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Evaluation of a community-based cardiovascular disease risk reduction program

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ABSTRACT

Since 1984, more women have fallen victim to cardiovascular disease (CVD) than men, yet women remain largely unaware of their risk for the disease. Women of lower socioeconomic and education status are at a particular disadvantage because they have limited access to health care facilities and services. This study involved quantitative and qualitative evaluation of WISEWomAN (Well-Integrated Screening and Evaluation for Women Across the Nation), which is a community-based cardiovascular disease risk reduction program designed to serve the growing number of under- and uninsured middle-aged women of Iowa who fall victim to CVD. The intervention consisted of 12 sessions which addressed healthy living through nutrition and physical activity.

Quantitative evaluation involved statistical analysis of participant intervention evaluations (using a Likert scale), self-reported mini-goal attainment, and self-reported lifestyle behaviors. Qualitative evaluation involved structured observations of intervention sessions and a focus group with the intervention educators.

Participants positively evaluated the intervention, according to Likert scale responses on intervention evaluations. In addition, significant improvements in dietary knowledge, behavior, and physical activity were reported by the participants. These quantitative tools indicated a successful intervention; however, further investigation was warranted to examine the context of the intervention's success.

Qualitative evaluation using structured observation revealed that educators asked primarily non-academic questions, which created a safe, non-threatening learning environment. Participants responded by asking knowledge questions and providing application responses, signifying interest and ability to apply information. The focus group

supported the findings of the structured observations; educators reported that a safe environment, hands-on activities and incentives were key to participant engagement.

This study found that incorporating both qualitative and quantitative evaluation provided more depth to the intervention evaluation. Qualitative evaluation strengthened quantitative evaluation by providing insight into the contextual elements which contributed to the success of the intervention.

CHAPTER 1. INTRODUCTION

Cardiovascular disease (CVD) is the leading cause of death in the United States, claiming one million lives annually (Centers for Disease Control and Prevention, National Center for Health Statistics, 2001). Startlingly, more women have fallen victim to CVD than men since 1984 (American Heart Association, 2004) with an alarming death rate of one death per minute (American Heart Association, 2003).

This high death rate could be related to women's diminished ability to recognize signs and symptoms of a heart attack and a lack of perceived susceptibility. Women assume that they will feel chest and arm pain with a heart attack; however, women often experience unusual fatigue, sleeplessness, weakness, and shortness of breath instead (McSweeney, et al., 2003; Mosca, et al., 1997; Cannon & Balaban, 2000; Milner et al., 1999; Pope et al., 2000; Bairey et al., 2001).

Women also perceive breast cancer as a larger health threat, despite the fact that heart disease kills one in two women and breast cancer kills one in 27 (American Heart Association, 1999). In particular, women living in rural areas remain uninformed of their risk for CVD and find it hard adopting heart-healthy diets due to family preferences, lack of support, and culturally sensitive food patterns (Krummel et al., 2002). Women of lower socioeconomic and education status have increased difficulty adopting heart-healthy diets due to limited access to nutritious foods, nutrition information, exercise facilities, safe neighborhoods in which to exercise, and health care services (Zhang et al, 2004; Winkleby, 1997; Johnson et al, 1995). Therefore, a community-based intervention to reduce CVD risk for low-income, rural women is warranted.

A community-based cardiovascular disease risk reduction program to serve the growing number of under- and uninsured middle-aged women residing in a rural state was developed using the Health Belief Model (HBM). This is the most widely used framework in health behavior research (Strecher and Rosenstock, 1997) and its application has brought about significant results in explaining behaviors related to disease prevention, treatment, and clinic utilization (Rosenstock, 1988; Rosenstock, 1974; Janz and Becker, 1984; Shillitoe and Christie, 1989). When used as the framework for nutrition interventions, the HBM has been shown to enhance nutrition knowledge and increase perceived benefits while improving dietary intake among participants (Abood et al., 2003).

The community-based lifestyle intervention consisted of 12 group sessions led by university extension educators. Each session included a healthy snack/mini-goal discussion, powerpoint presentation, physical activity, skill-building activity, maintaining change activity, incentive, and setting mini-goals. The focus of the sessions were improving nutrition, increasing physical activity, and maintaining behavior change.

The purpose of this thesis is to report qualitative and quantitative evaluation of the cardiovascular disease risk reduction program. Qualitative evaluation involved structured observations of intervention sessions and a focus group with the educators. Quantitative evaluation involved statistical analyses of self-reported lifestyle behaviors, self-reported mini-goal attainment, and intervention evaluations from intervention participants.

Research Objectives

The objectives addressed by this study were to:

1. Evaluate Well-Integrated Screening and Evaluation of Women Across the Nation (WISEWomAN) to determine effectiveness, success, and potentially future funding.

2. Determine if qualitative evaluation strengthens quantitative evaluation

Thesis Organization

This thesis includes a review of literature, methods, and two manuscripts. General conclusions follow the manuscripts and references for the first two chapters can be found at the end of the manuscript.

CHAPTER 2. LITERATURE REVIEW

Cardiovascular disease (CVD) is the leading cause of death in the United States (US), claiming the lives of approximately one million individuals annually (Centers for Disease Control and Prevention, National Center for Health Statistics, 2001). Each day, 2,600 Americans die of CVD, making CVD more prevalent than the next 5 causes of death combined, including cancer, chronic lower respiratory diseases, accidents, diabetes mellitus, influenza and pneumonia (American Heart Association, 2003). Heart disease and stroke make up the majority and account for 72% of the total CVD events (American Heart Association, 2003).

Older individuals are more susceptible to developing CVD, as risk increases with age. This is of particular concern in the US, where the older adult population (those over 65 years of age) will dramatically increase after the year 2010 (Day, 1996). Older adults will make up approximately 13.2% of the total population in 2010 and because of the baby boom generation, this number will increase to 20% by 2030 (Day, 1996).

Iowa's older adult population will also increase. Currently, Iowa ranks 7th out of the 50 states in the number of older adults and will remain in this top ranking, as the number will reach almost a quarter of the population in 2025 (U.S. Census Bureau, 1996).

Along with this increase, comes higher health care costs particularly for CVD. In 2001, CVD treatment costs were estimated to be $298.2 billion in the US (American Heart Association, 2001) but are projected to increase to $368.4 billion in 2004, almost a 20% increase in just three years (American Heart Association, 2003). Currently in the US, heart disease and stroke make up 40 percent of the deaths among those aged 65-74 and 60% among those aged 85 and older (Office of Disease Prevention and Health Promotion, 2000).

Costs for CVD treatment are of particular concern in the southern and Midwestern regions because of the predicted population increase (Campbell, 1996). Keeping all of these projections in mind, it is important for all Americans, especially those of the baby boom generation, to be proactive in keeping healthy by learning how to live lifestyles that prevent risk for CVD.

Women and CVD

Although CVD has been thought of as only a "man's disease," more women have fallen victim to CVD than men since 1984 (American Heart Association, 2004). Statistics indicate that 42% of women will die within the first year after having a myocardial infarction, compared to 27% for men (Office of Disease Prevention and Health Promotion, 2000). Older women are two times more likely to die than men after only a few weeks of having a myocardial infarction. In fact, the death rate due to CVD among American women is an alarming one death per minute (American Heart Association, 2004). This could be due to the fact that women, compared to men, have a diminished ability to recognize signs and symptoms of an acute myocardial infarction (Zheng et al, 2001).

Women also do not realize their susceptibility to CVD, still perceiving breast cancer to be a larger health threat even though heart disease kills one in two women and breast cancer kills one in 27 (American Heart Association, 1999). As a result, the majority of women living in the US do not meet heart-healthy nutrition guidelines (Kris-Etherton & Krummel, 1993). Rural women, in particular, are unaware of their risk for CVD and find it hard to adopt a heart-healthy diet due to family preferences, lack of support, and culturally sensitive food patterns (Krummel et al., 2002).

Furthermore, America's health care system fails to recognize the relationship between women and CVD, as women remain largely underdiagnosed and undertreated for heart disease and associated risk factors (Mosca et al, 2000). This disparity is further magnified for women of blue collar employment with lower socioeconomic and education status (Hartman et al, 1997). Less access to nutrition information (Hartman et al, 1997), nutritious foods, exercise facilities, safe neighborhoods in which to exercise, and health care services increase their risk for obesity (Zhang et al, 2004; Winkleby, 1997; Johnson et al, 1995), which is a major risk factor for CVD. In addition, nutrition and physical activity are low priorities for women of lower socioeconomic status due to economic limitations and family constraints (Mein & Winkleby, 1998; Shea et al., 1992).

Women also underestimate their risk for CVD, as a telephone survey of American women over 25 years of age (n=1000) found that more than 33% could not name a single risk factor for CVD, and only 8% classified heart disease and stroke as their number one health concern (Mosca et al, 2000). Less than 33% identified heart disease as the number one killer in America; however, 90% responded that they would like more information about heart disease from their physician. These results were similar to reports from the National Council on Aging (Washington, DC) indicating that women feared breast cancer over CVD and were unable to identify CVD as a leading cause of death (Lancet, 1997).

Since women remain largely unaware of their risk for CVD, and Iowa's older adult population is projected to rise within the next 20 years, educating middle-aged Iowa women about CVD is necessary. Being proactive with this population through nutrition and physical activity interventions will increase their knowledge of risk factors, allowing them to make informed decisions and live healthier lifestyles well into their future.

Educational Theories

Transtheoretical Model

Evaluation of educational theories is critical in finding applicable methods for nutrition and physical activity interventions developed to increase CVD awareness, particularly among women. One educational theory used in nutrition intervention is the Transtheoretical Model (TTM), also known as the Stages of Change Model. Developed by Prochaska and DiClemente in the 1970's, its purpose was to integrate several behavioral and psychotherapy theories into one that describes the progression of change and accompanying behaviors (Sigman-Grant, 1996). This model focuses on an individual's readiness to change behavior, based on the concept that behavior change is a multi-step process (Glanz & Rimer, 1997). It assists educators in developing intervention strategies specific for each of the stages in order to facilitate an individual's progression through each (Glanz & Rimer, 1997).

There are five stages of motivation categorized by the TTM: precontemplation, contemplation, preparation, action, and maintenance.

1. Precontemplation: An individual existing in this stage does not want to change and refuses any efforts to change the negative health behavior (Green et al., 1994). Reasons for existing in this stage might be that the individual is unaware or in complete denial of the problem (ie: risk for CVD) or they might feel discouraged after making an attempt to change (Glanz et al., 1995; Brownell & Cohen, 1995).
2. Contemplation: The individual is aware that change needs to be made and is cognitively thinking about taking action in the near future, usually within the next 6 months.

3. Preparation: An individual in this stage is committed to taking action within the next 30 days and may already be taking small steps toward change. Examples of small steps include enrolling in a health promotion class or joining a fitness center.
4. Action: This refers to an individual who has taken action to change his or her negative health behavior lasting from one day to six months (Prochaska et al., 1992, p. 1104). An individual in this stage is easy to recognize because his or her behavior change is noticeable through observable actions such as preparing healthier meals or adopting an exercise routine.
5. Maintenance: This individual has maintained the new healthy behavior for at least six months without any relapses back to the unhealthy behavior.

Some research has documented a sixth stage referred to as termination. This stage refers to an individual who has complete self-efficacy without feeling tempted to revert back to previous unhealthy behavior. However, when considering food intake, reaching this stage is highly unlikely (Sigman-Grant, 1996). Unlike other unhealthy behaviors such as smoking, food intake cannot be avoided because it is essential for life. In addition, a variety of environmental factors have created significant challenges to eating a healthy diet.

The TTM is not meant to be a linear model, where a person progresses sequentially through the precontemplation stage to the maintenance stage. Instead, it is a circular process, meaning an individual can enter at any stage and possibility regress back to previous stages, usually referred to as relapse (Figure 1). Smoking cessation research has shown that individuals experience relapse up to four times before reaching the maintenance stage (Maher, 1998). Keeping this in mind can help both the educator and client remain positive and realistic while progressing towards the goal.

