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EVALUATION OF HEALTH NEWSLETTER EFFECTIVENESS ON DIETARY
HABITS IN LOW-INCOME MIDDLE-AGED WOMEN

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

by
Nichole J. Hassebroek, RN, BSN

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EVALUATION OF HEALTH NEWSLETTER EFFECTIVENESS ON DIETARY
HABITS IN LOW-INCOME MIDDLE-AGED WOMEN

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Abstract

EVALUATION OF HEALTH NEWSLETTER EFFECTIVENESS ON DIETARY HABITS IN LOW-INCOME MIDDLE-AGED WOMEN

There is little known about the effectiveness of the *SagePlus* newsletters at motivating dietary habit changes. The purpose of this study was to determine the effectiveness of the *SagePlus* newsletter in motivating low-income, middle-aged women who are participating in the *SagePlus* program to adopt healthier eating habits, specifically to eat more fruits and vegetables. A nonexperimental, descriptive correlational design was used in this study. Phone calls were placed to current *SagePlus* participants who had been enrolled in the program between six and 12 months. 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 for data collection. Data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 12. This study found that the participants were motivated to work on and increase their intake of fruits and vegetables. A majority of the participants (70.5%) felt that the newsletter impacted their fruit and vegetable intake. Sixty-five percent of the women who participated in this study increased their fruit intake and 55% increased their daily vegetable intake between the time of enrollment in the program to the time of survey participation. The majority of the participants (72.7%) thought that the newsletter was able to motivate them to work toward working on their dietary goals throughout the month. Healthcare providers can promote healthy dietary change by the use of newsletters. The findings of this study

support the use of the Sage*Plus* newsletter as a tool to motivate middle-aged, low-income women to make dietary changes.

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CHAPTER I

INTRODUCTION TO THE PROBLEM

While studies have shown that one of the key factors to well-being is healthy dietary habits, there are many Americans who are falling short of the daily recommendations. Beginning in 1985, the United States Department of Agriculture (USDA) Dietary Guidelines for Healthy Americans recommended consuming at least two servings of fruit and three servings of vegetables daily (Casagrande, Wang, Anderson, & Gary, 2007). In 1991, the 5-a-day program for better health was implemented to increase public awareness of the importance of eating at least five fruits and vegetables daily (Casagrande et al., 2007). All of this was completed using education, advertising, and school and workplace interventions. Despite all of these interventions, researchers have reported that only an estimated 27% of adults consume three or more servings of vegetables and only 29% consumed two or more fruits, with only 9% meeting both guidelines (Beresford et al., 2010; Casagrande et al., 2007).

For dietary habits to improve, action by healthcare professionals must occur. In order to change individual dietary habits and behaviors, intervention must take place by the provider. 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. Through interventions, providers will strive to increase each individual's intake of fruits and vegetables to the recommended amount.

Poor dietary habits are a risk factor for many disease processes that are affecting the population today. As individuals consume unhealthy food, they are not only eating foods that are nonnutritive but are also increasing their risk for many diseases.

According to the World Health Organization [WHO] (2003) and the United Nations Food and Agriculture Organization [FAO] (2003), a diet that is abundant in fruits and vegetables is one of the key measures in preventing chronic disease. The WHO also identified that meeting the goals for the recommended dietary intake and physical activity will not only promote good health but will also aid in the prevention of many chronic diseases such as diabetes, hypertension, hyperlipidemia, and cancer. If clinicians are able to effectively promote healthier dietary practices, there would be potential to improve not only the person's immediate health, but also their future health.

Individuals who practice unhealthy dietary habits may have difficulty changing their behaviors. There are many factors that must be taken into consideration by both the individual and the provider when attempting to modify behavior. These may include psychological factors such as the readiness for change, knowledge, and attitude of the individual. However, the person may also have physical or financial barriers to dietary changes such as financial constraints, availability of nutritive foods such as fresh fruits and vegetables, time restraints of preparing healthy foods, or a lack of immediate perceived health gains (DeVet, 2007). In order to assist the person with changing his or her unhealthy dietary habits, the provider must assess and individually modify each barrier that the person has.

Once people are willing to make the dietary changes, the next task for the provider is continuing to motivate individuals to integrate changes into their lifestyle and

stay on task to meet their goals. The principle of motivation is at the core of behavior modification. The stimulus of reinforcement of change leads to an increase in the behaviors that are being targeted by the provider (Lejuez & Hopko, 2006). DeVet (2007) stated that dietary changes are complex and require motivation to continue with the repetition of behaviors. Behavior repetition increases the likelihood of the healthy behavior becoming integrated into the individual's lifestyle. DeVet added that integrating these healthy changes into a lifestyle is frequently a difficult task for providers. The difficulty of this task is partly because dietary behaviors require modification for an extended time before change will be detected (DeVet).

Currently, as noted by the United States Department of Agriculture [USDA] (2007), there are deficits in the eating habits of Americans. It is premised that by distributing large amounts of printed materials, or newsletters, programs may have a cost-effective way to reach many individuals (DeVet, 2007). If dietary health promotion programs are able to reach these individuals and increase awareness and knowledge about healthy eating habits, it is thought that these unhealthy habits may decrease. Although there is evidence that written materials on dietary health, such as newsletters, may improve knowledge, the impact of these newsletters on health education and motivation to continue healthy behaviors is not clear and has not been studied (O'Loughlin, Paradis, & Meshefedjian, 1997). Even though printed health material is a widely used method of both distributing health information and motivating clients to continue healthy behavior, they were not able to demonstrate how well these materials are actually utilized by the recipients (Harmon, Grim, & Gromis, 2007). For this reason, more research is needed to

determine if the published newsletters are an effective method in promoting desired dietary changes (Harmon et al., 2007).

This study evaluated the effectiveness of the *SagePlus* newsletter as one type of intervention healthcare providers could institute in an attempt to modify the dietary habits of low-income, middle-aged women. The *SagePlus* newsletter is part of a 12-month health-promotion program for eligible women ages 40 to 64 in Minnesota. *SagePlus* is a program that was established in 2004 as part of the Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMEN) program developed by the CDC. With this specific population, there is little known about their dietary habits, and even less about what interventions would be effective at improving these dietary habits. Eligibility is determined by previous screening for breast and 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 must agree to participate in cardiovascular screening and return for follow-up and annual screenings (Minnesota Department of Health [MDH], 2009).

Women who agree to be part of the *SagePlus* program receive free lifestyle coaching on diet, exercise, and smoking cessation. A monthly newsletter offering guidance and advice on cardiovascular health and healthy choices is mailed the first month of enrollment and continues for 12 issues or one calendar year. Participants are encouraged to enroll in the steps program or smart choices program which offer performance-based incentives in an attempt to keep participants motivated (MDH, 2009). The *SagePlus* program incorporates lifestyle coaching, performance-based incentive

plans, and a monthly health newsletter to promote, motivate, and encourage healthy lifestyles. Multiple methods of health promotion have to be employed to reach a variety of people with different cultures and socioeconomic backgrounds. Health education is a key element of health promotion in the *SagePlus* program (MDH, 2009).

Many individuals engage in behaviors that are done on a routine basis or from habit. These routine habits can be helpful to the daily routines of individuals and allow them to complete tasks without thought (Aarts & Dijksterhuis, 2000). However, it is also these daily routines that can get people into a pattern of unhealthy eating behaviors. It is these unhealthy routines or habitual dietary patterns that the clinician attempts to modify to improve the person's dietary pattern. In other words, making the healthy choices a habit is the goal of the intervention by the clinician (Aarts & Dijksterhuis, 2000).

Behavior modification is the basis to make these healthy changes occur for the individual. However, behavior modification is not something that happens simply overnight, it is a process. Behavior modification is also not a simple process; it is complex and complicated (DeVet, 2007). Researchers have indicated that if the behavior modification process is applied to the dietary habits of an individual, it is thought that a desirable change may be made. Dietary habits are an area that is greatly in need of change in many Americans, and the behavior modification process gives practitioners the tools needed to assist with implementing the recommended changes (Reinberg, 2010).

The results of behavior modification are not immediate and require commitment from the individual to experience; dietary behavior modification is difficult to achieve. One key factor to assuring the effectiveness of behavior modification is individualizing the treatment the participant receives. By assuring that the intervention is individualized,

the clinician assists the intervention to reach its maximum effectiveness (Resnicow et al., 2008).

A newsletter is an intervention that is commonly used to distribute information to a large group of people. Newsletters are typically viewed by the recipient as a noninvasive way to distribute information, because they are a method that may be used at the convenience of the recipient and may be saved as a reference for a later date (Harmon et al., 2007). However, newsletters are a one-way form of communication, meaning that the recipients are not able to question the information that they are given, leaving this information open for interpretation by the reader (Harmon et al., 2007).

Problem Statement

Although newsletters are a frequent intervention method that has been in place for many years, there is a lack of research evaluating their effectiveness. Harmon et al. (2007) reported that printed materials can increase a person's knowledge on a topic; however, there is limited clarity on the impact of printed materials on modifying healthy behaviors. These researchers also note that even though printed health material have been shown to be a widely used method of both distributing health information and motivating clients to continue healthy behavior, there is still little known on how well these materials are actually utilized by the recipients (Harmon et al., 2007). For this reason, more research is needed to determine if the published newsletter is effective in promoting the desired dietary changes in a specific population (Harmon et al., 2007).

Extensive research has been completed on behavior modification. However, there is limited research regarding behavior modification of dietary habits through newsletters. For this reason, little is known about the effectiveness of newsletters at motivating

behavior changes in healthy eating (Harmon et al., 2007). The information becomes even more limited as researchers begin to examine their effectiveness for specific ethnic and cultural backgrounds and age groups. So the gap in knowledge of the topic of behavior modification of dietary habits is even wider with the low-income middle-aged women. This study attempted to determine if the *SagePlus* newsletter is an effective tool to motivate low-income, middle-aged women to improve their dietary habits toward the daily recommended amounts of fruits and vegetables.

Purpose of the Study

The purpose of this study was to determine the effectiveness of the *SagePlus* newsletter in motivating low-income, middle-aged women who are participating in the *SagePlus* program to adopt healthier eating habits, specifically to eat more fruits and vegetables. The distribution of the newsletter is intended to not only give these women the knowledge that they need to know to eat healthier but also to motivate them to use the knowledge that they have.

