants was called. When the list of participants was exhausted before reaching the minimum sample size, the telephone calls begin at the first uncalled name and then continue calling every third person until the minimum sample size was attained. When a telephone call was unanswered, the name was marked as unanswered with the time and date recorded and a second telephone call was attempted at another time. If there was no answer on the second attempt, the person's name was crossed off the list and marked as unanswered. When a telephone call was refused or disconnected, the researcher crossed this name off the list and continued with the every third person pattern.

At the beginning of the telephone call the researcher read the informed consent to the participant. Upon their verbal informed consent to participate, the researcher read the *SagePlus* questionnaire to the participant and marked their responses to the questions. Each telephone call to a consenting participant required between 10 to 15 minutes.



### **Data Analysis**

The data was entered into Excel spreadsheets by the researchers, utilizing the alphanumeric code to identify the participant's data. Frequency counts of all items were generated to identify any errors in the data entry (Burns & Grove, 2005). When the data was deemed accurate, frequency counts, means, and standard deviations were generated to develop a profile of the participants and their responses to questions. Analysis of the responses allowed the researcher to determine the strengths and weakness of the newsletter and offer suggestions for change.

A Kendall Tau correlational coefficient was calculated to discover if relationships exist between use of newsletters and behavior modification and the strength of those relationships in the gathered data. This method is commonly used as a statistical test to establish whether two variables may be regarded as statistically dependent (Burns & Grove, 2005). Readability of the *SagePlus* newsletter was determined by using the Flesch-Kincaid Grade Level Readability Formula and the Flesch Reading Ease Test.

### **Limitations**

1. Results are not applicable to populations other than those studied because the study was completed with a specific group.
2. Biological patterns vary with each participant so each intervention does not affect each person the same.
3. Information on leveraging newsletters for healthcare promotion and education is inadequate in the literature review.

### **Summary**

This study utilizes a quantitative survey and was conducted using the *SagePlus* newsletter evaluation questionnaire. Participants were selected based on the inclusion criteria of the study. The purpose of this study is to evaluate the effectiveness of the *SagePlus* newsletter as a communication and motivational tool for the *SagePlus* participants. Data was analyzed using the described methods to meet the research objectives of the study.

## **CHAPTER IV**

### **RESULTS OF ANALYSIS**

The purpose of this study was to determine the reading level of the *SagePlus* newsletter and to evaluate the effectiveness of the *SagePlus* newsletter as a communication and motivational tool for the *SagePlus* participants. This chapter describes the sample of the *SagePlus* participants, data analysis process, results, and summary of research findings.

#### **Sample**

The MDH provided 263 names of participants in the *SagePlus* program. Seventy-three participants were eliminated from the pool of potential participants because they were non-English speaking. Of the remaining program participants, 190 were identified as potential participants for this study. Over the course of 2 days attempts were made to contact all of the remaining program participants to invite them to participate in this study. One hundred-eleven women did not answer their phone on the first or second attempt to contact them and thus were eliminated from the pool of potential participants. The second attempt to call was made at a different time of day in case the participant was working during the first attempt. Twenty-five women had their phones disconnected and were eliminated from the pool of potential participants. Nine women did not want to take part in the survey at this time and one other individual was not currently in the program. Forty-four women were contacted and agreed to participate in the study. Four of the individuals who agreed to participate in the study were excluded due to not receiving the

*SagePlus* newsletter and one of those four received the newsletter but in the wrong language. A total of 40 subjects participated in the study.

The sample surveyed included residents of 26 cities and 13 counties with the majority (32) living in the seven county Twin Cities Metro Area of Minnesota. The educational level among the 37 sample participants who listed their education revealed nine (24.3%) have a high-school diploma or equivalent, 13 (35.1%) with some college, two (5.0%) having a two year degree, and 10 (25.0%) having a four year degree. Only three (7.5%) participants of the sample had an education less than 11th grade.

The mean age of the participants was 55 with a range from 43 to 64 years old. The mean income was \$1,503 per month with only 36 participants reporting their income which ranged from \$111 to \$4,160. This income on average supported one person 57.5% of the time, two people 37.5% of the time, three people 2.5%, and four people 2.5% with a range of one to four people supported. The sample surveyed was primarily Caucasian with 28 (71.8%), and six (15.4%) African American participants. There were four Native Americans (10.3%) and one (2.5%) Hispanic in the sample surveyed. One participant did not report their race.

The BMI of the participants ranged from 19.60 to 47.60; nine participants (23.6%) were in the overweight category with a BMI between 25 and 29.9. Obesity or a BMI equal to or greater than 30 was noted in 23 (60%) of the participants and only six participants had a normal BMI of less than 25. Two of the 40 participants did not give their height and weight values to compute their BMI.

### Data Analysis

Data was analyzed using Statistical Package for Social Sciences (SPSS) software version 12. The research questions and results for each question are as follows.

#### Research Question One

The first research question was: Do the Sage*Plus* participants read the monthly newsletter in its entirety or only specific articles of interest? A majority of the respondents 19 (47.5%) read 100% of the newsletter and 11 (27.5%) reported reading 80% of the newsletter. Table 1 presents the results of the survey.

Table 1

#### *Percent of Newsletter Read*

Valid	Frequency	Percent	Valid %	Cumulative %
20%	2	5.0	5.0	5.0
40%	4	10.0	10.0	15.0
60%	4	10.0	10.0	25.0
80%	11	27.5	27.5	52.5
100%	19	47.5	47.5	100.0
Total	40	100.0	100.0	

Participants were asked which of the four main articles they read; Ask Anne, Recipes, Exercise, or Current Interest article. Nineteen (47.5%) participants surveyed said they read all four main articles. Table 2 represents the results of the survey.

Table 2

*Number of Articles Read*

Valid	Frequency	Percent	Valid %	Cumulative %
1	14	35.0	35.0	35.0
2	7	17.5	17.5	52.5
4	19	47.5	47.5	100.0
Total	40	100.0	100.0	

When participants were asked which of the four articles they read the most.