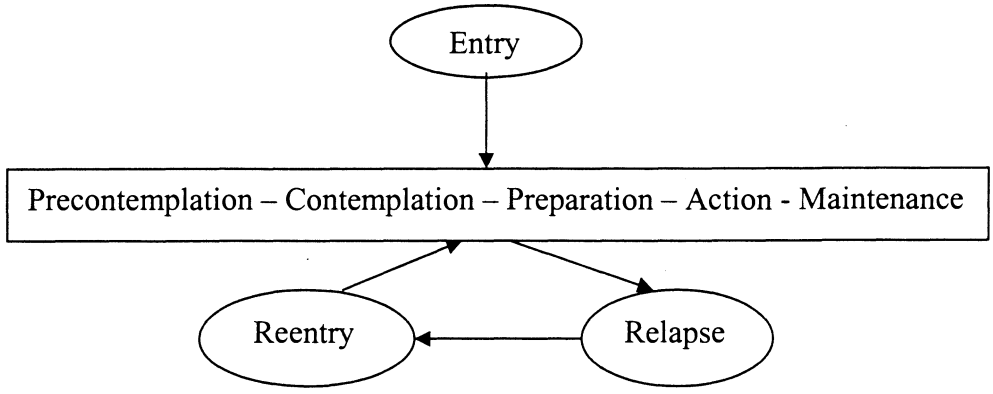


Figure 1. Prochaska and DiClemente's Stages of Change

The TTM is also useful in determining in which stage an individual exists, allowing educators to tailor messages and strategies to fit individual needs (Bauer & Sokolik, 2002). Traditionally, nutrition interventions treated all individuals as though they were in the preparation stage (Bauer & Sokolik, 2002). Educators would offer advice, disseminate nutrition information, and create diet plans even though some individuals did not even admit to unhealthy behavior (Bauer & Sokolik, 2002). This method of intervention was counterproductive, either delaying or preventing change (Maher, 1998). Instead, using this model for individual counseling is most beneficial because the TTM helps the educator and client work together toward a common goal. In addition, the TTM allows the educator to reevaluate a client's current stage of change, which helps measure a client's outcomes (Bauer & Sokolik, 2002).

Social Cognitive Theory

Another educational theory is the Social Cognitive Theory (SCT), previously labeled Social Learning Theory. This theory describes the constant interaction between people and their surrounding environments (Bauer & Sokolik, 2002) and how behavior is determined by a combination of both internal and external stimuli (Bandura, 1986). The SCT proposes that

learning occurs when an individual takes action or when he or she sees others take action, and the outcomes are assessed by the individual (Bauer & Sokolik, 2002). Past SCT research illustrates the process of behavior change, such as the movement from an unhealthy to a healthy behavior (Bandura, 1986).

Motivation to change is usually determined by individual evaluation of possible outcomes (both positive and negative), assessment of personal capabilities, and the development of goals to direct change (Ewart, 1991). The SCT explains that one's actions are dependent upon one's expectancies and incentives (Rosenstock et al., 1988). An individual's expectancies refer to environmental cues, outcome expectations, and self-efficacy, while incentives refer to the value an individual places on rewards (Rosenstock et al., 1988). For example, if individuals place value on healthy living (incentive), they will modify their lifestyle if they believe: (a) that their current lifestyle places their health at risk (environmental cues); (b) that making a lifestyle change will make them healthier (outcome expectations); (c) that they are capable of making the lifestyle change (self-efficacy) (Rosenstock et al., 1988).

The primary reason for using the SCT is to investigate various environmental and cognitive factors that impact behavior (Lewis et al, 1989). In nutrition, the SCT has been shown to predict dietary behavior change (Fleury, 1992; Sallis et al, 1988; Hickey, 1992; Edell, 1987; Bernier & Avard, 1986) because it incorporates various environmental, personal, and physiologic cues that impact dietary choices (Lewis et al, 1989). Health professionals can develop deeper understandings of an individual's dietary behavior by using the SCT to identify factors that have the largest impact on eating habits (Lewis et al, 1989). For example, investigators looking at milk and soft drink consumption in middle-aged adults

and college students found that the constructs of the SCT explained 35% to 61% of the variance in the frequency of full fat milk or regular soda pop consumption (Lewis et al, 1989). In contrast, a "traditional model," which included the basic variables of age, sex, education, socioeconomic status, attitude, and nutrition knowledge, only predicted 5% to 26% of the variance (Lewis et al, 1989). This illustrates the ability of the SCT to predict dietary behavior (Lewis et al, 1989).

The SCT is also closely related to the constructs of the Health Belief Model (HBM) (Maiman & Becker, 1974; Leventhal et al., 1980), which is a model widely used in nutrition intervention studies that will be described next (Table 1).

Social Cognitive Theory	**Health Belief Model**
Influence of environmental cues on personal expectancies	Perceived susceptibility and severity of disease threat and cues to action
Outcome expectations (does not specifically include costs or barriers to taking action)	Perceived benefits of taking action versus perceived barriers
Self-efficacy	Self-efficacy
Incentive or value	Value placed on health-related goal (ie: health motive)

Table 1. Adapted from Rosenstock et al., 1988

Both models bring together important concepts to aid educators in leading individuals through the process of behavior change. However, the HBM remains the most widely used behavior change theory in health behavior research (Strecher & Rosenstock, 1997).

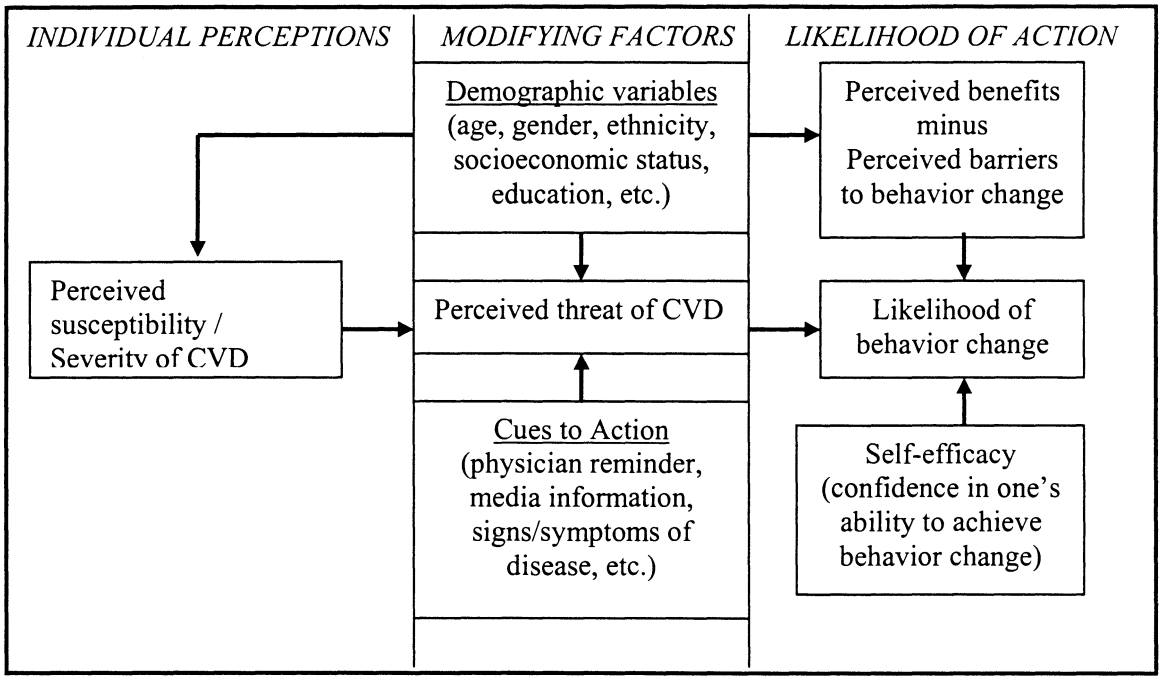
Health Belief Model

Since the 1950's, the Health Belief Model (HBM) has been the framework most widely used (Strecher & Rosenstock, 1997) to better understand patient compliance with disease prevention and detection (Janz et al, 1984). Initial development of the HBM was based upon years of psychological and behavioral research, demonstrating that behavior can be predicted by using two constructs: (1) the value an individual places on a health-related goal; and (2) an individual's assessment of whether recommended actions will help achieve that goal (Maiman, 1974).

The original HBM emphasized only two constructs: personal benefits and susceptibility (Becker, 1974; Janz & Becker, 1984; Rosenstock, 1974). However, continuous revision resulted in elaboration of the HBM into six constructs including cues to action, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy (Figure 2). These constructs collectively determine whether an individual will accept health recommendations to decrease their risk for a certain disease. For the purposes of this paper, the HBM will be discussed with CVD as the focus.

Both perceived susceptibility and severity can influence an individual's perception of CVD threat. Perceived susceptibility refers to an individual's personal risk assessment of developing CVD. In the case of a medically diagnosed disease, it refers to the belief in the diagnosis, general susceptibility and recurrence of the disease (Janz & Becker, 1984). Perceived severity is an individual's perception of CVD morbidity if they were to develop CVD or reject treatment for CVD. This concept involves examination of an individual's perception of the medical and social consequences accompanying the disease (Janz & Becker, 1984).

Figure 2. Health Belief Model including self-efficacy adapted from Strecher & Rosenstock (1997)



Factors which modify individual perceptions include demographics (ie: age, gender, ethnicity, socioeconomic status, education, etc.) and cues to action, which is considered the most recent addition to the HBM. Cues to action address environmental signals or physical symptoms that potentiate an individual's readiness to change (Glanz et al, 1997). While the HBM predicts the relationship between cues to action and healthy behavior, studies have actually demonstrated that cues to action lead to healthy behavior (Hanson et al., 2002; Hingson et al., 1990; Larson et al., 1979; Taplin et al., 1994, Hahn et al., 1996). More specifically, personalized cues to action, such as mailed postcard reminders or incentives to attend educational programs, have influenced healthy behavior (Hahn et al, 1996; Taplin et al, 1994). Interventions using cues to action have shown that patients are more motivated to ask questions and more compliant with health recommendations (Jones et al., 1987).

The HBM predicts that individual perceptions and modifying factors, such as demographic variables and cues to action, work synergistically to impact an individual's perceived threat of CVD. It is also predicted that perceived threat and demographic variables can impact the likelihood of taking action towards healthy behavior change.

Likelihood of action, the last tier of the HBM, considers perceived benefits and barriers. Perceived benefits are beliefs held by an individual regarding how effective the recommendations will be in decreasing risk or severity of CVD. An individual will evaluate the effectiveness of the recommended behavior, and if it is seen as effective, he/she will be more likely to incorporate the behavior into his/her lifestyles. Perceived barriers refer to potential difficulties an individual could face if he/she adopts the new health behavior. If the recommended behavior is too costly, painful, dangerous or inconvenient, the likelihood of adopting it will be low (Janz & Becker, 1984). Thus, if perceived susceptibility, severity, and benefits outweigh perceived barriers, the individual will be more likely to accept the new health behavior (Rosenstock, 1974) to decrease risk of CVD.

In regards to nutrition and health, the benefits/barriers ratio highly correlates with adopting healthy eating behaviors (Damrosch, 1991). In fact, other studies have documented barriers to healthy eating which include: time constraints, flavor of healthier foods, cost, confounding advertising or nutrition recommendations, and deficiency in knowledge about nutrition (Damrosch, 1991; Anderson et al., 1998; McCullock-Melnyk, 1988; Kayman S, 1989). The more barriers that exist, the more difficult it is to adopt healthy eating habits. Therefore, the incorporation of methods to overcome barriers is essential to an intervention program's success.

The last concept of the model is self-efficacy, which was added to strengthen the association between the HBM and predicted behavior (Rosenstock et al., 1988). Self-efficacy is defined as the level of confidence an individual has in his or her own ability to achieve a goal (Glanz et al, 1997). More specifically, it predicts whether behavior change will occur, how much effort will be needed to sustain behavior change, and how long behavior change will last despite barriers (Bandura, 1977). Four principle sources of information influences one's self-efficacy: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal.

Performance accomplishments, or personal mastery of previous health behavior changes, significantly strengthen self-efficacy (Strecher et al, 1986). In other words, people will feel more efficacious if they are able to accomplish new tasks that place them closer to their overall behavioral goal (Clark et al, 1992). The development and accomplishment of small, attainable goals or tasks will enhance self-efficacy and increase the likelihood of behavior change (Reid, 1995). In addition, verbal feedback from health professionals regarding progress can increase client or patient motivation to learn (Clark et al, 1992).