Research Questions

1. Has the participant's daily intake of fruits and vegetables increased with receiving the *SagePlus* newsletter?
2. When the newsletter is received, does it motivate the recipients to work on their dietary goals?
3. Does the newsletter continue to motivate the recipients to work toward their self-identified, individualized dietary goals throughout the month?

Definition of Terms

For the purposes of this study these terms will define the key concepts to be used.

Behavior: the action that is displayed by a client in response to their environment.

Behavior modification: the alteration of this human behavior.

Dietary habits: the habitual choices that individuals make regarding the foods that they eat. It should be noted that these can be both positive and negative habits.

Intervention: taking action upon a role or process to modify or change the outcome. If an intervention is defined as effective, it has produced the desired or positive result.

Low-income women: women with a monthly income of \$2,256 or less, and an additional \$779 for each additional family member in the household.

Middle-aged women: women who are between 40 and 64.

Newsletter: a printed material that distributes or presents information to members of a certain group.

Assumptions

For the purposes of this study the following assumptions were made.

- All study participants truthfully answered the survey questions.
- All study participants received the Sage*Plus* newsletter.
- All study participants were able to read the newsletter.
- All study participants were at risk for heart disease.

Limitations

- Results are not applicable to populations other than those studied because the study is completed on a specific group.
- There are never ideal dietary patterns, and there is always room for improvement.

- Individual biological patterns vary with each patient so each intervention does not affect each patient similarly.

Summary

As research suggests, current dietary habits of middle-aged, low-income women are not meeting the recommended requirements for fruit and vegetable intake. There are many interventions that can occur to modify these eating habits and assure that they are as healthy as they can be. By examining the effectiveness of the *SagePlus* newsletter at motivating behavior change of healthy eating habits, providers will be able to assure that the interventions that are being provided to clients are appropriate and maximizing the promotion of positive behavior change in these clients.

CHAPTER II

REVIEW OF THE LITERATURE AND THEORETICAL FRAMEWORK

The purpose of this study is to determine the effectiveness of the *SagePlus* newsletter in motivating low-income, middle-aged women to adopt healthier eating habits, specifically to eat more fruits and vegetables. Although research has been completed on behavior modification, motivation, and newsletters and their relationship to dietary habits, there continues to be gaps in the literature in these areas on specific populations. Literature was reviewed from the years 1985-2011 using Educational Resources Information Center (ERIC), Cumulative Index for Nursing and Allied Health Literature (CINAHL), U.S. National Library of Medicine, PubMed, along with a general internet search. Search terms included “newsletter,” “behavior modification,” “behavior modification modalities,” “dietary modification,” and “motivating behavior change.” This literature review presents the major findings regarding behavior modification, newsletters, dietary habits, and motivation.

State of the Literature of Dietary Habits

In 2000, the USDA set modest goals for the amount of fruits and vegetables that people should eat. By 2010 the majority of Americans were still not even close to reaching these goals (Reinberg, 2010). Research indicated that actions to improve the availability, accessibility, and affordability of fresh produce and behavior modification processes to increase the consumption of fruits and vegetables is recommended to be implemented by providers to assist with achievement of this goal (Casagrande et al., 2007).

Factors Affecting Dietary Change

There are many individual or personal factors that have been shown to affect an individual's ability to change and maintain the change. Although these internal attributes will affect a person's ability to complete any type of change, there are also many external factors that will affect a person's ability to change (Casagrande et al., 2007). These factors may be different with every change the individual is trying to make, dietary habits are no exception.

Income and Education

Income and formal education level are two important factors that may be related. An increase in education will commonly lead to higher income (Casagrande et al., 2007). Casagrande et al. (2007) used in home interviews to gain demographic information and to complete a 24-hour dietary recall. They found that fruit and vegetable consumption is positively associated with income and education. This has been a consistent finding for many years, suggesting that this is an ongoing relationship. Researchers from the study suggested that poverty, which may be related to a decreased education level, is a continuing barrier for both purchasing and consuming fruits and vegetables and a healthier diet. This could be one reason that there is low fruit and vegetable consumption in lower income populations (Casagrande et al., 2007).

Bernstein, Bloom, Rosner, Franz, and Willett (2010) evaluated the cost of dietary patterns and prevention of cardiovascular disease among American women. They reported that women who spent more money on food ate healthier (Bernstein et al., 2010). Drewnowski (2010) reported that this data is consistent with the earlier data that grains, fats, and sweets were associated with lower costs than healthier fruits and

vegetables. Bernstein et al. (2010) found that women who were at a decreased risk for cardiovascular disease related to diet spent an average of 24% more each day on food to prepare in their home. They also reported that although this relationship was made, it is possible to eat a healthy diet on a limited income. However, making this change to healthy food choices requires preparation time and education regarding appropriate low cost food choices (Bernstein et al., 2010).

Snack foods and other unhealthy foods are typically less costly when compared to fresh fruits and vegetables and advertising is typically aimed at foods that are less nutritive than fresh produce. This makes the healthier options less appealing especially to those populations that have an increased susceptibility to such advertising such as children and adolescents. Additionally, there may not be easy access to or limited access to fresh fruits and vegetables in many low-income neighborhoods (Casagrande et al., 2007).

Education, or lack of education, has been shown to be related to dietary knowledge and can be a barrier to eating a healthy diet (Casagrande et al., 2007). Individuals may be easily confused over following the recommended dietary guidelines because they are complex and are changing frequently. This confusion or lack of knowledge may deter people from attempting to meet the daily fruit and vegetable recommendations (Casagrande et al., 2007).

Culture

Food preferences and dietary habits can be strongly linked to individual culture. The demographic data collected by Casagrande et al. (2007), showed that individual culture and habits affect the daily food choices that individuals and families make. These

cultural preferences are not factors that are readily changed and are often deeply driven by the family and cultural background of the individual. If these habits and traditions do not include fruits and vegetables, this may result in a lack of fruits and vegetables in the diets of both current and future generations (Casagrande et al., 2007).

There are also many elements of racial or ethnic identity and desire to preserve one's cultural background that may play a role in food choices. Rensnicow et al. (2009) used a telephone survey to determine a more effective method to tailor a fruit and vegetable program to an individual's ethnic and cultural identity. They found that it is essential that practitioners utilize individual interventions to personalize the changes that they are attempting to implement to each ethnicity (Rensnicow et al., 2009).

There is also an impact of popular culture on the generations or age cohort of a specific cultural group. This is affecting not only the type of food eaten, but also the quantities and the manner in which they view food. Traditionally food was viewed as a source of nourishment and culture. In addition to nourishment food has been identified as the source for pleasure, social activity, and comfort (Rensnicow et al., 2009). It is these nonnutritive foods that are daily habits of many cultures, causing these bad habits to be a part of many daily routines (Rensnicow et al., 2009).

Environment

There are also many environmental barriers that can deter individuals from eating the recommended number of fruits and vegetables. Each individual's unique environment and living experiences may affect the functional reinforcement that the clinicians apply to reinforce change that they are trying to make (Lejuez & Hopko, 2006).

Beresford et al. (2010) completed a randomized trial in medium-sized, blue-collar businesses to attempt to increase employee's consumption of fruits and vegetables. Various interventions were completed to increase employee knowledge of fruits and vegetables through methods such as posters, taste tests, and teaching of simple skills, such as serving size. Finally, four employee tailored newsletters were sent to employees throughout the 18-month intervention. Assessment of the intervention's long-term impact on fruit and vegetable consumption was completed at an average of 4.4 years after the baseline evaluation. Beresford et al. reported that creating an environment of change or health can also be an effective method to not only increase fruit and vegetable intake, but also maintaining that change over time. In the study, employees who had received mild interventions to increase fruit and vegetable intake along with new employees who had received no intervention were able to maintain a higher fruit and vegetable intake than the general population. "It may be the social support at the workplace and a change in social norms may have played a role" (Beresford et al., 2010, p. 717).

Aarts and Dijksterhuis (2000) explored the idea of habits as goal-directed automatic behavior. They completed a study to analyze the affect of suggestion and its ability to make a behavior habitual. Their focus was on individuals residing on a university campus and attempting to change their automatic travel behaviors to using a bicycle. Over time, through altering their travel habits, this goal was achieved. They were able to test and confirm that when a behavior is habitual, the behavior response also occurs automatically. In other words, they reported that goal directed treatments have been shown to be effective and can be an automatic response in individuals. If the practitioner is able to tie the effective actions with the environment, when the individual

is in the desirable environment, the desirable choice or behavior will be made. To apply this principle to dietary modification, if the clinician is able to alter eating habits of people in their homes, this environment will trigger them to habitually eat healthy in this setting (Aarts & Dijksterhuis, 2000).

Behavior Modification

Behavior modification is a complex process that is used to modify an individual's current behavior to one that is more beneficial. The behavior modification process can be completed through a variety of behavior change techniques, and there are many individual factors that will affect behavior modification or change. There are also many individual characteristics that will affect the behavior that is attempting to be modified. It is all of these processes interacting that will determine how this process will affect the individual and how the desired change will occur, be motivated, and maintained (Hobbis & Sutton, 2005).

Internal Factors

There are many internal influences that will affect an individual's readiness or willingness to implement changes. This includes their beliefs, personality, and feelings of control of a situation. It is all of these internal, along with the external factors that affect individual behavior and willingness to change.

Locus of Control

The readiness of the individual is a key factor that will assist with determining if the person will implement change into their life, and if they are ready for change to occur. Locus of control is a concept that refers to the extent that people think that their individual personal behaviors will influence the events of their life (O'Neill & Ensle,

2008). If the individual believes that health and wellness come from external factors which they think they do not control, change is very unlikely to occur. These individuals think that health is largely related to chance or fate. Because they have this belief, individuals with an external locus of control will be less likely to take the recommended precautions to protect their health. They will also be less likely to exercise and to read and search for health-related materials (O'Neill & Ensle, 2008).

On the other hand, if the individual is able to feel empowered to change their attitude from passive acceptance to one of active participation, they will be more likely to implement changes (Gatterman, 2007). This is what is known as an internal locus of control. Individuals who have an internal locus of control are typically related to success and achievement of personal goals. These individuals are more likely to search for health-related information and engage in physical activities (O'Neill & Ensle, 2008). This was the finding of AbuSabha and Achterberg (1997) who completed a review of literature on self-efficacy and locus of control and their relationship to nutrition and health behaviors. They stated that nutrition behaviors are a complexity of many different behaviors and are many times difficult to change. Change is difficult because it may be heavy with meanings and emotions. If the person has a strong internal locus of control, change is more likely to occur. Even with these findings, there is still limited research available in this area and a need for more research on behavior change and locus of control is needed (AbuSabha & Achterberg, 1997).