Fourteen (35%) read one article of the newsletter with the recipes being read 90% of the time by the participants. Table 3 presents the results of the survey.

Table 3

*Read Recipe*

Valid	Frequency	Percent	Valid %	Cumulative %
No	4	10.0	10.0	10.0
Yes	36	90.0	90.0	100.0
Total	40	100.0	100.0	

Qualitative data in response to the open-ended question of how newsletters could be improved resulted in eight (18.2%) participants who would like to see more topics in the newsletter including articles on peri-menopause, menopause, weight-loss, and success stories. The article on recipes was mentioned by four (9%) of the participants. These participants would like to see more traditional recipes, meal planning guides, and shopping lists.

### **Research Question Two**

The second research question was: Is the English version of the *SagePlus* newsletter written clearly? Forty (100.0%) participants who received the newsletter thought the newsletter was written clearly and none of the participants felt there were areas in the newsletter that were not clear. From the qualitative data received in response to the open-ended question of how the newsletter could be improved, the majority of participants 27 (61.3%) said they loved the newsletter and do not feel it should change.

### **Research Question Three**

The third research question was: At what level is the *SagePlus* newsletter written? To determine the reading level of the *SagePlus* newsletter the Flesch-Kincaid Grade Level Readability Formula and the Flesch Reading Ease Test were used. The Flesch-Kincaid Grade Level Test rates text on a U.S. school grade level. The readability formula bases its ratings on the average number of syllables per word and words per sentence and rates on a 100-point scale; the higher the score the easier the document is to understand. The *SagePlus* participants receive 12 issues of the *SagePlus* newsletter per year. Each of the issues was analyzed by entering the 12 monthly *SagePlus* newsletters into Microsoft Word 2010 where Flesch-Kincaid and Flesch Reading Ease were

calculated. Results of the 12 issues based the average reading level of the newsletter at a U.S. grade 3.475 with a range from 2.8 to 4.0. The average reading ease of the 12 issues was 79.525 with a range from 74.8 to 84.2, with 100 being the easiest to read. This data indicates that the newsletters are very easy to read. Table 4 presents the results of the study.

Table 4

*Flesch Reading Ease and Flesch-Kincaid Grade Level*

	Flesch Reading Ease	Flesch-Kincaid Grade Level
Issue 1	80.9	3.4
Issue 2	74.8	4.0
Issue 3	76.3	3.9
Issue 4	79.8	3.5
Issue 5	77.2	3.6
Issue 6	77.4	3.9
Issue 7	79.7	3.3
Issue 8	81.3	3.4
Issue 9	84.2	2.8
Issue 10	78.1	3.7
Issue 11	84.2	2.8
Issue 12	80.4	3.4
Total	954.3	41.7
Mean	79.535	3.475



The qualitative data received in response to the open-ended question of how the newsletter could be improved indicated that the newsletter may be too simplistic. Five participants shared this perspective.

#### **Research Question Four**

The final research question was: Does the *SagePlus* newsletter motivate healthy behavior changes? Twenty-three participants (57.5%) felt the newsletter somewhat motivated them to make healthy changes and 12 (30.0%) felt the newsletter motivated them quite a bit. Five participants felt the newsletter was not very helpful in motivating them to make healthy changes. Table 5 presents the results of the survey.

Table 5

#### *Has Reading Newsletter Motivated You to Make Healthy Changes*

Valid	Frequency	Percent	Valid %	Cumulative %
Not very much	5	12.5	12.5	12.5
Somewhat	23	57.5	57.5	70.0
Quite a bit	12	30.0	30.0	100.0
Total	40	100.0	100.0	

Seventeen (42.5%) participants felt the newsletter somewhat helped them to work on dietary goals and 15 (37.5%) felt the newsletter helped them quite a bit. Table 6 represents these results. Eight participants reported the newsletter was not at all or not very helpful in motivating them to work on dietary goals.

Table 6

*Does Newsletter Motivate You to Work on Dietary Goals*

Valid	Frequency	Percent	Valid %	Cumulative %
Not at all	2	5.0	5.0	5.0
Not very much	6	15.0	15.0	20.0
Somewhat	17	42.5	42.5	62.5
Quite a bit	15	37.5	37.5	100.0
Total	40	100.0	100.0	

Twenty-two (55%) reported the newsletter was somewhat helpful in working on exercise goals and 11 (27.5%) felt it helped quite a bit. Table 7 represents the results of the survey. Only seven participants felt the newsletter was not at all or not very helpful in motivating them to work on exercise goals.

Table 7

*Does Newsletter Motivate You to Work on Exercise Goals*

Valid	Frequency	Percent	Valid %	Cumulative %
Not at all	1	2.5	2.5	2.5
Not very much	6	15.0	15.0	17.5
Somewhat	22	55.0	55.0	72.5
Quite a bit	11	27.5	27.5	100.0
Total	40	100.0	100.0	

When comparing intake of fruits from the participants' initial reported intake at the start of the SagePlus program to the intake reported during the survey, intake of fruits remained the same for 10 (25.6%) of the participants. Table 8 represents the results of the survey. Twenty-five or 62.5% participants reported an increase of servings of fruits per day by one to four servings. Four participants or 10% reported a decrease in daily consumption of fruits. There was one participant in the 40 who did not report their initial intake of fruit.

Table 8

*Change in Fruit Intake*

Valid	Frequency	Percent	Valid %	Cumulative
-3.00	1	2.5	2.6	2.6
-1.00	3	7.5	7.7	10.3
.00	10	25.0	25.6	35.9
1.00	9	22.5	23.1	59.0
2.00	12	30.0	30.8	89.7
3.00	3	7.5	7.7	97.4
4.00	1	2.5	2.6	100.0
Total	39	97.5	100.0	
Missing System	1	2.5		
Total	40	100.0		

Intake of vegetables remained the same for 11 (28.2%) participants and 22 (56.4%) reported an increase of servings of vegetables per day by one to five servings. Table 9 represents the results of the survey. Six participants or 15.4% reported a

decrease in daily consumption of vegetables. One participant did not report their initial vegetable intake.