Vicarious experiences also impact one's level of self-efficacy (Bandura & Barab, 1973). Observing others overcome similar struggles can motivate one to accomplish a goal. Vicarious experiences spark the "if they can do it, I can do it" mentality.

Verbal persuasion can also factor into one's self-efficacy (Bandura, 1977). This method is often used in counseling as a way to convince others that they are capable of accomplishing their goals, but is not as influential as performance accomplishments or vicarious experiences. Verbal persuasion is also quickly forgotten when the individual endures a barrier while working toward a goal.

The last source of information to influence self-efficacy is emotional arousal (Bandura, 1977). Emotions accompanying stressful situations often debilitate one's feeling of competency (Bandura, 1977). Therefore, a person will feel more efficacious and experience more success without enduring stressful situations that elicit high emotional arousal.

With all of the constructs that make up the HBM, it is no wonder why its application in lifestyle intervention development has enhanced the understanding of health-related behavior (Janz, et al., 1984; Rosenstock, 1990). Its application has brought about significant results in explaining behaviors related to disease prevention, treatment, and clinic utilization (Rosenstock, 1988; Rosenstock, 1974; Janz and Becker, 1984; Shillitoe and Christie, 1989). In addition, many health educators find the HBM constructs useful in evaluating educational needs of a target group, assessing general interest in health, individual feelings of disease susceptibility and severity, and the likelihood that members will take action to reduce disease threat (Rosenstock et al., 1988). The HBM allows for proper evaluation of a group or community's health beliefs because it is not geared toward the individual, and this is critical to planning effective group interventions (Rosenstock et al., 1988).

Relating more specifically to dietary intake, a review (Sahyoun, 2004) of successful nutrition interventions with older adults (>65 years) concluded that the HBM is an appropriate framework to use with this age group due to their amplified awareness of disease risk and thus, their motivation to adopt healthy behavior changes. The HBM has also been successful in explaining food consumption patterns (Schafer, 1995; Kloeblen & Batish, 1999), including patterns in dietary fat intake (Schafer, 1995), which has a direct relationship with CVD. When used as a theoretical framework for nutrition interventions, the HBM has

been shown to enhance nutrition knowledge and increase perceived benefits while improving dietary intake among participants (Abood et al., 2003).

The HBM is the most widely used behavior change theory in health behavior research (Strecher and Rosenstock, 1997) and has been used repeatedly for development of nutrition interventions (Contento et al., 1995). Previous studies have shown a relationship between the HBM and understanding dietary behavior, indicating that its earlier application has been successful. The HBM is widely applicable to many people with varying backgrounds because it addresses a number of variables such as perceived susceptibility, perceived severity, demographics, cues to action, perceived benefits, perceived barriers, and self-efficacy.

WISEWomAN

In 1993 Congress authorized the Centers for Disease Control and Prevention (CDC) to establish WISEWomAN (**W**ell **I**ntegrated **S**creening and **E**valuation for **Wom**en **A**cross the **N**ation) as an extension to the already-established state-based National Breast and Cervical Cancer Early Detection Program (NBCCEDP). WISEWomAN was designed to address the growing number of under- and uninsured middle-aged women who fall victim to CVD by providing them with preventive health services such as CVD risk factor screenings, knowledge, behavior and attitude screenings, lifestyle interventions, smoking cessation classes, and medical referral or follow-up (Centers for Disease Control and Prevention, 2004).

Phase One was initiated by CDC in1995 and continued through 1998. Three states (Arizona, Massachusetts, and North Carolina) were awarded grants at this time to conduct research with intervention and control groups (Will et al., 2004). All three states had the

same goal: to educate underserved women between the ages of 40-64 on the importance of living a healthy and active lifestyle to support cardiovascular health. Health departments from each state directed WISEWomAN and collaborated with a university to implement and evaluate the program.

Phase One of the Arizona WISEWomAN project was initiated and then modified for Phase Two, which targeted mostly Hispanic women over the age of 50 (Staten et al., 2004). Women already enrolled in NBCCEDP, and who met the WISEWomAN medical inclusion criteria, were randomized into three intervention groups. The first group consisted only of provider counseling in which the woman received health education brochures and brief nutrition and physical activity counseling. Women in the second group received provider counseling as well as two health education classes (based on the Social Cognitive Theory) and monthly health newsletters. The last intervention group consisted of provider counseling, two health education classes, monthly newsletters, and community health worker support. Women in this group were able to communicate via the telephone with a community health worker. Conversations consisted of a health tip and ways to increase fruit and vegetable consumption and physical activity. The community health workers also organized bimonthly walks for women participants.

Results from the Arizona project showed that women in all three intervention groups experienced a significant increase in self-reported physical activity from baseline. Participants in the more intensive intervention, which included provider counseling, health education classes, monthly newsletters, and support from community health workers, increased their fruit and vegetable consumption to the national recommendation of five a day.

The Massachusetts WISEWomAN project recruited women regardless of their

enrollment in NBCCEDP (Viadro et al., 2004). This project involved a variety of cancer screening sites, such as hospitals, health centers, or visiting nurses associations that were randomly assigned to either an enhanced intervention (EI) or minimum intervention (MI). A total of 10 sites were matched based on facility type and demographics of the women, resulting in a matched pairs design involving five paired sites. Women in both EI and MI sites received initial CVD risk factor screening, counseling and education, referrals, follow-ups, and brochures discussing CVD risk factors and ways to decrease risk for CVD. The EI groups received individual nutrition and physical activity counseling, group health education, various behavior change activities (ie: cultural festivals, walking groups, cooking classes, grocery store tours, etc), and social support through the formation of women's groups.

Prior to implementation, investigators sought client input regarding information and types of activities likely to stimulate behavior change. Activities were site-specific, meaning each site had unique activities specific for that site's target population. CVD brochures were evaluated using focus groups with women demographically similar to the women participating in the Massachusetts WISEWomAN project. The study was initiated and after 12 months, follow-up data were compared with baseline showing that both MI and EI groups experienced a significant decrease in hypertension and the EI groups experienced a significant increase in physically activity compared to the MI groups (Stoddard et al., 2004).

The North Carolina WISEWomAN project was implemented in local health departments. Participants were women from all ethnic backgrounds already enrolled in NBCCEDP with high cholesterol or abnormal lipid levels, high systolic or diastolic blood pressure, abnormal glucose, or any history of these conditions (Will et al., 2004). Local health departments in various counties were assigned to either MI or EI groups. The MI

involved local standard of care where women received educational brochures addressing CVD or brief counseling. The EI groups received two to three 30-minute one-on-one nutrition and physical activity interventions led by health department nurses, nutritionists, or health educators. The intervention was entitled *A New Leaf...Choices for Healthy Living* and used a manual for nutrition and physical activity counseling specific for CVD, geared toward low-income individuals (Centers for Disease Control and Prevention, 2002).

The *New Leaf* manual assessed individual risk for CVD and guided counseling. Based on the social cognitive theory and the socioecological model, the manual was geared toward multiethnic groups, particularly low-income, low literacy individuals. This attribute assisted the educator in finding counseling techniques tailored to fit individual needs (University of North Carolina at Chapel Hill, 2000). The EI emphasized goal setting, social support, and helped identify personal barriers and benefits of behavior change.

After one year, results showed lipid and blood pressure improvement and a decrease in risk for death from heart disease and stroke in all women regardless of intervention group placement (Centers for Disease Control and Prevention, 2002). Women in the EI experienced a decrease in total fat intake compared to women in the MI (Centers for Disease Control and Prevention, 2002).

Since initiation of Phase One, WISEWomAN has now spread to 14 different states with a total of 15 operating programs across the nation (Appendix A). More than 21,000 women have participated in WISEWomAN, and several new cases of hypertension, hypercholesterolemia, and diabetes mellitus have been identified (Centers for Disease Control and Prevention, 2004). Because these women were under- or uninsured, the majority would have remained unaware of their risk factors for cardiovascular disease if it were not

for WISEWomAN.

Iowa's WISEWomAN

The *Iowa Care for Yourself/WISEWOMAN* program is unique in that the lifestyle intervention is composed of 12 group sessions led by Iowa State University Extension educators. Sessions focus on improving nutrition, increasing physical activity, and maintaining behavior change. At each session women take part in the following: (1) a healthy snack/mini-goal discussion, (2) power point presentation (which includes how the topic relates to CVD, how information provided will help reduce risk of CVD, and what steps are necessary to reduce risk), (3) physical activity, (4) skill-building activity, (5) maintaining change activity, (6) incentive, and (7) setting new mini-goals. Elements of the intervention are based upon the Health Belief Model, which has shown much success in explaining health-related behavior (Janz et al., 1984; Rosenstock, 1990), and nutrition information is adapted from the Dietary Approaches to Stop Hypertension (DASH diet). The DASH diet is incorporated into the intervention because previous research has shown that it helps decrease risk for CVD (Obarzanek et al., 2001).

Literature reviews of previous lifestyle interventions found several key factors that contribute to an intervention's success. Key factors included: conducting multiple sessions, incorporating skill-building activities, social support to encourage attendance, focusing on gradual changes, and setting small and attainable goals. These key factors were incorporated into *The Iowa Care for Yourself/WISEWOMAN* program to enhance its effectiveness in providing underserved women of Iowa the chance to learn the knowledge and skills of living a healthier lifestyle.

Qualitative & Quantitative Evaluation

Not only is following the appropriate educational model critical to the success of a nutrition intervention, proper evaluation of the intervention is needed for accurate assessment of behavior change among the target population. Without evaluation, the degree of impact the intervention had on the population would remain largely unknown. Furthermore, evaluation helps researchers discover successful strategies that promote behavior change which can be incorporated into future interventions.

Two types of evaluation, qualitative and quantitative, have sparked ongoing debate among social and biological scientists (Kerlinger & Howard, 1999; Miles & Huberman, 1994; Newkirk, 1999; Mechanic, 1989). Qualitative research "focuses on the experiences, interpretations, impressions, or motivations of an individual or individuals, and seeks to describe how people view things and why." "It relates to beliefs, attitudes, and changing behavior." (Cambridge Institute for Research, Education and Management, 2004). "Quantitative research focuses on measuring and counting facts and the relationships among variables and seeks to describe observations through statistical analysis of data. It includes experimental and non-experimental research and descriptive research" (research that attempts to describe the characteristics of a sample or population) (Cambridge Institute for Research, Education and Management, 2004).

Arguments regarding the best research method, qualitative or quantitative, have been ongoing. Qualitative scientists argue that quantitative research limits human subjects and associated behaviors by placing them into distinct groups, neglecting any effort to make connections with the subjects through observed behavior (Miles & Huberman, 1994; Reichardt & Rallis, 1994) or interview. Qualitative scientists believe quantitative data is

artificial, arguing that human behavior cannot be explained by placing individuals in simulated situations while controlling and manipulating variables (AbuSabha & Woelfel, 2003).

Conversely, quantitative scientists feel that direct contact with subjects, used in qualitative research, will create bias because of heavy reliance on the subjectivity of the researcher (AbuSabha & Woelfel, 2003). In addition, extrapolation of qualitative data to larger populations is complicated due to the extreme closeness of observation on the individual (AbuSabha & Woelfel, 2003). Qualitative studies tend to involve smaller sample sizes, making generalization to the larger population difficult.

Despite the arguments, both research philosophies have positive features. Qualitative research explains relationships and phenomenon more precisely because the researcher is submerged directly into the subject's real world (Denzin & Lincoln, 1994). Questions and thoughts are formulated during, instead of prior to the research (Miles & Huberman, 1994; Denzin & Lincoln, 1994). In contrast, quantitative research upholds reliability through objectivity and the ability to design specific plans with preset hypotheses (Piergiorgio, 2003). The quantitative philosophy involves the collection of numerical figures for precise measurement to define cause and effect (Reichardt & Rallis, 1994).