Attitude

There is a complex relationship between attitudes and behavior. These relationships are even further complicated by the social factors that can influence both

attitudes and behaviors. Because of this complex relationship, minimal research has been completed on an individual's attitude and its relationship to behavior modification.

Behaviors that are exhibited by individuals are usually, but not always, a reflection of their established beliefs and attitudes (Ford-Martin, 2010). Ideally, if the individual has a positive attitude, this will reflect with well-adjusted positive behavior choices and the ability to implement positive behavior changes if they are indicated. On the other hand, if the person has a negative attitude, this may be reflected by their negative choices and behaviors. Implementing positive healthy behavior changes in these individuals is historically more difficult (Ford-Martin, 2010).

Assessing attitude is not only applicable to the individual. The attitude of the practitioner must also be assessed. If there are negative attitudes present in the practitioner, this will also complicate behavior change and decrease the likelihood that this behavior modification intervention will be effective (Ford-Martin, 2010).

Knowledge

To improve or modify habits, it is essential that individuals have knowledge of the topic that they are trying to improve. Specifically to improve dietary habits, the person must have knowledge of nutrition. The nutritional knowledge includes knowing the recommended amount of fruits, vegetables, and other recommended daily allowances so that that they are able to make the appropriate healthy food choices. If the person does not have this information, or is unaware of nutritional knowledge, they will not be able to make effective decisions to improve their health (University of California San Francisco Medical Center, 2010).

O'Brien and Davies (2007) investigated the relationship between nutritional knowledge and body mass index (BMI). The researchers distributed a questionnaire to the participants to measure nutritional knowledge and its relationship to BMI. They found that most individuals had a high level of nutrition knowledge, yet also continued to have a high BMI. The researchers suggested that a nutritional knowledge deficit may not be the most significant factor that is preventing overweight individuals from implementing healthier eating habits. They also suggested that knowledge of the subject is not the only factor influencing their weight. The person must be aware of the method to be utilized for change and the plan to achieve the set goals. This is an area that is a gap in current literature and requires further investigation (O'Brien & Davies, 2007).

Another topic that is important for people to know is what results can be expected from the set plan. For example, if the individual knows that they are not going to see immediate results, they are going to be more willing to stick to the plan and be willing to wait for those results. On the other hand, if they are expecting to see immediate results and see none, they are more likely to quit the change that they had implemented and revert to their previous actions. This is one reason why it is essential to have exceptional communication occurring between the participant and the clinician who is attempting to modify the behavior (DeVet, 2007).

External Factors

There are also many external influences that will affect an individual's readiness or willingness to implement changes. For example, personal factors are influenced by friends, family, peers, and the individual's healthcare provider. If the individual is surrounded by people who have implemented a healthy lifestyle, they too may be

motivated to make changes that will lead to a healthy behavior. Although these external factors have been shown to effect individual change, if the person is not ready for and committed to change, it is unlikely that change will occur (Gatterman, 2007).

Behavior Modification: The Process

Behavior modification is an active process that is constantly under evaluation. The change that is going to be made during this process will be intentional. This means that there will be a focus on the decision-making of the individual.

Defining the Problem

To effectively apply behavior modification, the behavior to be modified must be identified. This is a process that occurs hand-in-hand with the individual wishing to modify the behavior. By involving the individual in selecting the behavior to modify, the individual and the provider will share a common goal for health improvement (Velicer, Prochaska, Fava, Norman, & Redding, 2002).

While health behaviors are being examined, several problems may be identified that the individual may wish to change. This may be overwhelming and reassurance should be given by the provider (Velicer et al., 2002). Although, as noted, it is recommended that problem identification is a process that is completed by both the participant and the provider, researchers are reporting that this is not occurring. Fallon, Wilcox, and Laken (2006) completed a telephone survey with a stratified random sample over a 5-month period and found that providers were completing life style change advice only 47% of the time, instead of the recommended 85%. This number was 39.7% lower when specifically examining the modification of adding more fruits and vegetables to their diet (Fallon et al., 2006). They also reported because of this lack of counseling and

modification education, participants were not meeting their health behavior recommendations (Fallon et al., 2006).

Selecting the Problem and Planning for Modification

Once the clinician and the individual have worked together and identified problems to change, they must select a specific task or problem to change. Initially, it is important for the individual to select goals that they are able to achieve. If the person experiences failure meeting their initial goals, there is little chance that they will continue to attempt to meet future goals (Nilsen, Haverkos, Nebeling, & Taylor, 2010).

When looking to implement action on the goals, the individual will work with the clinician to set specific implementation intentions. Implementation intentions are specific actions that include when, where, and how the goals will be achieved. The individual will set a specific situation that the plan will be implemented (DeVet, 2007). When these specific factors are in place, it has been found that interventions will have an increased chance to be more effective and also increased likelihood of being maintained after the intervention is completed.

Luszczynska, Scholz, and Sutton (2007) conducted a randomized controlled trial to evaluate the effects of implementation intentions in patients who had recently experienced a myocardial infarction. The completed intervention was aimed at decreasing this population's intake of saturated fats. In this study, participants were questioned regarding their saturated fat intake and intentions to reduce fats at various points in their cardiac rehabilitation, as well as after the rehabilitation were completed. The results of the study indicated that participants with a researcher assisting them at setting their implementation intentions ate less saturated fat than those without

intervention. Similar results were also found for total fat consumption and percentage of calories that were consumed from fat. These researchers also premised that this assistance with implementation of interventions would increase the long-term maintenance of the set goals (Luszczynska et al., 2007).

Action

Once the plan is in place, action must occur to implement the plan. The action phase of interventions is defined as the stage where the change or modification occurs. There are many considerations that must be addressed for this action to occur. These include the individual, the clinician, and the goal to be modified. Goal setting and action planning involve the practitioner working with the individual for intentions and self rewards to create new behavioral intentions and a new behavioral belief. However, all of the effort that has been completed to plan for change will be of no benefit to the individual if the change itself is not implemented. The greatest of intentions are of no benefit if the action does not occur (DeVet, 2007).

Individuals in the action phase must overcome their previous experiences of failure with change and environmental barriers to conquer their problem and achieve their set goals. People in this phase must make changes to act on the previous decisions that were made and goals that were set. They will integrate methods of change that have worked previously, information that they have learned regarding their topic of change, and new skills that have been taught to make the change occur (Velicer et al., 2002). In the previously described study by Luszczynska et al. (2007), it was reported that the action phase of behavior change was followed through at a greater rate if the participants were confident in the skills that they had learned through the interventions.

Maintenance

The overall goal of any program that is designed to implement change is not to be successful only at implementing change for the present, but to cause a behavior change that will be sustained. Nilsen et al. (2010) completed a review and collection of research studies with the focus of behavior change maintenance. Their review found that the focus of behavior maintenance is one that continues to require studies to gain more information, specifically more research on specialized populations. They reported that for many different health-related issues, such as dietary habits, physical activity, and smoking cessation, that “initiation and maintenance of behavior change are two related, but distinct, phenomena” (Nilsen et al., 2010, p. 643). This conveys to providers that when the individual has implemented the plan, this does not mean that the work is done. Maintenance of behavior is a topic that not only the provider, but the individual must learn as well. Issues such as self-trust, self-value, and understanding that dietary changes are not an end result in themselves must be present if the behavior changes are to become permanent for the individual (Nilsen et al., 2010).

The same factors that interfere with implementing change can also play a role in the maintenance of change. Beresford et al. (2010) found that low-intensity intervention, such as teaching healthy behaviors at the workplace, was successful at not only increasing the fruit and vegetable intake of these individuals while the intervention was occurring, but that the habits were maintained for more than 2 years after the interventions were completed.

Beresford et al. (2010) also found that if there are internal and external factors to prevent change from continuing once it has been initiated, there is a decreased chance

that the change will be maintained. The opposite is also true; if there is a common goal that has been set within a community or group, there is an increased probability that the group will succeed with the set goal (Beresford et al., 2010). Maintenance is also something that comes with confidence building. Beresford et al. report that as individuals are able to gain confidence, further change will be made, and the new healthier behavior will increase over time.

Modalities of Lifestyle/Behavior Modification

Once the decision has been made to intervene with an individual or group to attempt a behavior change, there are many different possible modalities that may be implemented to achieve the desired change. As previously discussed, there are many factors that must be addressed before choosing the modality that will be utilized for the change. For the Sage*Plus* program the modalities that are utilized include motivational interviewing (MI) and a monthly newsletter (MDH, 2009). Because these are the modalities that have been utilized for the purposes of this study, they will be discussed in this review.

Motivational Interviewing

MI is a behavior modification process that was developed in 1991 and can be described as “a collaborative, person centered form of guiding to elicit and strengthen motivation for change” (Miller & Rollnick, 2009, p. 137). MI as a modality for behavioral change is a relatively new process. This process evolved from the addiction field and now is applicable to many behavior change areas. This technique allows clinicians to integrate the relationship-building principles that are used in humanistic

therapy with the cognitive-behavioral strategies that will be targeted at a specific client's stage in the change process (Burke, Arkowitz, & Menchola, 2003).

MI is composed of four basic principles. As these principles are implemented, change is promoted and hopefully made. The four basic principles are expressing empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy. Through using these four principles the interviewer will attempt to be directive without explicitly advocating for change, the goal is to have the client present the reason for change and have confidence in their ability to make the change (Burke et al., 2003).

Although MI is a relatively new behavior modification process, its efficacy has been demonstrated in several studies. Burke et al. (2003) completed a review of the literature on MI and concluded that adaptations of MI were equivalent to other active treatments and superior to no treatment or other placebo controls for problems that involve alcohol, drugs, diet, and exercise. Utilizing MI for treatment was also shown to be effective at maintaining change over time on these issues, and study participants were noted to have behaviors sustained as long as 4 years after treatment. Burke et al. also indicated that as individuals receive more treatment with MI, there is an increase in efficacy of treatment.