Table 9

*Change in Vegetable Intake*

Valid	Frequency	Percent	Valid %	Cumulative %
-3.00	1	2.5	2.6	2.6
-2.00	1	2.5	2.6	5.1
-1.00	4	10.0	10.3	15.4
.00	11	27.5	28.2	43.6
1.00	12	30.0	30.8	74.4
2.00	5	12.5	12.8	87.2
3.00	2	5.0	5.1	92.3
4.00	2	5.0	5.1	97.4
5.00	1	2.5	2.6	100.0
Total	39	97.5	100.0	
Missing System	1	2.5		
Total	40	100.0		

Moderate activity was described as activity that did not include walking and raised your heart-rate. When comparing activity when starting the Sage*Plus* program to activity reported on the survey, number of days of moderate activity showed no change in 8 (20%) of the participants. Table 10 presents the results of the survey. Another 12 (30%) of the participants increased the number of days they had moderate activity. Twenty or 50% actually decreased the number of days they had moderate activity.

Table 10

*Change in the Number of Days of Moderate Activity*

Valid	Frequency	Percent	Valid %	Cumulative %
-7.00	1	2.5	2.5	2.5
-5.00	2	5.0	5.0	7.5
-4.00	3	7.5	7.5	15.0
-3.00	2	5.0	5.0	20.0
-2.00	6	15.0	15.0	35.0
-1.00	6	15.0	15.0	50.0
.00	8	20.0	20.0	70.0
1.00	3	7.5	7.5	77.5
2.00	2	5.0	5.0	82.5
3.00	6	15.0	15.0	97.5
5.00	1	2.5	2.5	100.0
Total	40	100.0	100.0	

When comparing number of days per week the participant walked, 12 (30%) had no change and 9 (22.5%) increased the number of days walking per week. Nineteen or 47.5% actually decreased the number of days walked per week.

Table 11

*Change in the Number Days Per Week Walked 10 Minutes*

Valid	Frequency	Percent	Valid %	Cumulative %
-7.00	1	2.5	2.5	2.5
-5.00	1	2.5	2.5	5.0
-4.00	2	5.0	5.0	10.0
-3.00	2	5.0	5.0	15.0
-2.00	6	15.0	15.0	30.0
-1.00	7	17.5	17.5	47.5
.00	12	30.0	30.0	77.5
1.00	1	2.5	2.5	80.0
2.00	3	7.5	7.5	87.5
3.00	3	7.5	7.5	95.0
4.00	1	2.5	2.5	97.5
7.00	1	2.5	2.5	100.0
Total	40	100.0	100.0	

Using the Kendall Tau correlational coefficient studies, it was determined that there was no significant correlation between reading the newsletter and motivation to make healthy changes and number of fruit servings eaten ( $r = .008$ ,  $p = .954$ ,  $N = 39$ ) or changes in vegetable servings eaten ( $r = -.024$ ,  $p = .864$ ,  $N = 39$ ). Similar results were found between reading the newsletter to improve exercise habits and change in days of moderate activity ( $r = .128$ ,  $p = .328$ ,  $N = 40$ ) or changes in number of days per week walked ( $r = .172$ ,  $p = .194$ ,  $N = 40$ ).

There were no significant correlations between educational level and changes in number of fruit servings eaten ( $r = .035$ ,  $p = .802$ ,  $N = 36$ ), changes in vegetable servings eaten ( $r = .038$ ,  $p = .780$ ,  $N = 36$ ), changes in number of days of moderate activity ( $r = -.185$ ,  $p = .160$ ,  $N = 37$ ), and changes in number of days walked per week ( $r = .043$ ,  $p = .749$ ,  $N = 37$ ).

Close to 70% of the sample surveyed either did not make improvements or actually declined in activity level. Fruits and vegetables made the most positive change with intake of fruits increasing by 62.5% and only 10% decreasing their intake. Vegetables increased by 56.4% and only decreased by 15.4%. This data did not reach statistical significance using the Kendall correlational coefficient studies.

### **Summary**

Forty participants of the *SagePlus* program completed a telephone survey consisting of 20 questions and one open-ended question to evaluate the *SagePlus* newsletter. The sample population was middle aged, English speaking, primarily Caucasian women who reside in the State of Minnesota. Data was analyzed using SPSS version 12 software, Flesch-Kincaid Level Readability Formula, and the Flesch Reading Ease Test. Research questions guiding the results of the analysis were: (a) Do the *SagePlus* participants read the monthly newsletter in its entirety or only specific articles of interest? (b) Is the English version of the *SagePlus* newsletter written clearly? (c) At what level is the *SagePlus* newsletter written? and (d) Does the *SagePlus* newsletter motivate healthy behavior changes?

Findings of the study showed that participants do read the newsletter and the majority read all four main articles in the newsletter. All participants in the sample

thought the English version of the newsletter was clearly written. Findings showed the average reading ease of the newsletters was 79.53 and the average reading level was at the 3.5 U.S. grade level. Intake of fruits and vegetables made the most changes with fruits increasing by 62.5% and vegetables by 56.4%. Close to 70% of the sample surveyed either did not make improvements or actually declined in activity level. Participants (87.5%) receiving the newsletter thought the newsletter motivated healthy behavior changes.



## **CHAPTER V**

### **DISCUSSION AND CONCLUSIONS**

The purpose of this study is to determine the reading level of the *SagePlus* newsletter and to evaluate the effectiveness of the *SagePlus* newsletter as a communication and motivational tool for the *SagePlus* participants. The research questions for this study are: (a) Do the *SagePlus* participants read the monthly newsletter in its entirety or only specific articles of interest? (b) Is the English version of the *SagePlus* newsletter written clearly? (c) At what level is the *SagePlus* newsletter written? and (d) Does the *SagePlus* newsletter motivate healthy behavior changes? This chapter summarizes the background literature, methodology, and results of the study. Discussion and conclusions, scope and limitations, and implications for practice and research are included in this chapter.