Since both philosophies have defining features that are valuable to research, it would seem logical that a combination of the two would enhance research results. A New York City Women Infants and Children (WIC) clinic found that focus groups with WIC participants regarding barriers to participation resulted in identifying accurate barriers experienced by a larger population of WIC participants (Woelfel et al, 2001). The barriers obtained in the focus groups were written on a Likert scale survey, which was given to the

larger population (Woelfel et al, 2001). Combining qualitative and quantitative methods gave more accurate results regarding barriers to client participation (Woelfel et al., 2001). If the qualitative focus group had not been included, a number of barriers would have remained unidentified and left out of the Likert scale survey (Woelfel et al., 2001). While qualitative methodology provides rich detail, quantitative methodology provides a way to quantify and extrapolate rich detail to a larger population (AbuSabha & Woelfel, 2003).

Moreover, qualitative and quantitative data work synergistically to build scientific theories (Mintzberg, 1979). While quantitative data provide the solid foundation to the theory by revealing statistical relationships among variables, qualitative data provide the framework used to construct the theory (Mintzberg, 1979). Qualitative evaluation gathers rich information with the purpose of explaining relationships among variables (Mintzberg, 1979). Theories could be misunderstood and interesting relationships could be difficult to explain if research is based solely upon quantitative data collection without any reference to real world, qualitative observation (Mintzberg, 1979).

Whether an advocate of qualitative or quantitative research methodologies, incorporating both into program evaluations or food behavior research appears to be beneficial (AbuSabha & Woelfel, 2003). Using both cancels out the weaknesses encompassed by each, and allows researchers to cross validate results. In the public health field, it is beneficial to use both methods (Miles & Huberman, 1994; Reichardt & Rallis, 1994) to ensure valid results that are more representative of the target population (Woelfel et al., 2001), which is true when studying food behavior (AbuSabha & Woelfel, 2003).

Focus Group

One form of qualitative evaluation is a focus group. During the late 1930's and 1940's, social scientists experienced a shift from using direct interviewing techniques to focus groups because direct interviews usually consisted of questionnaires with closed-ended questions that left the respondent feeling limited to the answers he or she could provide (Krueger, 1994). This method of gathering information focused more on the researcher rather than the respondent and resulted in the researcher having a large influence on results (Krueger, 1994). The shift to focus groups places more emphasis on respondents, allowing them opportunities to influence the results by sharing personal and unique insight (Krueger, 1994).

Focus groups were originally developed for marketing research purposes to investigate consumer's reaction to new products (Anderson-Lively & Kemis, 1997). Marketing research experienced great success with focus group interviews because the outcomes were more applicable to the intended audience and implementation was relatively inexpensive (Krueger, 1994). Because of success in marketing, focus groups have now been applied in areas of education, health, and social sciences to better evaluate the affect these fields have on society (Krueger, 1994). Focus groups allow researchers to stay in tune with the group being studied because it is capable of revealing human interactions and behavior (Krueger, 1994).

A focus group involves a moderator, or researcher, who asks prepared, open-ended questions about a certain topic to stimulate semi-structured dialogue between respondents (Brotherson & Goldstein, 1992). The defining characteristics of a successful focus group interview include: (1) a focused dialogue lasting 1.5 to 2 hours, (2) the collection of rich data

used for qualitative evaluation, (3) a small group of six to ten people sharing similar traits (4) the incorporation of various techniques to ensure credibility (Krueger, 1994; Brotherson & Goldstein, 1992). The latter two characteristics will be described further.

Focus group size is critical in terms of having a large enough group to give diversity, yet small enough to allow everyone the opportunity to comment. Choosing group members is vital to research, as the members' opinions and perceptions could impact the future of the program or subject of interest. Thus, group members should be selected based on their education, knowledge, and experience with the subject (Brotherson & Goldstein, 1992). In addition, group members sharing similar characteristics results in a more focused, interactive discussion, and creates a favorable environment for establishing rapport among members (Brotherson & Goldstein, 1992). Selecting participants with similar characteristics helps create a non-threatening, relaxed environment (Holman, 1993).

The fourth characteristic of a successful focus group, ensuring credibility, is critical to the success of the research. The following techniques to ensure credibility can be incorporated into focus group research: (1) conducting a series of interviews (Krueger, 1994), (2) using multiple methods, (3) progressive subjectivity, (4) multiple researchers, (5) representing negative cases, (6) member checks, (7) stakeholder review (Brotherson & Goldstein, 1992).

Conducting a series of focus group interviews with different sets of groups sharing similar characteristics can ensure credibility as it will help identify trends and patterns (Krueger, 1994). Using the multiple methods technique can also identify trends and patterns by incorporating other means of data collection in conjunction with the focus group interview (Brotherson & Goldstein, 1992). For example, using participant observation or individual

interviews along with a focus group strengthens research credibility (Morgan, 1988; Morgan & Spanish, 1984).

Credibility can also be enhanced if researchers record prior assumptions through a process called progressive subjectivity (Brotherson & Goldstein, 1992). Writing down thoughts prior to the focus group helps the researcher identify ways in which personal assumptions could influence interpretation of focus group results (Brotherson & Goldstein, 1992). Bias can also be minimized by using multiple researchers (Brotherson & Goldstein, 1992). This method allows for better representation of focus group members because more researchers are involved in the collection and analysis of the members' perceptions (Brotherson & Goldstein, 1992). Analysis of negative cases is also a method of assuring that all data, including data that presents discrepancies against patterns and trends, is represented (Brotherson & Goldstein, 1992). This allows the researchers to look at discrepancies that might need further investigation.

Member checks is a technique the researcher uses during the focus group to ensure correct interpretation of the group members' comments (Brotherson & Goldstein, 1992). The researcher will present the data back to the members and give them time to discuss anything that needs to be clarified. A stakeholder review is a continuation of member checks where the researcher will present the data to the stakeholders of the research. The purpose of this is to crosscheck the data to see if the final interpretation correlates with the stake holders' views and perceptions (Brotherson & Goldstein, 1992).

Focus groups are particularly useful in research aimed at evaluating policies and practices in education (Brotherson & Goldstein, 1992). They create a way to assess multiple perspectives held by both the educator and students (Brotherson & Goldstein, 1992).

Specifically, focus groups provide insight as to the types of teaching strategies and methods that are applicable and effective to a specific population (Brotherson & Goldstein, 1992). Using focus groups as part of a qualitative evaluation provides greater understanding of the needs of the educator and student.

Focus groups have been applied to nutrition intervention studies because they help improve both the planning and design of programs (Lively & Kemis, 1997). Focus groups are able to provide detailed, qualitative information about the target audience (Krummel et al., 2002), and the environment is ideal for collecting comments and perceptions from individuals who have little influence on decisions (Morgan, 1990). For example, focus groups with low-income Hispanic women as the target audience have provided valuable information used to structure CVD intervention programs (Mein & Winkleby, 1998). Focus groups with low-income women have identified specific strategies and themes that can be incorporated into the CVD intervention (Gettleman & Winkleby, 2000). Taking part in a focus group that will be used for the development of CVD interventions enhances group members' interest and participation, which aids in the overall success of the program or intervention (Gettleman & Winkleby, 2000).

Structured Observation

Observation is another type of qualitative evaluation that can be applied to areas such as professional development, training, and research (Malderez, 2003). Structured observation involves both a researcher and participants. The researcher records information about the observed behavior (Lutz & Iannaccone, 1968) while trying not to impede on the participants' social situation. The term "structured" refers to the researcher having made

advanced decisions about what will be observed (Westover, 2002), allowing focus on certain social interactions without becoming overwhelmed from trying to observe everything.

Structured observations are useful in determining behavior under normal circumstances instead of laboratory settings. For example, structured observations depict what is naturally occurring in practice rather than just a glimpse of participant perceptions, as would be gathered from an interview or questionnaire. When applied to educational settings, structured observations become particularly helpful in determining the environmental conditions of the classroom (Johnson et al., 1998). Moreover, they help determine individual teaching methods that work best and types of interactions that occur between educator and students/participants (Johnson et al., 1998).

Researchers performing structured observations need to follow necessary procedures before, during, and after observations to ensure accurate data collection. Prior to completing the structured observation, the researcher needs to complete a thorough investigation of the target population and organization that will be observed (Martin, 1982). From studying past records, manuscripts, and other sources of information, the researcher can gather information about the interrelationships between participants and the function, history, and overall goals of the program. This will help the researcher develop specific questions that need to be investigated during the structured observations (Westover, 2002).

Before proceeding with the structured observation, possible non-verbal and verbal behaviors that could occur during the observation need to be identified. Possible behaviors are then narrowed down, allowing the researcher to observe within his or her capacity while ensuring a comprehensive observation (Martin, 1982). Observed behaviors should be

documented on a structured observation checklist, which helps the researcher remain consistent across multiple observations.

During the structured observation, it is necessary that the researcher be positioned far enough away from the participants to minimize distraction, yet close enough to allow for an adequate view of behavior. Field notes can incorporate shorthand descriptors, giving the researcher more time and a larger capacity for observation.

After completion of the structured observations, data can be examined and synthesized to reveal relationships and trends (Martin, 1982). In the classroom environment, for example, the nature of the interaction between students and educator can be determined (Martin, 1982). In addition, the rationale for educational activities can be further examined (Martin, 1982). Synthesis of structured observation data presents a comprehensive overview of the processes that occur within the program (Martin, 1982).

A structured observation checklist is used during the observation to assist the researcher in making accurate assessments (Appendix B). The checklist is particularly important for collecting consistent data across multiple observations or multiple researchers. When applied to the classroom, the checklist can quantify the types and number of interactions between educator and students (Scantelbury, 1996) and between students themselves. Coding classroom interactions indicates the quality of the learning environment (Johnson et al., 1998). The checklist provides a way to calculate and quantify simple and complex interactions between students and educator (Johnson et al., 1998). However, the researcher can still include anecdotal notes if necessary; the checklist is meant only to strengthen the meaning of the notes (Johnson et al., 1998).

The checklist quantifies various types of interactions such as student versus educator initiation of conversation and classification of academic questions (Johnson et al., 1998). A seating chart can be drawn (Johnson et al., 1998), documenting where researcher, students, and educator are positioned. This can be used to record interaction by placing a hash mark next to the individual who initiated conversation. In addition, the checklist can be used to document types of questions.

Questions have been shown to reveal and inspire unique thought, leading to ideas and answers that can improve the quality of life (Russell, 1956). Therefore, it is important to document questioning patterns during an observation to determine the level at which students are integrating the information to their lives.

In Table 2, Bloom et al. (1956) illustrates this point with the proposal of a taxonomy that illustrates six levels of thinking to support educational objectives. The six levels of thinking are accompanied with relevant questions regarding knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom et al., 1956).

Table 2. Adapted from Bloom et al. (1956) and Sousa (1995).

1. Knowledge: recalling previously learned information (ability to define, identify, label, list, locate, match, name, recall, restate)

   Example: What is your cholesterol level?

2. Comprehension: gaining meaning from information that has been learned; the ability to understand information. (classify, compare, describe, estimate, explain, summarize)

   Example: Describe why high cholesterol is harmful to your health.

3. Application: transferring previously learned information to new situations. (apply, assess, calculate, construct, demonstrate, determine, implement, solve)

   Example: Calculate your heart rate.

4. Analysis: splitting up information into various parts and being able to understand the elements and how they fit together. (analyze, contrast, deduce, differentiate, distinguish, infer, prioritize, recognize)

   Example: Compare and contrast your current level of physical activity per week with what is recommended.

5. Synthesis: the creation of new patterns, thoughts, or structures by the learner that incorporate elements of the learned information. (compose, create, design, formulate, integrate, produce, reconstruct)

   Example: Formulate a healthy eating plan for yourself.

6. Evaluation: examining information and making judgments regarding its importance and credibility. Evaluating significant components of information. (interpret, appraise, assess, evaluate, support, justify, translate)

   Example: In your opinion, why has it been hard for you to live a healthy lifestyle?

Incorporating structured observations into research has many advantages. As mentioned previously, structured observations allow research to take place under normal environmental conditions instead of controlled laboratory settings. Structured observations

are also capable of obtaining large amounts of in-depth information, as compared to questionnaires or surveys often used (Martin, 1982). The researcher can also gather information about actual behavior of the educator and students, rather than their self perceptions (Martin, 1982). A disadvantage, however, is the introduction of researcher subjectivity. To make research more objective, it is advantageous to conduct additional structured observational studies of the same classroom or organization using multiple researchers (Martin, 1982). A research team approach ensures a more representative view of the data while identifying key themes and relationships (Martin, 1982).