Although this research has been completed, Burke et al. (2003) also stated that there continues to be a need for studies on the utilization of MI. This is especially true for specialty populations where little research has been completed. There is also little known about the affect of MI when it is used with other treatment plans leaving room for studies in the future. They also questioned if further sessions for some individuals would increase the likelihood of maintaining the desired behavior changes. These future

sessions could consist of either more MI treatments or other clinical services (Burke et al., 2003).

Newsletter

Newsletters are defined as a printed material that distribute or present information to members of a certain group. Today newsletters are used in a variety of ways. A newsletter could be a monthly employee communication, a quarterly trade association, or a family flyer sent at Christmas. E-zines and e-newsletters add even more variety to the mix with countless topics packaged in either plain text or hyper text markup language (HTML) for free or for a fee for subscribers from all over the world (Sentementes, 2009). Newsletters have been utilized for many years with the first newsletter recorded back in 1704. However, the purpose of the first newsletter published in the United States was much simpler. It was utilized to recount the news printed in London journals about English politics and Europeans (Sentementes, 2009). It has also been reported that although many forms of communication are decreasing in popularity and usage, the newsletter is one form that is increasing in usage. It is thought that this may be due to the individualization that is included in the information that a newsletter provides. While many forms of communication target the generalized population, newsletters are individualizing data to fit the niche that they are attempting to target (Sentementes, 2009).

Change Utilizing a Newsletter, State of the Literature

Although newsletters have been in place for three centuries, there is still limited research available on their efficacy. Newsletters are viewed as a cost effective way to distribute individualized information to many people. It is this individualization that

allows the newsletter to reach its intended population, and researchers are indicating that as the newsletter becomes more individualized, there is an increase in the usage (Sentementes, 2009). The following describes characteristics of newsletters that have been shown to effect newsletter effectiveness with their target population. The current state of the literature regarding newsletter usage and effectiveness is also addressed.

Design

Many factors and individual design features go into planning for and distributing a newsletter. Although to the general population, these factors may be thought of as minor, they have been shown to impact the effectiveness of the newsletter. These factors include color, font style and size, design, educational level that it is written at, page layout, and intended population. Suggestions that have been made to increase the efficacy of newsletters include talking to the people who will be receiving the newsletters. If they are questioned regarding the content that will be included, it was shown that they will be more likely to utilize this resource (Lancaster, Smiciklas-Wright, Ahern, Achterberg, & Taylor-Davis, 1997; Resnicow et al., 2009).

Lancaster et al. (1997) completed a telephone survey on a nationwide sample of seniors to assess their nutrition interest, perceived nutrition knowledge, life satisfaction, interest in reading, and if they were interested in learning more about nutrition by receiving a newsletter for their targeted population. After the newsletter was received, the participants were again contacted to complete a survey regarding the newsletter characteristics such as ability to read, color, drawings, and layout. Lancaster et al. found that positive evaluation of the appearance of the newsletter by those who will be receiving it is critical to the acceptance and utilization of newsletters. They also reported

that design elements were an integral part of why subjects responded positively to the newsletter (Lancaster et al., 1997).

Target Audience

There are numerous health interventions that are tailored to fit the population that they are attempting to impact. Resnicow et al. (2008) completed a study evaluating effectiveness of a tailored versus nontailored newsletter aimed at improving fruit and vegetable intake. They divided the sample into two groups, one received a newsletter that was tailored to their values and other psychological factors found using MI and the other group received a non-tailored newsletter that was only specific to demographic and social variables. In using these targeted interventions, the recipients are targeted utilizing interventions that are thought by the researcher to meet their specific needs. The outcomes were measured by the researchers solely on self reported measures (Resnicow et al., 2008).

Although receiving a newsletter that was tailored was shown to be more effective in changing behavior than the non-tailored newsletter, there was no statistically significant difference between the tailoring for psychological and value factors and tailoring to demographic and social variables (Resnicow et al., 2008). However, the authors reported that individualizing only to a population fails to recognize that there is further individual diversity within the population and recommended that further research be completed on the topic (Resnicow et al., 2008).

Benefits

There are many benefits of newsletters, with individualization being high on the list. Fey-Yensan, English, Museler, and Caldwell (2002) completed a survey to evaluate

the knowledge that was gained by a geriatric group of home-delivered meal recipients after receiving a newsletter with their meals on a monthly basis. The newsletter was tailored for the study and was carefully developed for the geriatric population. The results of the study were measured based on participant perception of knowledge gained through the newsletter. The researchers found that the study participants perceived that they had a large improvement in nutrition knowledge, attitude, and behavior after receiving the tailored newsletter. This change was premised by the researcher to be secondary to the newsletter reading level and content being made for the targeted population (Fey-Yensan et al., 2002).

Fey-Yensan et al. (2002) also found that health literacy is an essential part of newsletter planning and many populations will struggle to read health information when it is written at a level for the general population. However, when this information is presented at a level that is appropriate for the population, the likelihood of its utilization will increase (Fey-Yensan et al., 2002).

Another advantage of newsletters is that they allow the individual to read at their own speed. If reading is something that typically will take them time, they are able to complete this in the privacy of their own home and not feel rushed. This will allow them time to interpret the information at their own speed and comfort. The newsletter also provides each of the individuals a reference if this is information that they would like to recall for use at a later time (Harmon et al., 2007).

Newsletters are typically viewed by the recipient as a noninvasive way to distribute information, because they are a method that may be used at the convenience of the recipient and may be saved as a reference for a later date (Harmon et al., 2007). By

utilizing these principles, the barriers that the individual will have to learning will be decreased, and when barriers are decreased, learning is enhanced (Fey-Yensan et al., 2002).

Limitations

There are several limitations of newsletters. Newsletters are a one-way form of communication, meaning that the recipients are not able to question the information that they are given, leaving this information open for interpretation by the reader (Harmon et al., 2007). There is no way to confirm that each individual actually received or read the newsletter. If the newsletter is not received or read, the intervention will obviously not be effective. Finally, there is no way to individually assess each individual's reading level and ability to interpret the newsletter (Fey-Yensan et al., 2002).

Gaps in the Literature

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 fact most of the research that has been completed on newsletters involved their use as a marketing or promotional tool, consumer interest and satisfaction, or other nonhealth-related purposes (Taylor-Davis et al., 2000). This leaves many gaps to be explored by further research.

Harmon et al. (2007) identified the types of nutrition newsletter content that those reading the newsletter found as relevant in making healthy food choices. After distributing focused newsletters to a food stamp eligible audience, the researchers held focus groups to question the participants on nutrition concerns and newsletter readership and distribution along with newsletter components such as wording and text format.

They found that printed materials can increase a person's knowledge on the topic of nutrition. However, they were not able to fully discover the impact of printed materials on modifying healthy behaviors. Further, they found that even though printed health material is a widely used method of both distributing health information and motivating clients to continue healthy behavior, they were not able to demonstrate how well these materials are actually utilized by the recipients. For this reason, more research is needed to determine if the published newsletters are a cost-effective method in promoting desired dietary changes (Harmon et al., 2007).

This is also true to the interventions that are completed on specific populations, cultural backgrounds, and age groups. It has been shown that the information presented and how the presentation is completed is vital to the utilization of the written materials. "More research is needed to determine if tailored print materials are a cost-effective approach for promoting dietary changes over time" (Lutz et al., 1999, p. 709). Researchers also report that although there are many populations that have obvious nutritional education needs, there are few studies that have been completed to show the effectiveness of newsletters as interventions (Fey-Yensan et al., 2002).

Conceptual Model

In 1983 Prochaska and DiClemente developed the Transtheoretical Model for Behavior Change. This model has been the basis for developing many effective interventions to promote health behavior changes (Velicer et al., 2002). This model developed five specific stages of susceptibility to health behavior change. These five steps include:

1. **Precontemplation:** In this stage there is no intention by the individual to make a change in the behavior in the foreseeable future. Individuals who are in this stage of change are typically not aware that there is a problem (Velicer et al., 2002).
2. **Contemplation:** In this stage individuals are aware that there is a problem and they are seriously thinking about a plan to address the problem. Although they are contemplating making this change, there has not been a commitment made to take action. Individuals may remain in this phase for long periods of time. Providing individuals with health information who are in this phase may be beneficial and provide them with the extra push that is required to move them to the next stage (Velicer et al., 2002).
3. **Preparation:** Individuals who are in this phase combine intention with the evaluation of behavior criteria. In this phase the individual intends to take action within the next month and they may have been unsuccessful with action in the recent past (Velicer et al., 2002).
4. **Action:** This is the stage that the individual will act to overcome and modify their behaviors to overcome their problem. While in this stage unhealthy behavior may be modified for a period of 1 day to 6 months (Velicer et al., 2002).
5. **Maintenance:** This is the stage of change that this individual attempts to work to prevent the relapse or return of the unhealthy behaviors that they have modified. Monitoring the behavior change and further evaluation of the

health status of the individual is common during this phase (Velicer et al., 2002).

By utilizing the Transtheoretical Model, researchers and practitioners have been able to increase the efficacy of the programs they are attempting to implement. This model has resulted in increased behavior modification program retention rates and participants' needs are being met on a more individual basis. This model is also more effective at analyzing process and also a more appropriate assessment of outcome (Velicer et al., 2002).

According to the Transtheoretical Model of Behavior Change, individuals who are in the process of behavior modification should be aware that many times participants in behavior change will revert to their previous behaviors while the change process is occurring. This does not mean that the goals that they have set are not attainable. Even with successful behavior change, there will be many occurrences of both progress and regression to a previous phase. Eventually, it is hoped that the individual will spend most of their time in the maintenance phase of the change process (Velicer et al., 2002).

Summary

As it has been noted throughout this review, there are many different methods in place for modifying the various behaviors that are present in many individuals. The one common theme that is presented within all of these various methods is that more research is required on each individual population so that the interventions may be tailored to meet their needs. If practitioners are able to tailor the desired interventions and health outcomes are improved, the benefits would be great for all involved.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

The purpose of this study was to determine the effectiveness of the *SagePlus* newsletter in motivating low-income, middle-aged women to adopt healthier eating habits, specifically to eat more fruits and vegetables. The research questions for this study were (a) Has the participant's daily intake of fruits and vegetables increased with the *SagePlus* newsletter? (b) When the newsletter is received, does it motivate the participants to work on their dietary goals? and (c) Does the newsletter continue to motivate the recipients to work toward their self identified, individualized dietary goals throughout the month?