#### **Research Question One**

Research question one: Do the *SagePlus* participants read the monthly newsletter in its entirety or only specific articles of interest? The results of this study are similar to other studies in that if a newsletter is easy to read it can be useful to the reader. Written material like newsletters can be a valuable tool for reinforcing the verbal message (Mumford, 1997). Educational and informational articles written in the newsletter need to communicate interest to the reader (Shackelford & Griffis, 2006). The *SagePlus* participants surveyed all agreed that the newsletter was useful and most of them reported reading the newsletter in its entirety and not just specific articles. Findings supported that the *SagePlus* newsletter is a useful educational tool for the participants. If the newsletter

lacked content it may be treated a junk mail and discarded without being read. This study found that 47.5% of the *SagePlus* participants surveyed read 100% of the monthly newsletter and 27.5% read 80% of the newsletter. This high percentage of women who read the newsletter could be contributed to selecting only participants who are enrolled in both the steps and fruits and vegetable program. Topics of interest may appeal to all participants if they have goals in both areas. Results could potentially be different if the study surveyed only women in one or the other program. Of the four main articles in the newsletters, recipes was read 90% of the time by participants.

### **Research Question Two**

Research question two: Is the English version of the *SagePlus* newsletter written clearly? One hundred percent of the participants involved in the survey felt the newsletter was clearly written. The literature review supports the idea that if a newsletter is to be an effective communication and motivational tool it must be tailored to the individual or group (Walker et al., 2010). The literature review identified that newsletters should be short and easy to read, and the appearance should be professional and attractive to the reader (Shackelford & Griffis, 2006). Clarity of the content of the *SagePlus* newsletter supports this view.

From the quantitative data collected a few *SagePlus* participants surveyed (61%) said they loved the newsletter and did not feel it should change and 11.3% of the participants reported that the newsletter was too basic or too generalized. This generalization could be related to the educational level of the participants. Of the participants surveyed 91.8% had a minimum of a high school diploma or equivalent. These statistics were higher than the 87.9% Minnesota state average of people age 25 or

above having a high school diploma or equivalent. Two of the participants or 5.4% had completed a two year college degree. Participants who held a Bachelors degree was 27% which was equal to the Minnesota average of people age 25 above with a Bachelors degree of 27.4% (see Appendix E).

Eight (18.2%) participants would like to see more topics in the newsletters. Comments from the participants during the survey mentioned that the newsletter was too simplistic. The findings do support that the *SagePlus* newsletter is clearly written for the population surveyed in the study. This raises the question, is the *SagePlus* newsletter too simple for the population surveyed? With a majority of the participants educated above the Minnesota average having a 12 grade education and the newsletter written at a 3.5 U.S. grade level, maybe the newsletter is too simplistic for the intended population.

### **Research Question Three**

Research question three: To determine what level the *SagePlus* newsletter is written at, the Flesch-Kincaid Grade Level Readability Formula and Flesch Reading Ease Test were used. The literature review identified that current healthcare written information is written at a level that is too advanced for the reader to comprehend. It is recommended that health information be written at an eighth-grade level or below (Badarudeen & Sabharwal, 2010). In the 1992 Adult Literacy Survey, results showed the 90-million Americans may be at risk of medical complications due to low health literacy (Pfizer, 2003). There is a generalization that patients understand written material that is given to them, placing the patient at risk for preventable complications (Charet, 2010). The *SagePlus* newsletter is written at a U.S. grade level of 3.5 which is clearly below the eighth-grade standard. The readability rates the newsletter on a 100-point scale; the

higher the score the easier it is to understand. The average reading ease of the 12 newsletters were 79.5 which were above the recommended score of between 60 and 70.

The low grade reading level of the newsletter could possibly be intentional due to the diverse population served by the *SagePlus* program. This study was limited to English speaking participants only whereas the *SagePlus* program also serves women that do not speak English or are non-native English speakers. The educational level of the participants surveyed showed 13 (35.1%) had some college and 12 (32.4%) had a two or four year degree. Only three participants had an education less than 11th grade level (see Appendix E). Findings support that the *SagePlus* newsletter is written at a reading level the population surveyed can understand.

#### **Research Question Four**

Research question four: Does the *SagePlus* newsletter motivate healthy behavior changes? The literature review indicated that reducing risk factors for CAD through behavior modification can reduce morbidity and mortality (Chiou et al., 2009). Behavior interventions such as the *SagePlus* newsletter can help improve the participants understanding of themselves and reinforce goals for behavior improvements. The literature review indicated that interventions like newsletters can motivate behavior change. Results of the telephone survey showed that 87.5% of the participants felt the newsletter motivated them in some way to make healthy changes (see Table 5). Participants rating their health “somewhat better” or “much better” since their enrollment in the *SagePlus* program was 77.5% while only 5% rated their health somewhat worse or much worse.

The newsletter made the most impact on intake of fruits and vegetables with fruits increasing by 62.5% and vegetables increasing by 56.4%. Participants reported that 90% read the “recipes” that were in the newsletter. The study revealed newsletters that contained easy to read articles that were useful to the reader influenced decisions in the reader (Miller, 1991). It is possible that the participants were successful in increasing fruits and vegetables due to other interventions offered by the *SagePlus* program such as weekly monitoring of intake of fruits and vegetables for a \$20 gift card when reaching 1,000 servings. In the ALIVE program when more than one intervention was used in the program the program was more successful among participants (Buijs et al., 2003).

When comparing reported activity prior to the start of the program and now, close to 70% of sample participants actually stayed the same or declined in activity.