Another limitation of structured observations is that the process requires a large investment of time and effort by the researcher. Not only does the researcher have to spend large amounts of time performing field studies, giving up situational control is essential to the success of structured observations (Martin, 1982). Unlike traditional methods of investigation, the researcher should maintain a reactive role during the observation. Furthermore, structured observations result in the collection of copious amounts of data. Thorough synthesis and evaluation of the data is critical in spotting all possible trends and relationships (Martin, 1982). The researcher also has an obligation to be as discrete as possible during the observation. Nonetheless, participants may still alter behavior just from knowing that an observer is present (Martin, 1982).

Structured observations are successful in obtaining large volumes of information to be used towards developing hypotheses (Martin, 1982). While structured observations serve as idea-generators, further empirical methods of research can follow, allowing for a more comprehensive examination of the hypothesis.

CHAPTER 3. METHODS

Subjects

Subjects of this study included under- and uninsured rural and urban Iowa women aged 40-64 participating in the BCCEDP and WISEWomAN (WW) programs. During the annual BCCEDP visit, participants were given the opportunity to enroll in the WW cardiovascular disease risk reduction program. The WW program consisted of 12 Lifestyle Intervention Group Sessions, which addressed healthy living through nutrition and physical activity. These sessions were led by five Nutrition and Health Field Specialists through Iowa State University Extension in the 6 intervention counties identified in Figure 1.

After electing to participate in WW, each subject signed an informed consent and release of medical information form and received a CVD risk factor screening, which included blood pressure, total cholesterol, LDL and HDL-cholesterol, and height and weight measurements. They also completed a lifestyle questionnaire (Appendix C). Regardless of their risk for CVD, all subjects were referred to the lifestyle intervention at their particular program site. Screening protocol for subjects participating in the intervention appears in Figure 2. All protocols were approved by the Institutional Review Board.

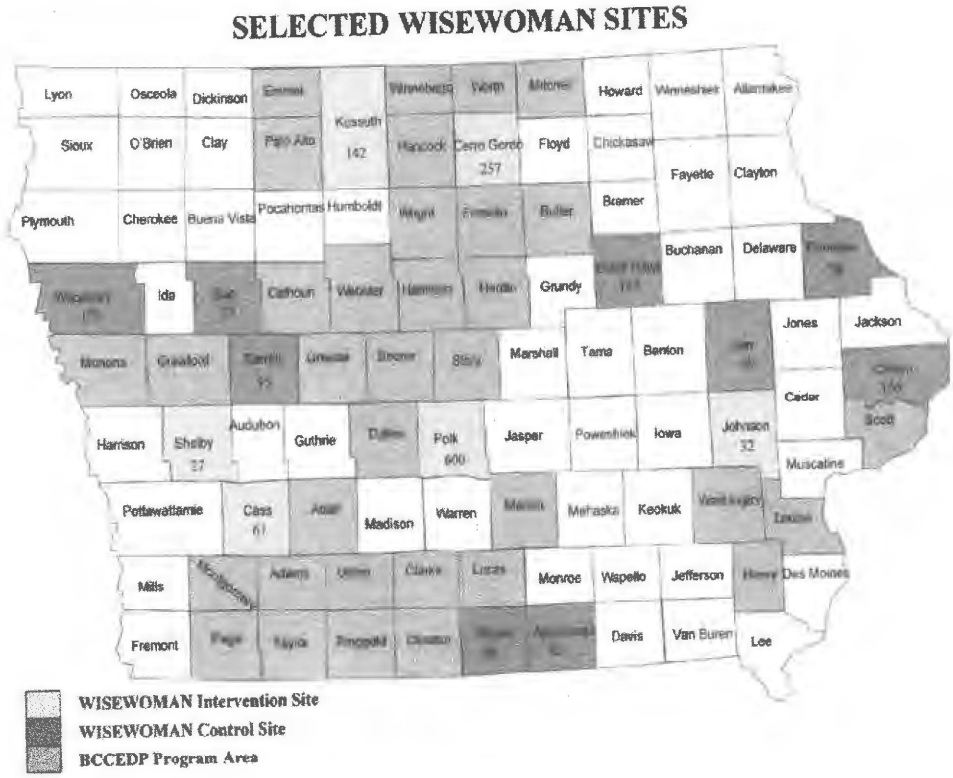
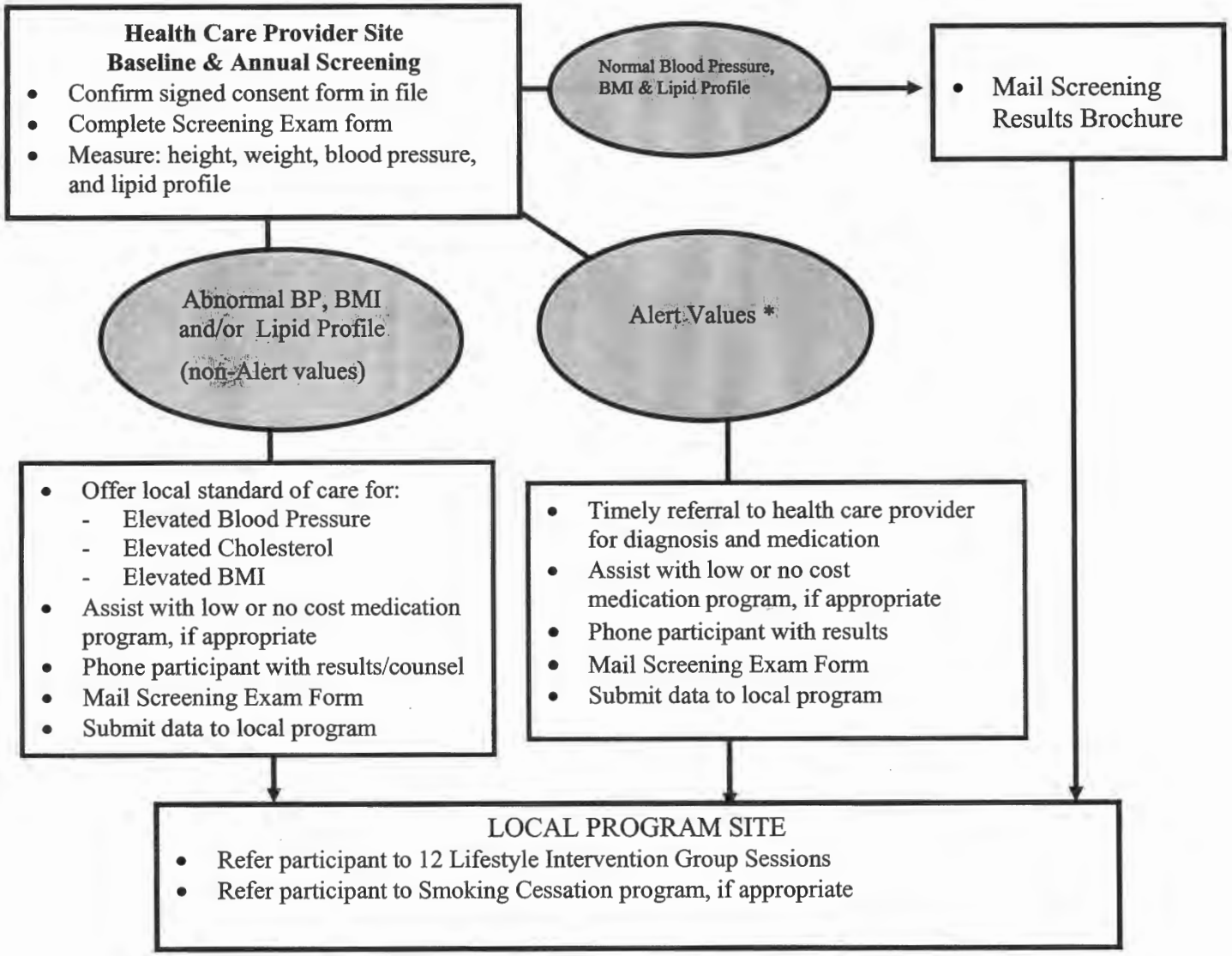


Figure 1: Intervention and control counties in Iowa.

Figure 2: Intervention Screening Study Flow Chart



*Alert Values: Cholesterol $\geq$ 400 mg/dl; Blood Pressure $\geq$ 180/110 mm Hg; BMI $\geq$ 40

Intervention

Twelve intervention sessions were created based on the Health Belief Model (HBM). Strategies incorporated into each of the sessions included: conducting multiple sessions with social interaction, using skill-building activities, applying gradual changes, and creating realistic goals.

Session 1: Take heart: Understanding cardiovascular disease

Session 2: Let's get moving

Session 3: Adjust the "fats" to care for your heart

Session 4: Choosing foods – The DASH Plan

Session 5: Can I eat the whole thing?

Session 6: Finding the power to change

Session 7: Make your recipes heart smart

Session 8: Snack smart

Session 9: Let's take a grocery store tour

Session 10: Weight loss diets?

Session 11: 3 foods for your heart

Session 12: Eating out the heart smart way

WW participants in the intervention counties were scheduled for session 1 within 30 days after receiving their screening results. Upon attending session 1, they received a schedule of dates and times for the next 11 sessions. Each session lasted approximately 75-90 minutes and had the following format:

Opening activity – heart healthy snack, participant/instructor introductions, each woman sharing experience with mini-goals set from previous session.

Feature presentation – Twenty minutes teaching about session's main topic which includes: how the topic relates to CVD, how information provided will help reduce risk of CVD, what steps are necessary to reduce risk.

Physical activity – gives women a chance to actively participate in a physical activity during the session (tai-chi, yoga, chair exercises, flexibility exercises, etc…).

Skill building – an activity that engages the women in thinking more about the topic; requires the women to apply what they have learned from the session.

Maintaining change – discussion of ways to incorporate and maintain behavior change in their lives, focuses on building self-efficacy and self-empowerment.

Goal setting – women set a mini-goal that they will work on until the next session, at which they report their progress.

Evaluation of session – women are given a session evaluation form.

Educational incentive – an educational tool given to all women to provide them with messages to encourage healthy eating and regular physical activity ("talking" pedometer, water bottle with printed health information, refrigerator magnet, etc…).

Evaluation

Qualitative and quantitative evaluation methods were used to assess both objective and subjective components of the WW intervention data. Three qualitative components included: structured observations of two intervention sessions from each intervention site, a focus group with Nutrition and Health Field Specialists who conducted the intervention sessions, and documentation of participant written comments from all session evaluation forms. The last evaluations included: statistical analysis of Likert scale responses from each intervention session and responses to a lifestyle questionnaire administered to the subjects.

Qualitative evaluation

Structured observations were conducted for two of the intervention sessions at each of the 6 intervention sites. Interventions #2 and #11 were chosen based on their incorporation of the constructs of the HBM. Constructs of the HBM include:

1. provide sufficient motivation/create awareness of one's vulnerability to the health problem in order to make the health issue relevant.
2. enhance one's belief that the health recommendations can be successfully executed in order to reach intended outcomes (improve self-efficacy).
3. demonstrate how following the provided health recommendations would reduce the health problem (outcome expectancy).
4. address potential perceived barriers.

The constructs were prioritized as # 1-4 for the purposes of this study. Session #2 (Let's Get Moving) was chosen because it incorporated all 4 constructs of the HBM, and session #11 (3 Foods for Your Heart) was chosen because it incorporated only 2 of the lower priority constructs. All six intervention sites were observed using a formulated checklist of a desirable learning environment as the basis of the structured observations.

A formulated checklist of a desirable learning environment was used during each structured observation as a framework (Appendix B). Educator- and participant-initiated questions were categorized as follows:

- Knowledge-level (recall, fact-based) (Ex: What is your cholesterol level?)
- Application (Ex: Can you show us how you calculated your heart rate?)
- Procedural (How do you plan to incorporate physical activity in the upcoming week?)
- Clarification (Ex: So are you saying that…?)

- Nonacademic (Ex: How are you doing today?)
- Disciplinary (Ex: Could you please stop talking to your neighbor?)

These categories coincide with the first three levels of cognition (knowledge, comprehension, and application) illustrated in Bloom's taxonomy and are appropriate for the intervention used in this study.