Even though research has been completed on behavior modification, motivation, and newsletters, there continues to be gaps in the literature in this area indicating further research was needed. This chapter describes the design, sample, ethical considerations, instrument, data collection, and data analysis.

Design

A nonexperimental, descriptive correlational design was used to guide data collection and analysis for this study. This method was chosen for several reasons. Descriptive studies are commonly used to obtain knowledge on a topic that has little known, and little research has been completed. Correlational research is completed to examine relationships among variables that are being examined. The combination of these two types of research in a nonexperimental, descriptive correlational study allowed the researchers to examine the relationship among variables in a single group. This type

of study design is typically used to examine the relationships of variables that exist in a single situation and also allows researchers to identify many interrelationships between study variables in a short period of time (Burns & Grove, 2009).

The researcher utilized this design to focus on the relationships among the study's variables which can lead to potential hypothesis for future studies. Advantages of a non-experimental, descriptive correlational study include the ability to identify a positive or negative correlation between two variables. The disadvantage of this type of study design is that you are not able to prove if an actual cause and effect relationship exists. This design was selected due to the vast diversity of the population and demographics of the participants to be sampled (Burns & Grove, 2009).

Variables that were compared throughout the study included: behavior modification or the alteration of human behavior; dietary habits which are the habitual choices that individuals make regarding the foods that they eat, these can be both positive and negative habits; and interventions which is taking action upon a role or process to modify or change the outcome. If an intervention is defined as effective, it has produced the desired or positive result.

Sample

This study was conducted with a group of low-income, middle-aged women who are participants in the MDH *SagePlus* program in Minnesota. This includes women with a monthly income of \$2,256 or less, and an additional \$779 for each additional family member in the household and who are between 40 and 64 years of age. This population was further limited to those that are English speaking, involved in both the steps and fruits and veggies programs of *SagePlus*, and have been enrolled in the *SagePlus*

program for at least 6 months and not greater than 12 months. The desired sample size for this study was 100 participants with a minimum requirement of 35 participants.

Ethical Considerations

An ethical consideration for this study was to assure the participants that either participation or nonparticipation in this study will in no way affect their current membership or enrollment in the *SagePlus* program. Institutional Review Board approvals (see Appendix A and B) were obtained from the MDH and Minnesota State University, Mankato prior to initiating data collection. Verbal consent was obtained from each participant at the beginning of each telephone survey. A scripted verbal informed consent was utilized to obtain participant consent (see Appendix C).

The consent included an introduction regarding the research study and its purpose to evaluate the effectiveness of the *SagePlus* newsletter. Participants were informed who was conducting the study, the purpose behind the study, and questioned if they are involved in the *SagePlus* program. The procedure of the study was explained, that 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 would be completely voluntary and no portion of the conversation would be recorded. The participants were assured that their choice to participate in this study did not affect their participation in the *SagePlus* program. Participants were assured that records of this study would be kept private by assigning an alphanumeric code to each participant in the study. No documents had their name attached to the information they share with the researcher. 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 sort of report or

paper published will not include any information that will make it possible to identify them. Research records were kept on a password protected computer and only researchers for the study will have access to the records.

Participants who decided to participate were free to withdraw from the study at any time and the interview may have been 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 Chairperson. Time for questions was allowed and verbal consent was obtained prior to data collection.

Instrument

A modified version of the Minnesota Women's Healthy Heart Program (MWHHP) evaluation questionnaire was used for this study (see Appendix D). The modified questionnaire contains 19 questions that included multiple choice and open ended format that were used to meet the objectives of the current study (see Appendix E). Questions were formatted to gather information to evaluate the effectiveness, utilization, and motivational qualities of the *SagePlus* newsletter.

The questionnaire contains 19 questions related to the *SagePlus* newsletter and its utilization. Participants were asked questions such as which part of the newsletter they liked best, if they felt the newsletter motivated them make healthy changes, and if the newsletter was clearly written. Questions regarding the newsletter were used to answer the research objectives of the study. The reliability and validity of this tool has yet to be established.

Data Collection Procedure

This study is part of a larger *SagePlus* newsletter program evaluation project. A qualifying list of participants enrolled in both the steps and fruits and veggies programs was obtained from the MDH from those enrolled in the *SagePlus* Program. Data was collected once IRB approval was obtained and completed within 1 year. Demographic data including age, marital status, number of individuals in the household, employment status, and highest educational level completed were obtained from the MDH *SagePlus* database records. Telephone calls were then made by researchers evaluating the *SagePlus* newsletter program to participants that met inclusion criteria for participation. The participant's demographic data was entered into the Excel spreadsheet and identified with their alphanumeric code and linked with study participants (see Appendix F).

For randomization purposes every third person was called on the list of participants. When the list of participants was exhausted before reaching the minimal sample size, the telephone calls began at the first uncalled name and then continued calling every third person until the minimum requirement of sample size was completed for the study. When a telephone call was refused, unanswered, or disconnected, the researcher crossed this potential participant off list and continued on with the every third person pattern. During the telephone call the researcher read the informed consent to the participant. Upon agreement to participate in the study, the researcher read the *SagePlus* questionnaire to the participant and marked appropriate responses made to questions asked. If the potential participant chooses not to participate, the researcher thanked them for their time and ended the conversation. Each telephone call to the consenting *SagePlus* participant required between 10-15 minutes.

Confidentiality was achieved by assigning an alphanumeric code to participants. The list was kept on a password protected computer that no one else had access to in the researcher's home until completion of the study. Upon completion of the study it will be saved for 2 years by the primary researcher in their office at MSU on a data disc. After 2 years the alphanumeric key 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 her office at the University. This office is locked when it is vacant.

Data Analysis

The data collected was entered into Excel spreadsheets by the researcher, identifying each participant by only their alphanumeric code. The data was then analyzed utilizing the various described methods.

Demographics

The frequency, mean, standard deviation, and range were calculated for the demographic data statistics to display averages and variety of data gathered. Data collected included race, level of education, and the intake of fruits and vegetables before enrollment in *SagePlus* program.

Questionnaire

The frequency, mean, standard deviation, and range were calculated for the questionnaire data statistics to display averages and variety of data gathered. Data was also assessed using frequency distribution to evaluate for incidence of responses to the questionnaire. This allowed the researchers to organize the gathered data for further analysis. The frequency distribution was also used to allow the researchers to check for

errors in coding (Burns & Grove, 2009). This data will be used to assess patterns of behavior throughout the population being studied.

A Kendall Tau correlational coefficient was calculated to discover if relationships exist between fruit and vegetable serving eaten, BMI, monthly income, and educational level. Further correlations were assessed between participant reading the newsletters, and feelings of improvement in dietary habits and fruit and vegetable intake. The strength of relationships in the gathered data was also assessed. This method is commonly used as a statistical test to establish whether two variables may be regarded as statistically dependent (Burns & Grove, 2009).

Limitations

- Results are not applicable to populations other than those studied because the study is completed on a specific group.
- There are never ideal dietary patterns, and there is always room for improvement.
- Individual biological patterns vary with each patient so each intervention does not affect each patient similarly.

Summary

In this study, an evaluation of the effectiveness of the *SagePlus* newsletter in motivating low-income, middle-aged women to adopt healthier eating habits, specifically to eat more fruits and vegetables, was performed. This was completed by utilizing the designed quantitative *SagePlus* Newsletter Evaluation questionnaire on the selected population through telephone surveys. This data was then analyzed using the described methods to meet the research objectives of the study.

CHAPTER IV

RESULTS OF THE ANALYSIS

The purpose of this study is to determine the effectiveness of the *SagePlus* newsletter in motivating low-income, middle-aged women to adopt healthier eating habits, specifically to eat more fruits and vegetables. This chapter describes the study sample, data analysis process, results, and summary of research findings.

Sample

The MDH provided the names of 263 *SagePlus* program participants who are currently enrolled in the Steps and Fruits and Veggies programs. Seventy-three participants were excluded because they were nonEnglish speaking. The remaining potential study participants included 190 English speaking, middle-aged women who were currently enrolled in both the Steps and Fruits and Veggies program for at least 6 months, but not greater than 12 months. Over the course of two days, attempts were made to contact all of the potential study participants to invite them to participate in the study. Of the possible participants, 25 women had phones that had been disconnected and 111 women did not answer their phone on the first or second attempt and were then eliminated from the potential participants. The second attempt to call each participant was made at a different time of day to assure the participant was not working during the first attempt. Nine women declined participation in the survey and one woman was not currently enrolled in the fruits and veggies program. This created a pool of 44 women that were contacted and agreed to participate in the study. Of these 44 women, three were excluded due to not receiving the *SagePlus* newsletter and one was excluded for

receiving the newsletter in the wrong language. This left a total of 40 women that participated that in the study.

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

Those in the sample with an overall less than a high school education are comparable with the Minnesota 2009 United States (U.S.) Census Bureau report of people age 25 or above, 7.7% and 8.8% respectively (U.S. Census Bureau, 2010). Those participants with a high school education level only made up 24.3% of the sample population in contrast to 28.1% for the general population in Minnesota. The category of some college in this sample was higher than the general Minnesota population and accounted for 35.1% versus 22.3%, and those with a two- year degree was lower in the sample with 5.4% versus 9.5% in the general Minnesota population. There were a higher percentage of women with a bachelor's degree in the sample with 27% versus 21.2% of people in Minnesota according to the 2009 U.S. Census Bureau report (U.S. Census Bureau, 2010). These findings indicate that the sample had a higher percentage of people educated with some college or a bachelor's degree than the general population of Minnesota; however, there were a lower percentage of participants' two-year degrees.

Those with less than a high school education were comparable to the general population of Minnesota.

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 among the 36 participants who reported their income. Incomes had a range of \$111 to \$4,160. The incomes, on average, were listed as supporting 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 also found to be primarily Caucasian with 28 (71.8%), and six (15.4%) African American participants. In addition, there were four Native Americans (10.3%) and one (2.5%) Hispanic in the sample surveyed. One participant did not list their race. The sample was not congruent with the racial demographics in the State of Minnesota. The 2010 U.S. Census Bureau reported the following percentage of populations residing in Minnesota: Caucasians 88.6%, African Americans 4.7%, Native Americans 1.3% and Hispanic 4.3% (U.S. Census Bureau, 2010). Both Caucasians and Hispanic women are represented less than in the general population in Minnesota. The African American and Native American are represented at a greater percentage in the *SagePlus* sample than that of the general population of Minnesota.