Interestingly, 87.5% of the women who participated in this study felt the newsletter motivated them to make healthy changes, yet 70% stayed the same or declined in their activity level. This decline could possibly be due to the time of year the study was done compared to when they started the program; the study was conducted during the Minnesota winter month of March. Comments from participants surveyed during the telephone interview suggested winter weather or injury made it difficult for them to be active. Comments were also made that they could not afford to go to a gym or buy equipment to exercise at home. The *SagePlus* program offers a pedometer to help participants keep track of their steps and gives a \$20 gift card at 1 million steps; if the participants cannot get out walking due to weather then the intervention will be unsuccessful. Other means of meeting their activity goals need to be addressed in the newsletter.

The findings present the possible need to modify the *SagePlus* newsletter during the winter months to promote healthy behavior changes. Articles such as “exercise” or “current interest” could be tailored to types of indoor activities that could be done indoors during inclement weather. Cost saving activities could be featured such as indoor mall walking or promoting gyms that offer discounts. Participants requested additional information about physical activity or exercises as part of the survey. The participants commented that they would like to see information on exercise programs and include diagrams in the newsletter. Participants would also like to see motivational articles on success stories of weight loss that other participants have done.

The literature consistently indicates that newsletters can make an impact on behavior change if the newsletter is tailored to the individual or group. Tailoring the *SagePlus* newsletter to include ways to be active, increase exercise, and increase fruits and vegetables in the winter may be needed to effectively use the newsletter as an interventional tool. Strategies need to be developed to increase daily activity all year long.

### **Pender’s Model of Health Promotion**

Pender’s model of health promotion helps guide the provider in helping people achieve a better quality of life based on their individual potential by tailoring interventions for that person. The study supports the Pender model in determining if the *SagePlus* newsletter is an interventional tool, tailored to improve the quality of life of the participants. This model has been used in several clinical studies including schools, workplaces, treatment facilities, jails, and rehabilitation facilities. These areas included a

diverse range of people in both age and gender (McCullagh, 2009). The *SagePlus* newsletter serves women with diverse backgrounds which supports the Pender model.

Pender's model articulates if a person has confidence and understands the value of the behaviors they are trying to achieve, they are more likely to have success in meeting their goals (McCullagh, 2009). The *SagePlus* newsletter provides participants with information to help them understand the value of exercise. When evaluating an intervention tool such as the *SagePlus* newsletter it is important to have a model that examines the total health of the person and tailors an intervention that is effective in behavior change for that person. The results of this study support the use of the Health Promotion Model by showing that the *SagePlus* newsletter did impact the intake of fruits and vegetables in a positive way, with the hopes of achieving a better quality of life in the participant. Despite the fact that activity levels remained the same or decreased in 70% of the participants, 82.5% felt the newsletter was helpful in working on exercise goals. The *SagePlus* newsletter supported the efforts of the participants in meeting their goals and supporting Pender's Health Promotion Model.

### **Scope and Limitations**

Results of the study are not applicable to populations other than those studied because the study was carried out with a specific group. The sample size was small and further limited to those who received the *SagePlus* newsletter. Biological patterns vary with each participant so each intervention does not affect each person the same.

It is not possible to know if the information shared by the participants accurately reflects their behavior in regard to reading the newsletter, dietary intake, or physical activity. The time of year was also a potential limitation in the study based on

participants stating they exercise more and eat more fruits and vegetables at other times of year versus winter months. A general assumption was made that during the telephone survey participants remembered the questions that they were asked and answered them based on receiving the *SagePlus* newsletter.

Results of the study were limited to the two days the researcher attempted to call participants. Of the 190 potential participants, 111 did not answer their phones and 25 had numbers that were disconnected. If the calling time was expanded and included the weekend the sample participants could have potentially been larger. Results were limited to being a telephone survey and the assumption everyone has a phone. Questions could be confusing to the participant over the phone and the possibility of more accurate results exist if a mailed survey was done.

### **Implications for Practice**

This study found that newsletters as an intervention are effective in motivating people to continue to work on their personal goals towards improving their dietary practices and physical activity. Providers can use this study to positively impact individuals and promote healthy lifestyle changes through the use of educational tools such as newsletters. The results of the study support the use of newsletters as an educational, motivational avenue for healthcare providers to use with patients to promote health and behavior change.

Reading ease and grade level of the newsletter should be written at an eighth grade level or below. The *SagePlus* newsletters were written at a U.S. grade level of 3.5 and are potentially too simplistic for the intended audience in the sample based on both quantitative and qualitative data. For newsletters to be an effective interventional tool it



needs to be tailored to the group or individual. More research needs to be conducted to determine if writing the newsletter at a higher grade level would improve results.

Primary prevention is aimed at the prevention of health problems and disease before they occur. Health promotion and primary prevention often overlap in healthcare education and interventions. Interventional tools like the *SagePlus* newsletter can be used in primary prevention of health problems and disease in the clinical setting.

Communication is valuable in the clinical setting between the provider and the patient. Verbal information given to patients is forgotten 40-80% of the time (Rao & Fogarty, 2007). Newsletters can be a valuable communication tool for teaching and reinforcing what is given verbally to the patient.

### **Implications for Research**

Further research needs to be completed with the Spanish version of the *SagePlus* newsletter in the utilization of the newsletter in health promotion. More research needs to be conducted to determine if writing the newsletter at a higher grade level would improve results in activity levels of the participants.

The telephone questionnaire was difficult to administer due to the similarities of the questions and choices. A replication study could be completed after modifying the questionnaire by eliminating confusing questions and comparing results. Eliminating the telephone survey and administering a mailed survey could also be done to eliminate or decrease confusion of reading a telephone survey, and expecting the participant to remember accurately what was read to them.

Further studies could be done by including second and third year *SagePlus* participants and comparing BMI each year to accurately reflect the newsletter impact on

behavior change. Expanding the telephone calling beyond two days could also yield and increase in sample size and provide more accurate relationships between variables.