The checklist also categorized participant responses as paraphrasing, revelation, and application. Educator verbal responses were also recorded, specifically focusing on methods the educator used to encouraged participation and interaction with the participants. The number of participant responses was tallied by drawing a graphic representation of the room, depicting participant and educator location. Hash marks were used to record each time a participant gave a verbal response. Brief descriptions of participant non-verbal cues (such as head-nods, eye contact, sitting forward, note taking, looks of concentration, etc…) indicating engagement in learning, were also documented during each observation. In addition to the structured observation checklist, each observation was tape recorded and transcribed to ensure completeness of the observation.

A focus group was conducted with Nutrition and Health Field Specialists (n = 5). An observer was present to take notes, and a tape recording was transcribed to ensure completeness of the data. Focus group questions were formulated prior to and asked during the focus group (Appendix D).

The final element to the qualitative evaluation was the collection of participant written comments on session evaluation forms from each session and intervention county. Written comments were pulled from the forms and entered in a Microsoft Access data base. Each comment was categorized by county, session number, and date, and they served as

direct feedback from each participant. Written comments were analyzed by session number and interventionist and placed into the following categories: positive/negative, general/specific recommendations, and personal success stories.

Quantitative evaluation

Each group session included an evaluation (Appendix E) where participants were asked to rate both the instructor and the session content using a Likert scale. Each of these responses coincided with the numbers 1-5 (1 being "far below average," and 5 being "far above average"). Pre and post lifestyle questionnaires (Appendix C) were also given to the participants to evaluate behavior change as a result of the intervention. Statistics were conducted using SPSS for windows version 11.0, and data were analyzed according to intervention session, intervention educator, and participant demographics.

CHAPTER 4. QUALITATIVE EVALUATION PROVIDES CONTEXT TO QUANTITATIVE EVALUATION OF A NUTRITION INTERVENTION

A paper to be published in Topics in Clinical Nutrition

Abstract

This evaluation of a nutrition intervention used quantitative and qualitative data. Quantitative data included participant evaluation of educators and content using a Likert scale. Qualitative data included structured observations and focus group with educators. Likert scale responses were positive, but lacked variability. Structured observation revealed that educators asked non-academic questions, creating a relaxed environment. Participants responded by asking knowledge questions and giving application responses, signifying interest and ability to apply information. The focus group supported structured observations; educators reported that a safe environment, hands-on activities, and incentives were key to participant engagement. Quantitative evaluation indicated a successful intervention; however, qualitative evaluation provided the contextual elements.

Introduction

Evaluation is essential to determine effectiveness, success, and potentially future funding of nutrition interventions. Without evaluation, it would remain unknown as to which intervention strategies are effective and the impact an intervention has on its participants. Qualitative evaluation is a method where researchers submerge themselves directly into the participant's world[1] to gather rich information, which may explain interesting relationships among variables.[2] Qualitative evaluation, such as structured observations and focus groups, do not rely on artificial or simulated situations commonly used in quantitative research.[3]

Instead, it focuses on actual experiences of participants and seeks to explain motivations, interpretations, and impressions.[4]

Structured observation is an example of qualitative evaluation that can be applied to professional development, training, education, and research.[5] Researchers record information about observed behavior[6] while trying not to infringe on participant experiences. The term "structured" refers to the researcher having made prior decisions about what will be observed.[7] Advanced decisions regarding observations, allow the researcher to focus on certain social interactions without becoming overwhelmed.

Structured observation is useful in examining behavior under normal circumstances. For example, structured observation reflects what is naturally occurring in practice rather than just a glimpse of participant perceptions, as would be gathered from an interview or questionnaire. When applied to educational settings, structured observations become particularly helpful in exploring environmental conditions of the classroom.[8] Examination and synthesis of structured observations describes interactions that occur between educator and participants,[8,9] which ultimately impact effectiveness of the intervention. Synthesis of structured observation data presents a comprehensive overview of the processes that occur within the educational program and provides rationale for educational activities.[9]

Another example of qualitative evaluation is a focus group, where the participants can influence results by sharing personal and unique insight.[10] Focus groups were originally developed for marketing research purposes to investigate consumer reaction to new products.[11] While relatively inexpensive, focus groups have been applied in areas of education, health, and social sciences to examine the influences these fields have on society,[10] as well as identify strengths and areas for improvement.

Focus groups are particularly useful in evaluating educational policies and practice.[12] They create a way to assess multiple perspectives held by the educator and participant. Specifically, focus groups provide insight into teaching strategies appropriate for, and applicable to, a specific population. Focus groups provide a deeper understanding of student and educator needs and have been applied to nutrition intervention studies for improving both plan and design.[11]

The purpose of this study was to use qualitative evaluation to describe and explain quantitative evaluation results of a community-based cardiovascular risk reduction program. Qualitative evaluation was completed using a two-pronged approach, structured observation and a focus group with the educators, to provide additional insight and depth to the quantitative evaluation for a more comprehensive analysis of the intervention.

Materials and Methods

Quantitative Evaluation

Participants of a community-based cardiovascular disease risk reduction program completed evaluation forms after each of the 12 intervention sessions. The form included a 5-point Likert scale, which evaluated the educator on five variables (preparation, enthusiasm, clear explanations, teaching methods, overall educator evaluation) and session content on four variables (amount learned, useful information, likelihood of behavior change, overall session evaluation). The scale ranged from one to five (1=far below average; 5=far above average), and included a space for comments. Data analysis of Likert scale responses for sessions 2 and 11 was performed using an independent samples t-test procedure in SPSS for Windows (SPSS version 12.0; Chicago, IL).

Qualitative Evaluation

Structured Observation

A structured observation was conducted at sessions 2 and 11 facilitated by each educator (N=12). The two sessions observed were those identified as incorporating the least and most constructs of the Health Belief Model,[13] which provided the basis for the intervention structure.

All intervention sites were observed using a formulated checklist. Educator- and participant-initiated questions and participant responses were recorded and categorized. Categories of educator- and participant-initiated questions and participant responses are shown in Tables 1 and 2.

Educator verbal responses were also recorded, specifically focusing on methods used to encouraged participation and interaction with the participants. Participant responses were tallied by drawing a graphic representation of the room, depicting participant and educator location. Hash marks were used to record each time a participant gave a verbal response. In addition to the checklist, each observation was tape recorded and transcribed to ensure completeness. Participant non-verbal cues (such as head-nods, eye contact, sitting forward, note taking, looks of concentration, etc…) indicating engagement in learning, were also documented during the observation.

Focus Group

A focus group was conducted with the intervention educators (N=5). Questions were formulated prior to the focus group including opening, introductory, transition, key, and ending questions.[10] These categories have been documented to enhance the flow of the focus

group interviewing process by helping create questions to elicit responses on a desired topic (Krueger, 1994).

An observer was present at the focus group to note verbal and non-verbal responses, and the session was tape recorded to ensure completeness. The focus group was reviewed by three researchers to identify emerging themes related to the strengths and weaknesses of the intervention.

Results

Likert Scale

An independent samples t-test found no significant differences in Likert scale responses between session 2 and session 11 for both educator and content items. Mean Likert scale responses for both sessions ranged from 4.33 - 4.45 ($\pm$0.62 - 0.95) for the educator variables and 4.03 - 4.49 ($\pm$0.68 – 1.02) for content variables (Table 3). These scores indicate a positive evaluation from the participants for both educator and session content (5 is the highest rating possible). The lack of variability in quantitative evaluation led to the use of qualitative evaluation as a means to provide insight into the contextual elements of the intervention.

Structured Observations

Structured observations revealed that overall, educators initiated more questions than participants (337 vs. 258) in the observed sessions (N=12). Almost half (45.7%) of the educator-initiated questions were categorized as non-academic (prompting participant conversation), whereas most of the participant-initiated questions (39.5%) were knowledge questions (factual inquiries). Categorization of all educator and participant-initiated questions appears in Figure 1.

The educator- and participant-initiated questions for each of the two sessions observed appear in Figures 2 and 3. More total questions were asked during session 11 compared to session 2 (346 vs. 249). Educator-initiated questions in both sessions were primarily non-academic questions; however, session 11 involved a greater percentage of non-academic questions, 56.2% versus 32.9% for session 2 (Figure 2). Participant-initiated questions in both sessions were primarily knowledge questions, 41.6% for session 11 and 36.1% for session 2 (Figure 3).

Figure 4 represents the categorization of participant responses. More responses occurred during session 11 (243 vs. 174). The majority of responses were application for both session 2 (78.2%) and session 11 (89.3%).

All interactions between participant and educators (questions, responses, non-verbal) indicated no significant differences between the educators; each educator evoked a similar number of interactions from each participant. Though not statistically significant, there were more mean interactions per participant during session 11 than in session 2 (28.0 versus 17.3).

Focus group

Emerging themes from the focus group with the educators suggest that group support and participant success stories were their favorite experiences. Educators felt the group support created a social, non-threatening environment in which women could freely share thoughts and feelings. For example, one participant had two friends die, yet she came to the intervention session because she knew she would have the support of others. Another participant needed help dealing with a crisis in her life, and the other participants helped her find ways to cope. Participant comments from session evaluation forms also noted group support within the intervention. One woman wrote, "I love the positive attitude, and it is

helpful to see others have the same problems." Another shared, "I really enjoyed the class and making new friends."

Participants' personal success stories made the educators' feel their job was worthwhile. One educator had a participant lose 30 pounds, and another educator shared that a participant's mother's edema disappeared by incorporating concepts of the intervention into their eating habits. Personal success stories helped educators feel like they were making a difference.

Educators felt that participants learned most by participating in engaging activities because they were actively applying learned information. For example, label reading activities and a grocery store tour required participants to use what they learned. Many participants wrote on their evaluation forms that they enjoyed the hands-on examples throughout all the sessions.

Participation in the physical activities also got the women actively involved. One educator said, "All the women liked the idea that just getting up and moving is good for you, and it doesn't have to be a formal exercise to be beneficial." Educators felt that setting mini-goals was also useful, particularly when participants set specific, achievable goals that were successfully attained.

Educators were unable to identify an intervention session where participants learned the least or most. However, an overall consensus was that participants learned least when their basic needs, such as physiologic or safety needs, were not met. For these women, learning was dependent upon stability in life situations including work, finances, home, and family. One educator commented that many of the women probably would benefit from family therapy/counseling.

Weaknesses of the intervention identified by educators tended to be technical difficulties with program administration and small class sizes. In addition, some educators reported concern with material presented in session 2 about physical activity, reporting that the 'take home message' was lost in the technical scientific research. Educators felt small class sizes compromised the effectiveness of the intervention because creating a sense of connection and group support was more difficult.

Discussion

The quantitative evaluation data in this study (Likert scale results) suggest that the cardiovascular risk-reduction intervention was successful and effective. However, the quantitative data did not provide information to decipher the contextual elements that made it successful and effective. Qualitative evaluation data provided this information, revealing the characteristics and mechanisms of the intervention contributing to its success.

Structured observation of educator-initiated questions revealed that almost half (45.7%) of the educator-initiated questions were categorized as non-academic, or prompting participant conversation. Educators spent a significant amount of time discussing health behaviors with participants, while prompting conversation to keep participants engaged in learning. Non-academic questions created a non-threatening, friendly environment in which participants could relax and actively participate in learning.

Sessions 2 and 11 showed distinct differences in the number of questions asked, responses given, and interactions per participant. Educators had a greater number of non-academic questions in session 11 and participants asked more questions, responded more frequently, and interacted more among the group. The educator-initiated questions fostered a safe learning environment that led to increased communication among participants including

questions and responses, and ultimately active learning. It had been hypothesized that session 2 would have greater interaction because it included more constructs of the Health Belief Model; however, session 11, with fewer constructs, had more interaction. The educators shared in the focus group that they were less comfortable with some of the material presented in session 2, which may account for this finding.

For both sessions, most participant-initiated questions were knowledge-based and clarification, involving factual inquiries. Thus, participants were engaged in the intervention, comfortable in asking questions, and interested in learning more. Conversely, participant responses were mostly application. According to Bloom's taxonomy, application is a higher level of cognition, which builds upon the knowledge and comprehension levels of cognition.[14,15] Therefore, participants sought more knowledge, were able to make sense of the material (comprehend), and used the information in new situations with minimal direction to solve problems (application). This indicates participants were able to apply, calculate, demonstrate, or use information in new situations, thus more likely to apply it to their lives. Yet, whether this higher level of cognition (application) actually leads to more health behavior change than cognition at the level of knowledge requires further investigation.