The BMI of the participants ranged from 19.60 to 47.60. Nine of the participants (23.6%) were found to be in the overweight category with a BMI between 25 and 29.9. Obesity, or a BMI equal to or greater than 30, was found in 23 (60%) of the participants and only six (15%) of the participants had a normal BMI of less than 25. Two of the participants did not give their height and weight values, so a BMI was not able to be computed. It is estimated in the State of Minnesota that 36.8% of people are neither

overweight nor obese, 37.9% are overweight and those that are categorized as obese make up 25.4% (CDC, 2011). The high obesity rate among participants was double the Minnesota overweight rate and obesity rate of 24.6% reported in 2009 (CDC, 2011).

Data Analysis

Data was analyzed using SPSS software version 12. The research questions and results for each question are as follows.

Research Question One

The first research question that was addressed was: Has the participant's daily intake of fruits and vegetables increased with the *SagePlus* newsletter? These results show that a majority of the participants, 70.5% feel as though the newsletter has impacted their dietary habits, while 20.5% feel that the newsletter has not. Table 1 represents the results of the survey.

Table 1

Has Newsletter Impacted Fruit and Vegetables Intake

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	9.1	9.1	9.1
	No	9	20.5	20.5	29.5
	Yes	31	70.5	70.5	100.0
	Total	44	100.0	100.0	

This question was further explored by the researcher by gathering data from MDH regarding the dietary habits of the participants prior to enrollment and gathering the data

from the participants during the survey to assess for change that occurred. It was reported by the participants at their time of enrollment that participants were consuming between 0-5 servings of fruits per day. The greatest number of participants, 17 (38.6%), were consuming only 1 serving of fruits per day. Thirteen (29.5%) were consuming 2 servings, nine (20.5%) 3-5 servings, four (9.1%) zero servings, and one participant did not report. These findings are shown in Table 2.

Table 2

Fruit Eaten at Time of Enrollment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	9.1	9.3	9.3
	1	17	38.6	39.5	48.8
	2	13	29.5	30.2	79.1
	3-5	9	20.5	20.9	100.0
Total		43	97.7	100.0	
Missing	System	1	2.3		
Total		44	100.0		

The range of fruits and vegetables that participants ate increased modestly after program enrollment from 0-5 to 0-6 servings daily. The greatest number of participants, nine or 20.5%, ate two or three servings of fruits daily. Eight participants (18.2%) consumed one serving, six (13.6%) consumed zero or five servings, five (11.4%) had four servings, and one (2.3%) had six servings. This information is shown in Table 3.

Table 3

Daily Servings of Fruits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6	13.6	13.6	13.6
	1	8	18.2	18.2	31.8
	2	9	20.5	20.5	52.3
	3	9	20.5	20.5	72.7
	4	5	11.4	11.4	84.1
	5	6	13.6	13.6	97.7
	6	1	2.3	2.3	100.0
	Total	44	100.0	100.0	

This information was further analyzed to assess for number of participants that have changed their fruit intake since enrollment in the program. These results include that four participants (10%) had a decrease in fruit intake. Ten (25%) had no change, and 25 (65%) had an increase in servings of fruit eaten (see Table 4).

Table 4

Revised Change in Number of Fruits Eaten

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-3	1	2.5	2.6	2.6
	-1	3	7.5	7.7	10.3
	0	10	25.0	25.6	35.9
	1	9	22.5	23.1	59.0
	2	12	30.0	30.8	89.7
	3	3	7.5	7.7	97.4
	4	1	2.5	2.6	100.0
	Total	39	97.5	100.0	
Missing	System	1	2.5		
Total		40	100.0		

Information that was gathered from MDH also included the number of vegetables eaten at the time of enrollment. This information found that the participants ate between 0-8 servings per day. The greatest number, 19 (43.2%), ate two servings per day at the time of enrollment. Fourteen (31.8%) had one serving, eight (18.2%) had three to five servings, one (2.3%) participant had zero servings, and one (2.3%) had six to eight servings per day. There was one participant who did not report vegetable intake at the time of enrollment (see Table 5).

Table 5

Vegetables Eaten at Time of Enrollment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	2.3	2.3	2.3
	1	14	31.8	32.6	34.9
	2	19	43.2	44.2	79.1
	3-5	8	18.2	18.6	97.7
	6-8	1	2.3	2.3	100.0
	Total	43	97.7	100.0	
Missing	System	1	2.3		
Total		44	100.0		

The range of daily servings of vegetables remained unchanged after enrollment in the SagePlus program. Two daily servings also continued to be the highest frequency of servings eaten with 15 (34.1%) of participants. Four daily servings of vegetables were reported by eight (18.2%), three servings by six (13.6%), and five participants (11.4%) reported both zero and one serving. Two (4.5%) participants reported five servings daily and one (2.3%) reported both six and eight daily servings. One participant (2.3%) did not report daily vegetable intake. These findings are displayed in Table 6.

Table 6

Daily Servings of Vegetables

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5	11.4	11.6	11.6
	1	5	11.4	11.6	23.3
	2	15	34.1	34.9	58.1
	3	6	13.6	14.0	72.1
	4	8	18.2	18.6	90.7
	5	2	4.5	4.7	95.3
	6	1	2.3	2.3	97.7
	8	1	2.3	2.3	100.0
Total		43	97.7	100.0	
Missing	System	1	2.3		
Total		44	100.0	100.0	

From the time of program enrollment to participation in the study, it was found that six (15%) of the participants decreased the amount of daily vegetable servings. Eleven (27.5%) showed no change in their dietary habits and 22 (55%) had an increased intake of daily vegetable servings (see Table 7).

Table 7

Revised Change in Number of Vegetables Eaten

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-3	1	2.5	2.6	2.6
	-2	1	2.5	2.6	5.1
	-1	4	10.0	10.3	15.4
	0	11	27.5	28.2	43.6
	1	12	30.0	30.8	74.4
	2	5	12.5	12.8	87.2
	3	2	5.0	5.1	92.3
	4	2	5.0	5.1	97.4
	5	1	2.5	2.6	100.0
	Total	39	97.5	100.0	
Missing	System	1	2.5		
Total		40	100.0		

Research Question Two

The second research question that was explored was: When the newsletter is received, does it motivate the participants to work on their dietary goals?

To address this question, the participants were asked how much thought they had given to making healthy changes. Twenty-five participants, 56.8%, gave the response “much thought, some change,” and twelve participants, 23.7%, responded “much thought, much change.” These findings are shown in Table 8. In addition, 77.2% (34 participants) rated their health “somewhat better” or “much better” since their enrollment

in the Sage*Plus* program, while only 2.3% (one participant) rated their health much worse. Table 9 shows these results.

Table 8

How Much Thought About Making Healthy Changes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Some Thought, Some Change	5	11.4	11.4	11.4
	Much Thought, No Change	2	4.5	4.5	15.9
	Much Thought, Some Change	25	56.8	56.8	72.7
	Much Thought, Much Change	12	27.3	27.3	100.0
	Total	44	100.0	100.0	

Table 9

How Would You Rate Your Health in General Today

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Much Worse	1	2.3	2.3	2.3
	Somewhat Worse	1	2.3	2.3	4.5
	About the Same	8	18.2	18.2	22.7
	Somewhat Better	21	47.7	47.7	70.5
	Much Better	13	29.5	29.5	100.0
	Total	44	100.0	100.0	

Reading the newsletter was thought by the majority of participants to improve their dietary habits. “Somewhat” and “quite a bit” were the answers given by 35 or

87.5% of participants (Table 10). The remaining participants did not think reading the newsletter improved their dietary habits with two (5%) answering “not at all” and three (7.5%) participants answering “not very much.”

Table 10

Has Reading Newsletter Improved Your Dietary Habits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	2	5.0	5.0	5.0
	Not Very Much	3	7.5	7.5	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	

The final analysis that was completed to assist with answering if the newsletter motivates participants to work on their goals when it was received was to question the participants if the newsletter motivates them to work on their goals. The results of this question found that 36 or 81.8% of participants felt that they were “somewhat” or “quite a bit” motivated to work on their SagePlus goals when they receive the newsletter. Eight or 18.2 % of participants found no change, “not at all,” or “not very much change” was motivated by the newsletter (see Table 11).

Table 11

Does Newsletter Motivate You to Work on Goals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	9.1	9.1	9.1
	Not at All	1	2.3	2.3	11.4
	Not Very Much	3	6.8	6.8	18.2
	Somewhat	23	52.3	52.3	70.5
	Quite a Bit	13	29.5	29.5	100.0
	Total	44	100.0	100.0	

Research Question Three

The third and final research question that was addressed was: Does the newsletter continue to motivate the recipients to work toward their self identified individualized dietary goals throughout the month?

In questioning the participants it was found that 32 or 72.7% of participants thought that the newsletter “somewhat” or “quite a bit” motivated them to work toward their dietary goals throughout the month. Four (9.1%) thought that there was no change, and eight (18.1%) were “not at all” or “not very much” motivated to work on their dietary goals throughout the month that it was received. See Table 12 for results.

Table 12

Does the Newsletter Motivate You to Work Toward Your Dietary Goals Throughout the Month

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	9.1	9.1	9.1
	Not at All	2	4.5	4.5	13.6
	Not Very Much	6	13.6	13.6	27.3
	Somewhat	17	38.6	38.6	65.9
	Quite a Bit	15	34.1	34.1	100.0
	Total	44	100.0	100.0	

Using Kendall's Tau correlation coefficient there were no statistically significant correlations between the change in number of fruit servings eaten or vegetable servings eaten and BMI ($r = -.013$, $r = -.044$), monthly income ($r = .060$, $r = -.048$), or educational level ($r = -.120$, $r = -.037$). There were also no statistical significant correlations found regarding the change in the number of servings of fruits eaten and reading the newsletter to motivate healthy changes and participant feelings of improvement in dietary habits ($r = .168$, $r = .076$). In addition, there were also no significant correlations found regarding change in number of servings of vegetables eaten and reading the newsletter to motivate healthy changes and participant feelings of improvement in dietary habits ($r = .136$, $r = .044$).