Women in the study reported that they were motivated to make changes in their lifestyle yet 70% stayed the same or actually declined on the program objectives of increasing activity. It would be useful to apply this study in the summer and compare results to this study done in the winter to determine if the newsletter motivates different levels of change at different times of the year. Identifying factors or barriers other than motivation that influence behavior change could also be studied in future research.

This study was based on women in both “steps” and “fruits and vegetable” programs of *SagePlus*. Studies need to be conducted on each of these programs separately and compare if the newsletter is effective as a motivational tool.

### **Summary**

The findings of this study support the use of the *SagePlus* newsletter as a tool to motivate participants to meet their goals. Participants did read the newsletter with a majority reading the whole newsletter. The findings indicate that the newsletter is written clearly at a reading level that is comprehensible yet lower than the current recommendations for healthcare patient education materials. The majority of participants reported that the newsletter motivated healthy behavior changes. This change was consistent when compared with initial data provided by the MDH regarding initial fruits and vegetable intake prior to starting the program. Despite the fact that activity levels remained the same or decreased in 70% of the participants, the majority (82.5%) felt the newsletter was helpful in working on exercise goals.

Newsletters can be an effective educational and motivational tool provided they are written clearly and at a level the reader can comprehend. Providers can positively impact individuals and promote healthy lifestyle changes through the use of educational tools such as newsletters. Pender's model of health promotion postulates that health includes the complete person, including that person's strengths and potential. Behavior modification results from the desire to increase well-being and actualize human health potential in the person (Kozier, 2004). A review of the literature indicates that healthcare professionals have a responsibility to communicate at a level the reader can comprehend. If the reader is unable to comprehend the newsletter, then it will be difficult to optimize their potential and change behavior.

Healthcare professionals are constantly struggling to find ways to provide information to influence behavior and encourage people to maintain healthy lifestyles. Health education has traditionally been a key element of health promotion. The monthly newsletters sent to the participants in the *SagePlus* program are one way to provide health education and promote continued motivation to work toward dietary and activity goals of the participants.

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## REFERENCES

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**APPENDICES**

**APPENDIX A**

**IRB APPROVAL LETTERS**

Hi, Diane:

Thank you for sending information about another study related to *SagePlus* titled "Minnesota Department of Health *SagePlus* program evaluation: Newsletter effectiveness." In this study, participants are asked to respond to a telephone survey about the newsletter. The focus is on participants' reaction to the newsletter of this specific project. After reviewing the material, we find that the study is program evaluation of a public health program and does not constitute research as defined by federal regulations. This study also does not need further review by the Department of Health's IRB.

Please feel free to contact me if you want to discuss this study further.

Sincerely,  
Pete Rode  
IRB Administrator



Diane E. Witt, Ph.D.  
 360 Wissink Hall – School of Nursing  
 Minnesota State University, Mankato  
 Mankato, MN 56001

Karen Anderson  
 215 Buffalo St. S.  
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 224 111<sup>th</sup> St.  
 Beaver Creek, MN 56116

JoLene Schlegel  
 23533 45<sup>th</sup> St. SE  
 Lake Lillian, MN 56253

February 28, 2011

Dear Diane, Karen, Nichole and JoLene:

RE: IRB Proposal, Log #3758 entitled “Minnesota Department of Health SagePlus program evaluation: Newsletter effectiveness”

Your IRB Proposal has been approved as of February 28, 2011. On behalf of the Institutional Review Board I wish you success with your study. Remember that you must seek approval for any changes in your study, its design, funding source, consent process, or any part of the study that may affect participants in the study. Should any of the participants in your study suffer a research-related injury or other harmful outcome, you are required to report them to the IRB as soon as possible.

The approval of your study is for one calendar year from the approval date. When you complete your data collection, or should you discontinue your study, you must notify the IRB. Please include your log number with any correspondence with the IRB.

This approval is considered final when the full IRB approves the monthly decisions and active log. The IRB reserves the right to review each study as part of its continuing review process. Continuing reviews are usually scheduled. However, under some conditions the IRB may choose not to announce a continuing review.

Sincerely,

A handwritten signature in cursive script that reads "Patricia Hargrove".

Patricia M. Hargrove, Ph.D.  
 IRB Coordinator  
 CC: File

COLLEGE OF GRADUATE STUDIES AND RESEARCH  
 115 ALUMNI FOUNDATION CENTER – MANKATO, MN 56001  
 PHONE 507-389-2321 (V) – 800-627-3529 OR 711 (MRS/TTY) – FAX 507-389-5974  
*A member of the Minnesota State Colleges and Universities System. Minnesota State University, Mankato is an Affirmative Action/Equal Opportunity University.*

**APPENDIX B**  
**CONSENT FORM**

## Consent Form

### Project: The Evaluation of a Health Newsletter

Hello, is this \_\_\_\_\_ (name of potential participant)?

**If NO:** Thank you. (End the call.) **If they ask if there is a message:** “No message today, is there another time I can call back? (Log time). Thank you. (End call.)

#### **If YES,**

##### **Introduction:**

I am speaking with you from Minnesota State University, Mankato regarding a research study in the evaluation of the *SagePlus* newsletter.

**How Selected:** You were selected as a possible participant because you are enrolled in the *SagePlus* program through the Minnesota Department of Health.

**Voluntary:** Your participation is completely voluntary. Your participation has no impact on your enrollment in the *SagePlus* program. You can skip any questions you don't want to answer. You can stop at any time.

##### **Procedure:**

If you agree to be in this study, we will ask you to do take part in a 10-15 minute telephone survey about your experiences with the *SagePlus* newsletter.

##### **Confidentiality:**

The records of this study will be kept private. Your name will not appear on the completed questionnaire, it will be coded and answers are completely confidential. MDH will not know who participated in the study or answers. Only the researchers for this study will have access to the records.

##### **Risks and Benefits:**

There are no risks to you. The benefits of this study will help us make improvements to the newsletter.