A main theme of the focus group related to the success of the intervention was creating a safe, non-threatening environment, which verified a result of the structured observations. In fact, 11% of participant responses were emotional, providing additional evidence that the learning environment was safe and non-threatening. Other themes identified from the focus group suggest that group support and personal success stories motivated the educators to perform their job well. The educators' motivation likely inspired

participants to successfully accomplish goals, an important component to enhancing self-efficacy.[16] Personal success stories also indicated that the intervention extended beyond the participants to family members and friends.

Qualitative evaluation was an effective tool for evaluating this health intervention because it gathered rich information to identify ways in which subjects were engaged in learning. Quantitative evaluation indicated a successful intervention, but qualitative data provided insight into the contextual elements making the intervention successful and effective. The qualitative evaluation suggests that the safe and non-threatening environment was central to the success of the intervention by: 1) encouraging participants to ask knowledge and clarification questions when they needed more information, 2) providing participants the self-confidence to express application responses (applying the information to their own lives), and 3) facilitating the sharing of emotional responses among participants. Without the qualitative evaluation component, all that would be known was that the intervention was successful.

This study demonstrates that qualitative evaluation data can be used to provide additional insight to determine the mechanisms of why and how a nutrition intervention is successful. Additional research is necessary to investigate other methods of qualitative evaluation, which may provide other types of data in the evaluation of nutrition intervention. This study found that educator non-academic questions helped facilitate learning by keeping participants engaged and creating a relaxed environment; however, future research should focus on the amount of information retained. Finally, research to examine whether cognition at the level of application leads to more health behavior change than cognition at the level of knowledge is warranted.

Table 1. Categories of educator- and participant-initiated questions.

Question Categories	Description
Knowledge	Fact-based, involves recalling information
Upper-level	Involves synthesis, problem-solving, or critical-thinking skills; is conceptual in nature
Procedural	Involves methods of applying learned behavior to everyday life
Nonacademic	Relates to health-behaviors and prompting participant conversation
Disciplinary	Bringing order to group
Clarification	Used to gain clearer understanding

Table 2. Participant response classification.

Participant Responses	**Description**
Paraphrasing	Restating information in another form to gain clearer understanding
Revelation	An enlightening or 'ah-ha' moment
Emotional	Appealing to or inspiring emotion
Application	Applying what is being learned to new situations

Table 3. Likert Scale Responses for Sessions 2 and 11

	Likert Scale Items	Mean Scores (±SD)	
		Session 2	Session 11
Educator Evaluation	Preparation and organization	4.34 (±.62)	4.37 (±.78)
	Enthusiasm in teaching	4.45 (±.81)	4.39 (±.94)
	Ability to clearly explain items	4.39 (±.80)	4.35 (±.95)
	Teaching methods	4.36 (±.81)	4.33 (±.92)
	Overall evaluation	4.45 (±.79)	4.40 (±.93)
Session Content Evaluation	I learned a lot	4.31 (±.68)	4.44 (±.77)
	I will be able to use the information	4.39 (±.68)	4.29 (±.94)
	I will change the way I do things	4.14 (±.88)	4.03 (±1.02)
	Overall evaluation	4.49 (±.85)	4.44 (±.90)

Figure 1. Educator- and participant-initiated questions

Figure 2. Educator-initiated questions for sessions 2 and 11

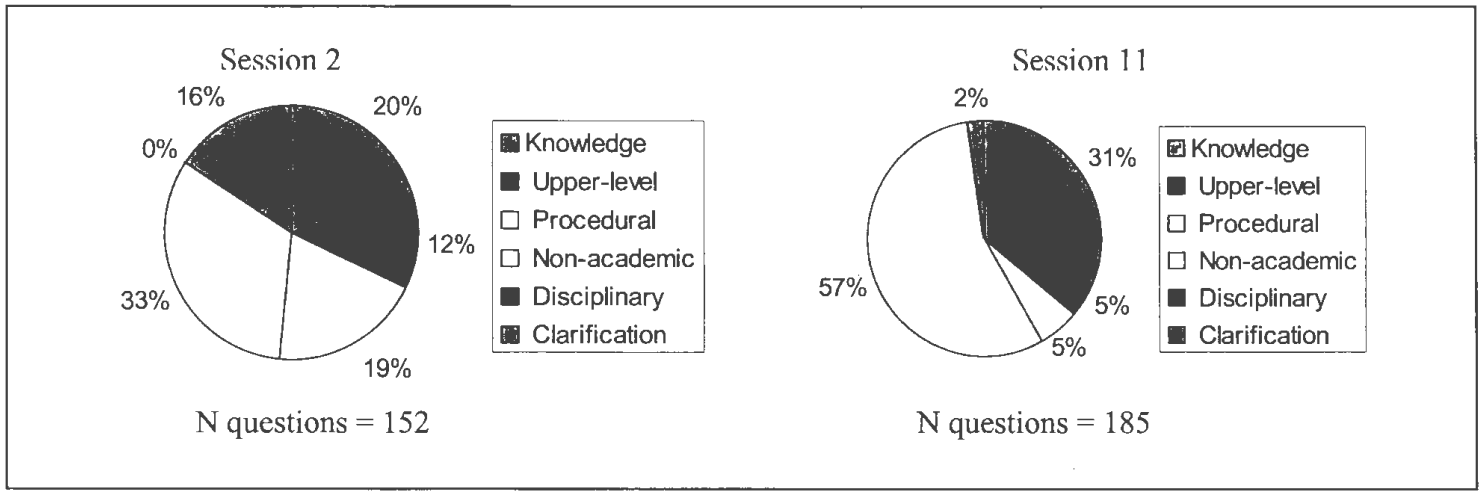


Figure 3. Participant-initiated questions for sessions 2 and 11

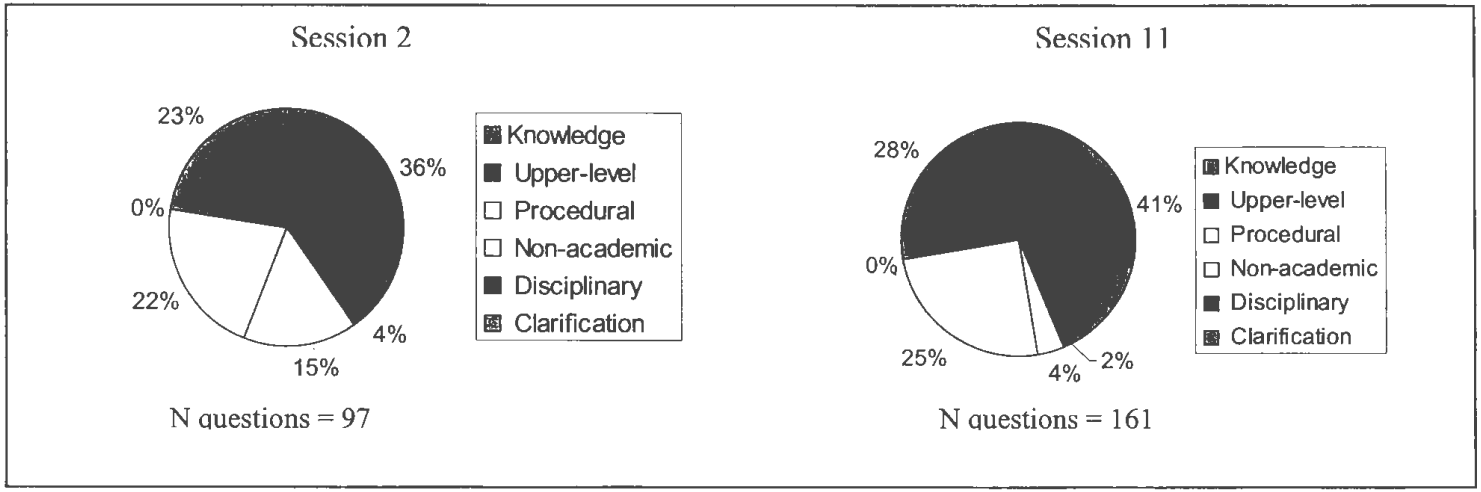
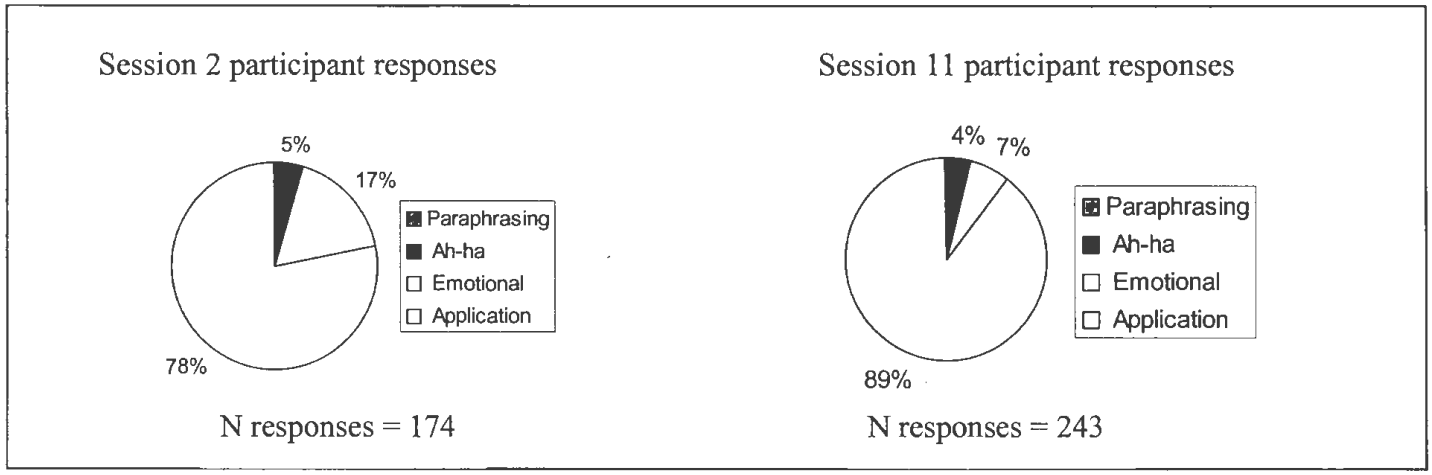


Figure 4. Session 2 and 11 participant responses



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CHAPTER 5. EVALUATION OF A COMMUNITY-BASED CARDIOVASCULAR DISEASE RISK REDUCTION PROGRAM USING THE HEALTH BELIEF MODEL

A paper to be published in the Journal of Women's Health

Abstract

Since 1984, more women have fallen victim to cardiovascular disease (CVD) than men, yet women remain largely unaware of their risk for CVD. Women of lower socioeconomic and education status are at greater risk related to their limited access to health care facilities and services. This study evaluates a community-based cardiovascular disease risk reduction program based upon the Health Belief Model designed to serve the growing number of under- and uninsured middle-aged women at risk for CVD. Specifically, the study sought to evaluate success of the intervention by participant intervention evaluations (Likert scale), self-reported mini-goal attainment, and self-reported lifestyle behaviors. Mean Likert scores for all 12 intervention sessions were positive, indicating participants enjoyed and learned from all 12 sessions. Significant improvements ($p<0.05$) in dietary knowledge, behavior, and physical activity were observed. The results of this study suggest that this community-based cardiovascular disease risk reduction program based upon the Health Belief Model was effective for the target population.

Introduction

Cardiovascular disease (CVD) is the leading cause of death in the United States, claiming the lives of approximately one million individuals annually.[1] Although CVD has been thought of as a "man's disease," more women have fallen victim to CVD than men since 1984.[2] In fact, the death rate due to CVD among American women is an alarming one death per minute. This could be due to the fact that women, compared to men, have a

diminished ability to recognize signs and symptoms of a heart attack.[3] The hallmark symptom for men is chest pain, yet most women experience symptoms other than chest pain such as unusual fatigue, sleeplessness, weakness, and shortness of breath.[4-9]

Women also underestimate their susceptibility to CVD, still perceiving breast cancer to be a larger health threat, despite the fact that heart disease kills one in two women and breast cancer kills one in 27.[10] In particular, women living in rural areas remain uninformed of their risk for CVD and find it hard to adopt heart-healthy diets due to family preferences, lack of support, and culturally sensitive food patterns.[11] Women of lower socioeconomic and education status have increased difficulty adopting heart-healthy diets due to limited access to nutritious foods, nutrition information, exercise facilities, safe neighborhoods in which to exercise, and health care services.[12-14] Therefore, a community-based intervention to reduce CVD risk for low-income, rural women is warranted.