Summary

A telephone survey was conducted with participants in the *SagePlus* program to evaluate the effectiveness of the *SagePlus* newsletter in motivating changes in dietary habits. The sample size for this study included 40 English-speaking, middle-aged women, who were primarily Caucasian, single, educated, and living in the Twin City Metro Area. Data was analyzed using the SPSS software version 12. Many participants, 70.5%, felt that the newsletter impacted their fruit and vegetable intake with 65% increasing their fruit intake and 55% increasing their daily vegetable intake. Participants that received and read the newsletter identified that they were motivated to work on dietary habits and improve dietary goals not only when it was received, but throughout the month. Eighty-seven percent of participants felt that the *SagePlus* newsletter improved their dietary habits “somewhat” or “quite a bit,” resulting in the participants viewing the *SagePlus* newsletter as a positive impact on their dietary habits.

CHAPTER V

DISCUSSIONS AND CONCLUSIONS

The purpose of this study was to determine the effectiveness of the *SagePlus* newsletter in motivating low-income, middle-aged women to adopt healthier eating habits, specifically to eat more fruits and vegetables. The research questions for this study were (a) Has the participant's daily intake of fruits and vegetables increased with the *SagePlus* newsletter? (b) When the newsletter is received, does it motivate the participants to work on their dietary goals? and (c) Does the newsletter continue to motivate the recipients to work toward their self identified individualized dietary goals throughout the month?

This chapter summarizes the results of the study. Discussion and conclusion, scope and limitations, and implications for practice and research are included in this chapter.

Discussion and Conclusion

Research Question One

Has the participant's daily intake of fruits and vegetables increased with the *SagePlus* newsletter? The study revealed that 70.5% (31 participants) felt that the newsletter impacted their fruit and vegetable intake. The study also found that 65% (25 participants) increased their fruit intake, and 55% (22 participants) increased their daily vegetable intake from the time of enrollment to the time of survey participation.

Researchers have reported that only an estimated 27% of adults consume three or more servings of vegetables and only 29% consumed two or more servings of fruits daily

(Beresford et al., 2010; Casagrande et al., 2007). At the time of enrollment, 22 participants or 55% ate the daily recommended servings of fruits and nine participants or 22% ate the recommended servings of vegetables. This placed the participants above the national average for consumption of recommended daily fruit intake, and modestly below the national average for consumption of daily recommended vegetable intake. Both of these numbers increased above the national average after participants became enrolled in the *SagePlus* program and received the newsletter to 70% for daily fruit intake and 45% for daily vegetable intake.

One possibility for these findings could be the education and commitment that is completed with enrollment in the *SagePlus* program. This education is not only completed through receiving the monthly newsletter, but women enrolled must also agree to learn about healthy lifestyle changes and consider making changes toward a healthier lifestyle through a couple of different methods (MDH, 2009). Education is completed by providing free lifestyle coaching on diet, exercise, and smoking cessation. The program also incorporates lifestyle coaching, performance-based incentive plans along with the monthly health newsletter to promote, motivate, and encourage healthy lifestyles. Health education is a key element of health promotion in the *SagePlus* program (MDH, 2009).

Because of all of the additional services that are provided to the participants, it is difficult to associate the change directly with receiving the newsletter. An attempt was made by the researcher to make this association by asking the participants specifically about change resulting from receiving the newsletter, however, it is difficult to know if the change that was experienced can be tied directly to the newsletter or a combination of the elements of the *SagePlus* program.

Low income was also found by previous researchers to be related to a decreased intake of fruits and vegetables. Although this population has a low income, it was found that their intake of fruits and vegetables was higher than the U.S. average. This could be related to a couple of different factors. The participants of the study were found to have a higher level of education than the average Minnesotan. In regard to the education level of the sample, it was found that some college education accounted for 35.1% of the participants versus 22.3% of people in Minnesota and those with a two-year degree were 5.4% versus 9.5%. Twenty-seven percent of women in this study have a bachelor's degree versus 21.2% of people in Minnesota (U.S. Census Bureau, 2010). Another factor that could have affected fruit and vegetable intake among this low income population is the increased dietary education received through the *SagePlus* program. This additional teaching places increased knowledge of importance of healthy eating along with methods for integrating fruits and vegetables into their diet.

Research Question Two

When the newsletter is received, did it motivate the participants to work on their dietary goals? Overall reading the newsletter motivated the *SagePlus* participants to improve their dietary habits and increase their intake of fruits and vegetables. This study found that the majority of participants, (87.5%) thought that reading the newsletter has improved their dietary habits.

The study found that 81.8% of participants felt that they were “somewhat” or “quite a bit” motivated to work on their *SagePlus* goals when they receive the newsletter. Fifty-seven percent had given “much thought, some change” and 27.5% have given “much thought, much change” to making healthy changes in their lifestyle.

The study found that many of the women are making progress toward their goals and increasing their intake of fruits and vegetables indicating that they are in the action phase of behavior modification. The action phase of the Transtheoretical Model of Behavior Change is where the change actually occurs. Other participants may have regressed to the contemplation phase where change is only being considered, but not acted upon as their fruit and vegetable intake has decreased since program enrollment. As described, this process is one that participants may regress and progress through several times before the change is made into a habit (Velicer et al., 2002).

While the participants are in the action stage, unhealthy behavior may be modified for a period of 1 day to 6 months so continued motivation and encouragement is needed. According to the Transtheoretical Model of Behavior Change, individuals who are in the process of behavior modification should be aware that many times participants in behavior change will revert to their previous behaviors while the change process is occurring. This does not mean that the goals that they have set are not attainable. Even with successful behavior change, there will be many occurrences of both progress and regression to a previous phase. Eventually, it is hoped that the individual will spend most of their time in the maintenance phase of the change process (Velicer et al., 2002).

Reading the general content and recipe section of the newsletter provides continued motivation and direction in working towards set goals. In this study, the recipe is the section of the newsletter that is most widely read (81.8%). This may be one aspect of the newsletter that continues to motivate participants to increase healthy eating each month. It should also be considered that some participants may be saying what they want the researcher to hear or not saying what they do not want to admit on the phone.

Research Question Three

Did the newsletter continue to motivate the recipients to work toward their self-identified individualized dietary goals throughout the month it was received? Overall, the participants thought that the newsletter was able to motivate them to work toward working on their dietary goals throughout the month with a response of a majority of participants were “somewhat” or “quite a bit” (72.7%) motivated. This result shows that the newsletter is not only a valuable tool in the *SagePlus* program on the day it is received, but throughout the month motivating the participants to work on their dietary goals.

Some of the participants (52.5%) aren't reading the entire newsletter which could mean that just receiving the newsletter acts as an effective motivator to work on their set goals or increasing fruit and vegetable intake. The study also was not able to identify a correlation between income, education, and BMI with fruit and vegetable intake. These correlations may not have been present for a variety of different reasons. For example, the population sampled was found to have a very high percentage of obese members at 50% compared to the Minnesota obesity rate of 24.6% (CDC, 2011). The participants studied were also not congruent with the general population of Minnesota with both Caucasians and Hispanic women represented less than in the general population. Additionally, the African American and Native American are represented at a greater percentage in the *SagePlus* sample than that of the general population Minnesota (U.S. Census Bureau, 2010).

The participants of the study identified that reading the newsletter motivates them to make lifestyle changes, however, 25% have not made changes to their fruit intake and

27.5% have not made changes to their vegetable intake. In addition, 10% decreased their fruit intake and 15% decreased their vegetable intake since their time of enrollment in the *SagePlus* program. This may indicate that there are barriers interfering with behavior change in these women. This finding is significant from a clinical perspective, because although the women are motivated to work towards their dietary goals they are not making progress towards them and in some cases their habits are worsening.

Healthcare providers may need to make further intervention to assist in identifying individual barriers and modify the dietary goals appropriately. Actions to improve the availability, accessibility, and affordability of fresh produce and behavior modification processes to increase the consumption of fruits and vegetables is recommended to be implemented by providers to assist with achievement of dietary goals (Casagrande et al., 2007).

Study Comments and Program Satisfaction Discussion

The study found that overall participants were quite pleased with the newsletter and felt that it was a helpful augmentation to the *SAGEPlus* program. Throughout survey completion, all of the participants were appreciative of the education that they had been given through the program and also enjoyed the continued resources. One participant noted that she “loves the recipes” and is able to complete “efficient grocery shopping with menu.” Four participants simply stated “love it!” and one reported that it “continues to motivate people to make healthy lifestyle changes.” All of the positive comments may add to the increased motivation that the participants felt and continue to feel while receiving the newsletter.

There were also some areas that were mentioned to be improved on including that the newsletter may be too simplistic, and appears to be written at a level that does not explore the topics in depth. These comments may be related to the higher education level that was found in the participants compared to the general Minnesota population or the additional education that was received by the participants through the *SAGEPlus* program.

Scope and Limitations

Several limitations were found with this study. First, the results are not applicable to all populations, only those surveyed because the study was completed on a specific group. In addition the sample size was small and further limited to those who were English speaking, receiving the newsletters, and receiving the newsletters in the correct language. Expanding the length of time the sample has been participating in the *SagePlus* Program to include second and third year enrollees may have provided a more accurate reflection of a person's ability to reach their goals.

It is not possible to know whether the information received from the participants is true because there is no way of verifying the veracity of the statements given at the time of collection. The time of the year may have been a limitation to this study as some of the participants may have a decreased availability to fresh produce during the winter months in Minnesota. During the summer months the participants may have access to garden produce.

Although the focus is on the newsletter, it is not likely that all motivation for dietary change can be attributed to it. As previously mentioned, although participants were instructed to answer the questions in relation to receiving and reading the *SagePlus*

newsletter their answers may reflect other components of the Sage*Plus* program or other factors in their personal lives that contribute to healthy lifestyle modifications.

Implications for Practice

Health promotion in the form of a newsletter can encourage self-awareness along with directing and motivating behaviors to achieve health outcomes. These healthy outcomes can include exercise, dietary changes, weight control as well as a wide variety of other topics.

This study creates awareness of the use of newsletters as an intervention. Newsletters can motivate people to improve their dietary habits and increase fruit and vegetable intake. Providers may also positively impact individuals to promote healthy lifestyles, specifically fruit and vegetable intake with monthly educational material such as newsletters.

Motivation alone does not cause a person to make changes in their health and does not equate with change. People can be very motivated to make changes without changes in their behavior actually occurring. The barriers they experience may outweigh their motivation and therefore must be addressed for the change will occur.