##### **Contacts:**

If you have questions later, you may contact Karen Anderson, by calling (952) 873-2657. If you are concerned about an ethical concern you will need to call IRB personnel at 507-389-2321, or the principle investigator, Diane Witt, (507) 389-1725.

**Questions:** Do you have any questions?

**Consent:** Do you agree to participate?

YES. Interviewer Print Name \_\_\_\_\_ Code # \_\_\_\_\_

NO. Interviewer: (Thank you for your time)

**APPENDIX C**  
**MODIFIED MINNESOTA WOMEN'S HEALTHY**  
**HEART PROGRAM QUESTIONNAIRE**



**Modified Minnesota Women's Healthy Heart Program Questionnaire**

Code: \_\_\_\_\_

Length in Program: \_\_\_\_\_

1. What motivated you to choose to participate in the Sage*Plus* program?
  1. \_\_\_ Free heart health screening
  2. \_\_\_ I was worried about my heart health
  3. \_\_\_ A friend or relative recommended it
  4. \_\_\_ Gift card or check
  5. \_\_\_ Other \_\_\_\_\_
  
2. How much have you thought about making healthy changes in your lifestyle?
  1. \_\_\_ No thought.
  2. \_\_\_ Some thought, but have made no changes.
  3. \_\_\_ Some thought and have made some changes.
  4. \_\_\_ Much thought, but have made no changes.
  5. \_\_\_ Much thought and have made some changes.
  6. \_\_\_ Much thought and have made many changes.
  
3. Compared to before you began the program, how would you rate your health in general today?
  1. \_\_\_ Much worse
  2. \_\_\_ Somewhat worse
  3. \_\_\_ About the same
  4. \_\_\_ Somewhat better
  5. \_\_\_ Much better

Please answer the following questions, thinking about since you began receiving the Sage*Plus* newsletter:

4. What is your overall impression of the Sage*Plus* newsletters?
  1. \_\_\_ I have not received the newsletter---If yes, end survey here.
  2. \_\_\_ I am very impressed with the newsletter.
  3. \_\_\_ I am somewhat impressed with the newsletter.
  4. \_\_\_ I am somewhat unimpressed with the newsletter.
  5. \_\_\_ I am not impressed with the newsletter.
  
5. What percent of the newsletter do you read?
  1. \_\_\_ 20%
  2. \_\_\_ 40%
  3. \_\_\_ 60%
  4. \_\_\_ 80%
  5. \_\_\_ 100%

6. When you receive the newsletter every month, does it motivate you to work on your goals set in the *SagePlus* program?
  1. \_\_\_ Not at all
  2. \_\_\_ Not very much
  3. \_\_\_ Somewhat
  4. \_\_\_ Quite a bit
  
7. How much does reading the newsletter continue to motivate you to work toward your dietary goals throughout the month?
  1. \_\_\_ Not at all
  2. \_\_\_ Not very much
  3. \_\_\_ Somewhat
  4. \_\_\_ Quite a bit
  
8. How much does reading the newsletter continue to motivate you to work toward your exercise goals throughout the month?
  1. \_\_\_ Not at all
  2. \_\_\_ Not very much
  3. \_\_\_ Somewhat
  4. \_\_\_ Quite a bit
  
9. How much has reading *SagePlus* newsletter motivated you to make healthy changes in your lifestyle?
  1. \_\_\_ Not at all
  2. \_\_\_ Not very much
  3. \_\_\_ Somewhat
  4. \_\_\_ Quite a bit
  
10. How much has reading the *SagePlus* newsletter improved your overall dietary habits?
  1. \_\_\_ Not at all
  2. \_\_\_ Not very much
  3. \_\_\_ Somewhat
  4. \_\_\_ Quite a bit
  
11. How much has reading the *SagePlus* newsletter improved your overall exercise habits?
  1. \_\_\_ Not at all
  2. \_\_\_ Not very much
  3. \_\_\_ Somewhat
  4. \_\_\_ Quite a bit

12. How many servings of fruits and vegetables do you eat daily?  
Fruits: \_\_\_\_\_ Vegetables: \_\_\_\_\_
13. How many days a week do you participate in moderate physical activity?  
(Moderate physical efforts that make you breathe somewhat harder than normal.  
Do not include walking.)  
Number of days/week \_\_\_\_\_ Average number of minutes \_\_\_\_\_
14. How many days per week do you walk for at least 10 minutes at a time?  
Number of days/week \_\_\_\_\_ Average number of minutes \_\_\_\_\_
15. Has the newsletter impacted your change in fruit and vegetable intake?  
1. \_\_\_No            2. \_\_\_Yes
16. Has the newsletter impacted your change in physical activity level?  
1. \_\_\_No            2. \_\_\_Yes
17. Is the newsletter written clearly?  
1. \_\_\_Not at all  
2. \_\_\_Not very much  
3. \_\_\_Somewhat  
4. \_\_\_Quite a bit
18. If the answer to #17 is rated 1-3, what part(s) of the newsletter are not clear?  
Please check all that apply.  
1. \_\_\_Ask Anne  
2. \_\_\_Recipe  
3. \_\_\_Exercise  
4. \_\_\_Current interest article
19. What part(s) of the newsletter did you routinely read? Please check all that apply.  
1. \_\_\_Ask Anne  
2. \_\_\_Recipe  
3. \_\_\_Exercise  
4. \_\_\_Current interest article
20. What do you think we could do to improve the Sage*Plus* newsletter?

**APPENDIX D**  
**DEMOGRAPHIC QUESTIONNAIRE**

## Demographic Questionnaire

Code: \_\_\_\_\_

Age: \_\_\_\_\_ Race: \_\_\_\_\_

Primary language spoken in the home: \_\_\_\_\_

City of Residence: \_\_\_\_\_ County of Residence: \_\_\_\_\_

Monthly household income: \_\_\_\_\_

Number of people supported by this income: \_\_\_\_\_

Highest level of education:

- 1) Grade 8 or less
- 2) Grade 9-11(some High School)
- 3) Grade 12 or GED (High School Graduate)
- 4) College or Tech. School, but no degree
- 5) Associate degree (2-year college graduate)
- 6) Bachelor's degree (4-year college graduate)
- 7) Post-graduate degree (Master's, Professional or Doctorate)

Height: \_\_\_\_\_ Weight: \_\_\_\_\_

At the time of enrollment in the Sage*Plus* program:Number of fruit servings eaten daily: \_\_\_\_ **B35 is between 3 and 5**Number of vegetable servings eaten daily: \_\_\_\_ **B35 is between 3 and 5**

Number of days per week they engaged in vigorous activity: \_\_\_\_\_

Hours: \_\_\_\_\_ Minutes: \_\_\_\_\_

Number of days per week they engaged in moderate activity: \_\_\_\_\_

Hours: \_\_\_\_\_ Minutes: \_\_\_\_\_

Number of days per week they walked at least 10 minutes at a time: \_\_\_\_\_

Hours: \_\_\_\_\_ Minutes: \_\_\_\_\_

**APPENDIX E**  
**DEMOGRAPHIC STATISTICS**

**Age**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	43	1	2.5	2.5	2.5
	45	1	2.5	2.5	5.0
	46	2	5.0	5.0	10.0
	47	1	2.5	2.5	12.5
	50	4	10.0	10.0	22.5
	51	1	2.5	2.5	25.0
	52	3	7.5	7.5	32.5
	53	2	5.0	5.0	37.5
	54	2	5.0	5.0	42.5
	56	2	5.0	5.0	47.5
	57	4	10.0	10.0	57.5
	58	5	12.5	12.5	70.0
	59	3	7.5	7.5	77.5
	60	1	2.5	2.5	80.0
	61	3	7.5	7.5	87.5
	63	3	7.5	7.5	95.0
	64	2	5.0	5.0	100.0
Total		40	100.0	100.0	

**Educational Level**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< Grade 9	1	2.5	2.7	2.7
	Grade 9-11	2	5.0	5.4	8.1
	Grade 12 or GED	9	22.5	24.3	32.4
	Some College	13	32.5	35.1	67.6
	2-Year Degree	2	5.0	5.4	73.0
	4-Year Degree	10	25.0	27.0	100.0
	Total		37	92.5	100.0
Missing	System	3	7.5		
Total		40	100.0		

**Monthly Income**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	111	1	2.5	2.8	2.8
	450	1	2.5	2.8	5.6
	500	1	2.5	2.8	8.3
	850	1	2.5	2.8	11.1
	900	1	2.5	2.8	13.9
	928	1	2.5	2.8	16.7
	960	1	2.5	2.8	19.4
	968	1	2.5	2.8	22.2
	1000	3	7.5	8.3	30.6
	1100	2	5.0	5.6	36.1
	1136	1	2.5	2.8	38.9
	1196	1	2.5	2.8	41.7
	1200	3	7.5	8.3	50.0
	1250	1	2.5	2.8	52.8
	1500	2	5.0	5.6	58.3
	1504	1	2.5	2.8	61.1
	1560	1	2.5	2.8	63.9
	1825	1	2.5	2.8	66.7
	1917	1	2.5	2.8	69.4
	1967	1	2.5	2.8	72.2
	1996	1	2.5	2.8	75.0
	2000	2	5.0	5.6	80.6
	2100	2	5.0	5.6	86.1
	2321	1	2.5	2.8	88.9
	2500	2	5.0	5.6	94.4
	2613	1	2.5	2.8	97.2
	4160	1	2.5	2.8	100.0
	Total	36	90.0	100.0	
Missing	System	4	10.0		
Total		40	100.0		

**Number of People Supported by Income**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	23	57.5	57.5	57.5
	2	15	37.5	37.5	95.0
	3	1	2.5	2.5	97.5
	4	1	2.5	2.5	100.0
	Total	40	100.0	100.0	



## Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	28	70.0	71.8	71.8
	Native American	4	10.0	10.3	82.1
	African American	6	15.0	15.4	97.4
	Hispanic	1	2.5	2.6	100.0
	Total	39	97.5	100.0	
Missing	System	1	2.5		
Total		40	100.0		

## BMI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19.60	1	2.5	2.6	2.6
	20.10	1	2.5	2.6	5.3
	20.80	1	2.5	2.6	7.9
	22.80	1	2.5	2.6	10.5
	23.60	1	2.5	2.6	13.2
	24.10	1	2.5	2.6	15.8
	25.80	3	7.5	7.9	23.7
	26.20	1	2.5	2.6	26.3
	26.90	2	5.0	5.3	31.6
	27.20	1	2.5	2.6	34.2
	28.70	1	2.5	2.6	36.8
	29.20	1	2.5	2.6	39.5
	30.00	1	2.5	2.6	42.1
	30.20	2	5.0	5.3	47.4
	30.30	1	2.5	2.6	50.0
	30.70	1	2.5	2.6	52.6
	33.20	1	2.5	2.6	55.3
	33.30	1	2.5	2.6	57.9
	33.80	1	2.5	2.6	60.5
	34.20	2	5.0	5.3	65.8
	34.30	1	2.5	2.6	68.4
	34.40	1	2.5	2.6	71.1
	34.80	1	2.5	2.6	73.7
	35.10	1	2.5	2.6	76.3
	36.60	1	2.5	2.6	78.9
	36.80	1	2.5	2.6	81.6
	37.40	1	2.5	2.6	84.2
	37.70	1	2.5	2.6	86.8
	38.20	1	2.5	2.6	89.5
	38.60	1	2.5	2.6	92.1
	41.20	1	2.5	2.6	94.7
	43.10	1	2.5	2.6	97.4
	47.60	1	2.5	2.6	100.0
	Total	38	95.0	100.0	
Missing	System	2	5.0		
Total		40	100.0		