Implications for Research

Since the present study was only focused on middle-aged, low-income, and English-speaking women it would be useful for further research to examine and compare various ages, genders, income levels, and cultural groups. Another study could include the collection of the BMI at subsequent visits in order to gauge success of dietary habit changes and assess for correlation between an increase in fruit and vegetable intake and

BMI. Further research could also investigate if fruit and vegetable intake would increase if data collection was completed during different seasons throughout the year.

Summary

Newsletters can be an effective tool to assist with behavior modification.

Healthcare providers are able to positively impact behavior modification by working with individuals to develop dietary goals and working with them throughout the behavior modification process. The Transtheoretical Model of Behavior Change has been shown to increase the efficacy of the programs that are attempting to implement change. This model also has resulted in increased behavior modification program retention rates and participant's needs are met on a more individual basis (Velicer et al., 2002). A review of the literature indicated that healthcare professionals have a responsibility to assure that interventions of behavior modification of dietary habits are tailored to the target population to assist with achieving the desired health outcomes and goals. If this is achieved, the benefits can be great for all involved.

The findings of this study support the use of the Sage*Plus* newsletter a tool to motivating middle-aged, low-income women to make dietary changes. The study found that the participants were motivated to work on and increase their intake of fruits and vegetables. A majority of the participants, 70.5%, felt that the newsletter impacted their fruit and vegetable intake and 65% increased their fruit intake in addition to 55% increasing their daily vegetable intake from the time of enrollment to the time of survey participation.

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APPENDICES

APPENDIX A

MINNESOTA DEPARTMENT OF HEALTH IRB APPROVAL LETTER

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

APPENDIX B
MINNESOTA STATE UNIVERSITY IRB APPROVAL LETTER



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

Karen Anderson
 215 Buffalo St. S.
 Belle Plaine, MN 56011

Nichole Hassebroek
 224 111th St.
 Beaver Creek, MN 56116

JoLene Schlegel
 23533 45th 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 M. 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 C
CONSENT FORM

Project: The Evaluation of a Health Newsletter

Hello, may I speak with _____ (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 the call.)

If YES,

Introduction:

I am calling with you from Minnesota State University, Mankato regarding an 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 Nichole Hassebroek, by calling (507) 350-8334. If you are concerned about an ethical concern you will need to call IRB personnel 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. If you have further questions you can call me back at 507-389-xxxx.

APPENDIX D

MINNESOTA WOMEN'S HEALTHY HEART PROGRAM EVALUATION

Name _____

Date of Birth _____

Please circle your answer to the following questions:

1. What is your current living situation:
 1. Married →→ **Please skip to question 3**
 2. Single
 3. Divorced
 4. Widowed

2. If single, divorced or widowed, are you living in a partnered relationship?
 1. Yes, I am in a partnered relationship
 2. No, I am not in a partnered relationship

3. How many people currently live in your household (include yourself)?
 1. One →→ **Please skip to question 5**
 2. Two
 3. Three
 4. Four
 5. Five
 6. Six or more

4. Please describe the people who live with you (check all that apply):
 1. Children
 2. Spouse/Significant other
 3. Roommate
 4. Parent
 5. Other family members
 6. Other _____

5. Please describe your employment status (check all that apply):
 1. I work part time outside the home
 2. I work full time outside the home
 3. I am unemployed
 4. I am a stay-at-home homemaker
 5. I am a student
 6. I am retired

6. I am the primary caretaker of the following people (check all that apply):
1. Not Applicable
 2. Children
 3. Parents
 4. Spouse/Significant other
 5. Other family members
 6. Other_____
7. What percentage of household duties are your responsibility?
1. 0%
 2. 25%
 3. 50%
 4. 75%
 5. 100%

Please answer the following questions, thinking about since you began the Program.

8. How much have you thought about making healthy changes in your lifestyle?
1. I have already made some changes
 2. I'm going to do it
 3. I'm thinking about it
 4. I have not thought about it at all
9. How often do you eat healthy foods?
1. Every day
 2. A few times a week
 3. A few times a month
 4. Not at all
10. How often are you physically active?
1. Every day
 2. A few times a week
 3. A few times a month
 4. Not at all
11. What is your overall impression of the Minnesota Women's Healthy Heart Program?
1. I am Very Satisfied with the program
 2. I am Somewhat Satisfied with the program
 3. I am Somewhat Dissatisfied with the program
 4. I am Very Dissatisfied with the program

12. When you first began the program, did you receive a printed report that showed your individual risk for heart disease?
1. Yes
 2. No → → **Please skip to question #14**
 3. Don't Know
13. How much did the individual report motivate you to make healthy changes in your lifestyle?
1. Quite a bit
 2. Somewhat
 3. Not very much
 4. Not at all
14. How much did the lifestyle counseling, goal setting or signing the contract motivate you to start doing some of the things you discussed?
1. I did not sign a contract or set goals
 2. Quite a bit
 3. Somewhat
 4. Not very much
 5. Not at all
15. How much did the incentive programs ('Steps' and/or 'Fruits and Vegetables') motivate you to work towards your goals?
1. Quite a bit
 2. Somewhat
 3. Not very much
 4. Not at all
16. Which of the program materials did you like best? (Please check all that apply)
1. Individual risk profile
 2. Educational materials
 3. *Keep the Beat* heart healthy recipe book
 4. Women's health calendar
 5. Laminated daily checklist (with dry erase marker)
 6. Pedometer
 7. Other _____
-
17. Did you participate in Healthy Heart's 'Fruit and Vegetable' program?
1. Yes
 2. No → → **Please skip to question #19**
 3. Don't Know

18. How much did the 'Fruits and Vegetables' program help you to eat healthier?
(Please answer this question and →→**skip to question #20**)
1. Quite a bit
 2. Somewhat
 3. Not very much
 4. Not at all
 5. Did not participate in this part of the program
19. What kept you from participating in the 'Fruits and Vegetables' program?
1. I did participate
 2. The cost of fruits and vegetables
 3. No place to buy them in my neighborhood
 4. I don't like fruits and vegetables
 5. No time to cook
 6. Not interested
 7. Didn't know about it
 8. Other_____
20. Did you participate in the program called 'Steps'? (a program designed to track the amount you walk)
1. Yes
 2. No→→**Please skip to question #22**
 3. Don't Know
21. How much did 'Steps' help you to be more physically active? (Please answer this question and then →→**skip to question #23**)
1. Quite a bit
 2. Somewhat
 3. Not very much
 4. Not at all
22. What kept you from participating in the 'Steps' program?
1. Physical aches and pains
 2. No place to walk in my neighborhood
 3. Childcare responsibilities
 4. Transportation challenges
 5. Work schedule
 6. Not interested
 7. No time
 8. Too tired
 9. Didn't know about it
 10. Other_____

23. Did someone from our program call to discuss how the Healthy Heart Program was going for you?
1. Yes
 2. No → → **Please skip to question #27**
 3. Don't Know
24. Did you find the follow-up calls helpful?
1. Yes
 2. No
 3. Don't Know
25. How much did the phone call(s) from Healthy Heart motivate you to make healthy changes in your lifestyle? Would you say it/they motivated you:
1. Quite a bit
 2. Somewhat
 3. Not very much
 4. Not at all
26. In your opinion, should the follow-up calls be
1. More frequent
 2. Same frequency
 3. Less frequent
27. Is there a different medium that would be more effective for change?
1. No, Keep it the same
 2. Office visit follow-ups
 3. Email only follow-ups
 4. Web-based (site postings/blog/web calendar)
 5. Group visits
 6. Other _____
28. Why did you choose to participate in the heart health 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 _____
29. Compared to before you began the program, how would you rate your health in general today?
1. Much better
 2. Somewhat better
 3. About the same
 4. Somewhat worse
 5. Much worse

30. What do you think we could do to improve the Healthy Heart program? _____

Please do not fill in the information below the line, office use only

Date of most recent labs_____ Fasting? Y N
Total Chol_____ LDL Chol_____ HDL Chol_____
Triglycerides_____ Glucose_____
BP: 1 st : / 2 nd : /
Weight_____lbs
Change in medication_____
Other notes:

APPENDIX E
SAGEPLUS NEWSLETTER EVALUATION

Personal ID Number:

Length in Program:

Please check your answer(s) to the following questions.

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%

Please answer the following questions (6-11) range 1-4 with the following choices:

1. ___Not at all
 2. ___Not very much
 3. ___Somewhat
 4. ___Quite a bit
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 did reading *SagePlus* newsletter motivate 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. Today, after being enrolled in the *SagePlus* program, how many servings of fruits and vegetables do you eat daily?
1. _____
13. Today, after being enrolled in the *SagePlus* program, how many days a week do you participate in moderate physical activity (ex. walking, running, stair climbing, muscle strengthening)?
1. _____
14. Has the newsletter impacted your change in fruit and vegetable intake?
- 1___ No
 - 2___ Yes
15. Has the newsletter impacted your change in physical activity level?
- 1___ No
 - 2___ Yes
16. Are you able to understand what is written clearly?
- 1___ Not at all
 - 2___ Not very much
 - 3___ Somewhat
 - 4___ Quite a bit
17. If the answer to #16 is rated 1-3, what part(s) of the newsletter are not clear? Please check all that apply.
- a. ___ Ask Anne
 - b. ___ Recipe
 - c. ___ Exercise
 - d. ___ Current interest article
18. What part(s) of the newsletter did you routinely read? Please check all that apply.
- a. ___ Ask Anne
 - b. ___ Recipe
 - c. ___ Exercise
 - d. ___ Current interest article
19. What do you think we could do to improve the *SagePlus* newsletter?

APPENDIX F
SAGEPLUS NEWSLETTER DEMOGRAPHIC-OBTAINED
FROM MDH ENROLLMENT FORM

Personal ID Number:

1. Date of Birth: _____
2. Race:
 1. White
 2. Black or African American
 3. Native American, Hawaiian or other Pacific ethnicity
 4. American Indian or Alaskan Native
 5. Asian
 6. Other _____
3. What is your highest level of education?
 1. ___ Grade 8 or less (some high school)
 2. ___ Grade 12 or GED (high school graduate)
 3. ___ College or Technical school but no degree
 4. ___ Associate Degree (2 year college graduate)
 5. ___ Bachelor degree (4 year degree)
 6. ___ Professional (Masters, Professional or Doctorate)
4. What was the participant's baseline activity level before starting the Sage*Plus* program? _____
5. What was the participant's intake servings per day of fruits and vegetables before starting the Sage*Plus* program? _____