A community-based cardiovascular disease risk reduction program to serve the growing number of under- and uninsured middle-aged women residing in a rural state was developed using the Health Belief Model (HBM). This is the most widely used framework in health behavior research[15] and its application has brought about significant results in explaining behaviors related to disease prevention, treatment, and clinic utilization.[16-19] When used as the framework for nutrition interventions, the HBM has been shown to enhance nutrition knowledge and increase perceived benefits while improving dietary intake among participants.[20]

The community-based lifestyle intervention reported here consisted of 12 group sessions led by university extension educators. Each session included a healthy snack/mini-goal discussion, powerpoint presentation, physical activity, skill-building activity,

maintaining change activity, incentive, and setting mini-goals. The foci of the sessions were on improving nutrition, increasing physical activity, and maintaining behavior change.

The purpose of this study was to evaluate the cardiovascular disease risk reduction program. Specifically, the study sought to evaluate success of the intervention by self-reported lifestyle behaviors, self-reported mini-goal attainment, and intervention evaluations. In addition, relationships between participant demographics, intervention evaluations, and self-reported lifestyle behaviors and mini-goals were examined.

Materials and Methods

Subjects

Subjects were 359 women, ages 40-64, participating in a community-based cardiovascular disease risk reduction program. Subject demographics were obtained from an annual enrollment form, which included age, ethnicity, monthly income, family unit size, health insurance, and education. Protocols in accordance with the Human Subjects Review Board were followed throughout the course of the study.

Lifestyle Survey

Each subject completed a lifestyle questionnaire as part of the annual enrollment, prior to the nutrition intervention. The lifestyle questionnaire included questions related to nutrition knowledge, physical activity and dietary habits. The same questionnaire was completed at the following annual enrollment, one year later. Data were available for 98 matched pairs to evaluate behavior change from the pre- and post-intervention lifestyle questionnaire. From the lifestyle questionnaire, physical activity, fiber, and fat scores were calculated.

Intervention Evaluation Forms

After each intervention session, participants completed a 5-point Likert scale evaluation (N = 2012). The extension educator was evaluated on five variables: preparation, enthusiasm, ability to explain, teaching methods, and overall educator evaluation. Intervention session content was evaluated on four variables: amount learned, usefulness of information, likelihood of behavior change, and overall session evaluation. Participants also reported on the attainment of the mini-goal set at the previous intervention session.

Statistical Analysis

All statistical analyses were conducted using Statistical Package for Social Sciences for Windows (SPSS version 12.0; Chicago, IL). Descriptive statistics, independent samples t-tests, paired sample t-tests, one-way ANOVA, Pearson chi-square, Lambda correlation, Wilcoxon signed rank, and McNemar tests were conducted on the data.

Results

Demographics of participants are presented in Table 1. The majority (91.9%) of participants were white, and approximately two-thirds (65.7%) had no health insurance. Most (88.3%) had a high school diploma or some post-secondary education and the mean family size was 2.1. The mean monthly income was $1257 thus, 37% of the participants were considered at the poverty threshold.[21]

Demographic variables (age, monthly income, family unit size, education, ethnicity, and health insurance) had no significant correlation with Likert scale responses, according to Pearson correlation and Lambda association tests. A one-way ANOVA analysis revealed negligible variation of Likert scale responses between the 12 intervention sessions thus, the data was collapsed and overall mean Likert scale scores for each criteria were used for

further analysis (Table 2). Mean Likert scale responses ranged from 4.11-4.45 ($\pm$ 0.81 to $\pm$ 0.98) for all 12 sessions. Two Likert scale criteria, 'I learned a lot' and 'I will be able to use the information' were found to be significantly different from the other criteria. These results were examined further using Tukey's HSD test (Table 3), which revealed that session 1 criteria 'I learned a lot' was rated significantly lower than sessions 4, 5, 7, 11, and 12 ($p<0.05$). Session 1 was also rated significantly lower than session 4 for 'I will be able to use information' ($p<0.05$).

Intervention sessions were also examined by comparing the number of participants who attained their mini-goal set at each session. A Pearson chi-square test revealed no significant correlation between mini-goal attainment and session number. However, throughout the 12 sessions, 52% of the participants reported attaining their mini-goals.

Results of dietary behavior change and knowledge (pre-test/post-test) are reported in Table 4. Fruit and vegetable consumption increased significantly; 42.4% of the participants were meeting the recommendation of five or more servings a day after the intervention, compared to 27.3% at pre-test. Participants reported limiting fried foods, increasing fish consumption, and learning more about the risk factors for heart disease and different types of fat ($p<0.05$). Behaviors where no significant changes were observed were awareness of portion size and limiting foods high in saturated or *trans* fats. Participants significantly increased their dietary fiber intake, while decreasing dietary fat according to fiber and fat scores calculated from self-reported food frequency questionnaires.

Self-reported change in physical activity was examined and appears in Table 5. A significant increase ($p<0.05$) in self-reported walking and organized sport participation was observed; however, there was no change in the amount of sedentary leisure time. Further

examination of walking and organized sport participation appears in Figures 1 and 2. Walking for exercise and participation in active sports or organized exercise programs increased significantly pre- to post-test according to the Wilcoxon Signs Rank test.

Discussion

Mean Likert scores for all 12 intervention sessions were positive, suggesting that the cardiovascular risk-reduction intervention was successful and effective. Yet session 1 scored lower for information learned and useable information criteria. Session 1 consisted primarily of statistics and risk for cardiovascular disease in addition to basic information on heart healthy living. Thus, participants may have found this information difficult to use or apply, or perhaps they had heard the information from other sources. In addition, session 1 was the first session all participants attended. The session may have received lower scores because participants were not yet familiar and comfortable with the learning environment.

Correlation of Likert scores with participant demographics showed no significant association, indicating that participant demographics were independent of responses to the Likert scale. Therefore, a participant's age, monthly income, family unit size, ethnicity, education, and health insurance coverage did not influence participant evaluation of the program. The lack of relationship between demographics and Likert criteria was not surprising. A sample group representative of the target audience was involved in the development of the intervention by participating in a focus group and pilot intervention sessions. The intervention had been carefully developed for this target audience and the lack of any correlation between the demographics and session evaluations indicates that it was successful in reaching all the subgroups within the target population.

Correlations between mini-goal attainment and session number were not significant; mini-goal success was independent of session content. Throughout each of the 12 sessions, educators encouraged participants to set small, attainable goals. In addition, participants could set goals that were unrelated to the current session's content but related to a previous session. Thus, no correlation could be detected between session content and mini-goal attainment.

Eight of ten self-reported dietary knowledge and behaviors were improved by the intervention. Participation in organized sports and walking for exercise were also improved. However, awareness of portion size, saturated and *trans* fat intake, and sedentary leisure time activity remained unchanged. An increase in self-reported exercise, while sedentary leisure time activity remained unchanged, appears contradictory. Typically when exercise increases, leisure time spent in sedentary activities (ie: television or computer) decreases. This contradiction needs further investigation as to how participants had time in their day for increased exercise while continuing the same amount of sedentary leisure time.

The results of this study suggest that this community-based cardiovascular disease risk reduction program is effective for the target population. Participants not only increased knowledge, but also applied positive behavior changes to their own lives. The positive outcomes of this study suggest that the Health Belief Model is an appropriate framework to use for lifestyle interventions with this target population. Implications for improving the intervention might focus on decreasing sedentary leisure time activity and saturated/*trans* fat intake, and increasing awareness of appropriate portion sizes.

Table 1. Participant Demographics

Demographic Characteristics **N = 359**	**Mean ± SD** **Or** **%**
Age	53.1 ± 6.4
Monthly Income	1257.4 ± 807.4
Family Unit Size	2.1 ± 1.2
Ethnicity (allowed to mark more than one)	
White	91.9%
Black or African American	5.6%
Spanish, Hispanic, or Latino	5.6%
American Indian or Alaska Native	0.6%
Asian	0.3%
Native Hawaiian or Other Pacific Islander	0%
Other	1.1%
Health Insurance	
None	65.7%
Private	33.4%
Medicare A	0.3%
Other	0.6%
Education	
Less than 9th grade	5.0%
Some high school	6.7%
High school graduate or equivalent	42.1%
Some college	29.5%
Associate Degree	5.8%
Bachelor's Degree	7.8%
Graduate School	3.1%

Table 2. Mean Likert scale responses (N = 2012 evaluations)

Likert Criteria	Mean score ± SD	F Value	P Value
Preparation	4.30 ± 0.81	1.1	.33
Enthusiasm	4.40 ± 0.88	0.50	.90
Ability	4.36 ± 0.89	0.87	.57
Teaching methods	4.32 ± 0.91	0.81	.63
Overall educator evaluation	4.41 ± 0.85	0.88	.56
Information learned	4.30 ± 0.81	4.19	.00*
Useful information	4.33 ± 0.89	1.87	.04*
Probability of changing	4.11 ± 0.98	1.40	.16
Overall session evaluation	4.45 ± 0.88	1.22	.27

*Significant at $p<0.05$

Table 3. Examination of Likert criteria using Tukey's HSD test.

Likert Criteria **N = 2012 evaluations**	**Mean Difference ±** **Standard Error**	**P value**	**Confidence** **Interval**
I learned a lot			
Session 1 – Session 4	-0.32 ± 0.08	.00*	(-.59, -.06)
Session 1 – Session 5	-0.35 ± 0.08	.00*	(-.62, -.09)
Session 1 – Session 7	-0.28 ± 0.08	.01*	(-.53, -.03)
Session 1 – Session 11	-0.34 ± 0.08	.00*	(-.59, -.09)
Session 1 – Session 12	-0.32 ± 0.08	.00*	(-.57, -.07)
I will be able to use the information			
Session 1 – Session 4	-0.30 ± 0.09	.03*	(-.59, -.01)

*Significant at $p<0.05$

Table 4. Change in dietary knowledge*, behavior*, fiber and fat scores (1 = yes; 2=no)

Lifestyle Behaviors/Scores N = 98	**Pre-test mean (±SD)**	**Post-test mean (±SD)**	**Pearson Chi-Square *(T value)***	**P value**
Do you eat 5 or more servings of fruits and vegetables most days?	1.73 (±.45)	1.58 (±.50)	8.93	.01**
Do you eat fish at least twice a week (not fried), for example, a tuna fish sandwich or broiled fish?	1.81 (±.40)	1.71 (±.46)	17.38	.05**
Do you try to limit fried foods?	1.10 (±.30)	1.02 (±.14)	3.58	.02**
Do you know the risk factors for heart disease?	1.21 (±.41)	1.06(±.24)	7.90	.00**
When selecting a food, do you think about the size of the serving?	1.32 (±.47)	1.23 (±.42)	11.16	.12
Do you know the four types of fat in foods?	1.78 (±.42)	1.44 (±.50)	7.90	.00**
Do you know in general which foods are high in saturated and trans fat?	1.60 (±.49)	1.27 (±.45)	13.23	.00**
Do you try to limit foods you know are high in saturated and trans fat?	1.05 (±.23)	1.03 (±.16)	0.06	.81
Fiber Score	14.95 (±5.42)	16.86 (±5.97)	*(-3.68)*	.00**
Fat Score	22.43 (±7.79)	22.03 (±8.31)	*(2.30)*	.02**

* 1 = yes, 2 = no

**Significant at $p<0.05$

Table 5. Change in physical activity.

Physical Activity N = 98	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Z Value	P value
Walk	3.91 ± 1.72	3.12 ± 1.75	-3.95	.00*
Sport	5.74 ± 0.88	5.37 ± 1.34	-2.85	.00*
Leisure	5.28 ± 1.31	5.35 ± 1.29	0.61	.54

*Significant at $p<0.05$

1 = Everyday/almost everyday
2 = 3-5 times a week
3 = 2 times a week
4 = Less than once a week
5 = Once a month
6 = Hardly ever

Figure 1. Change in walking for exercise.

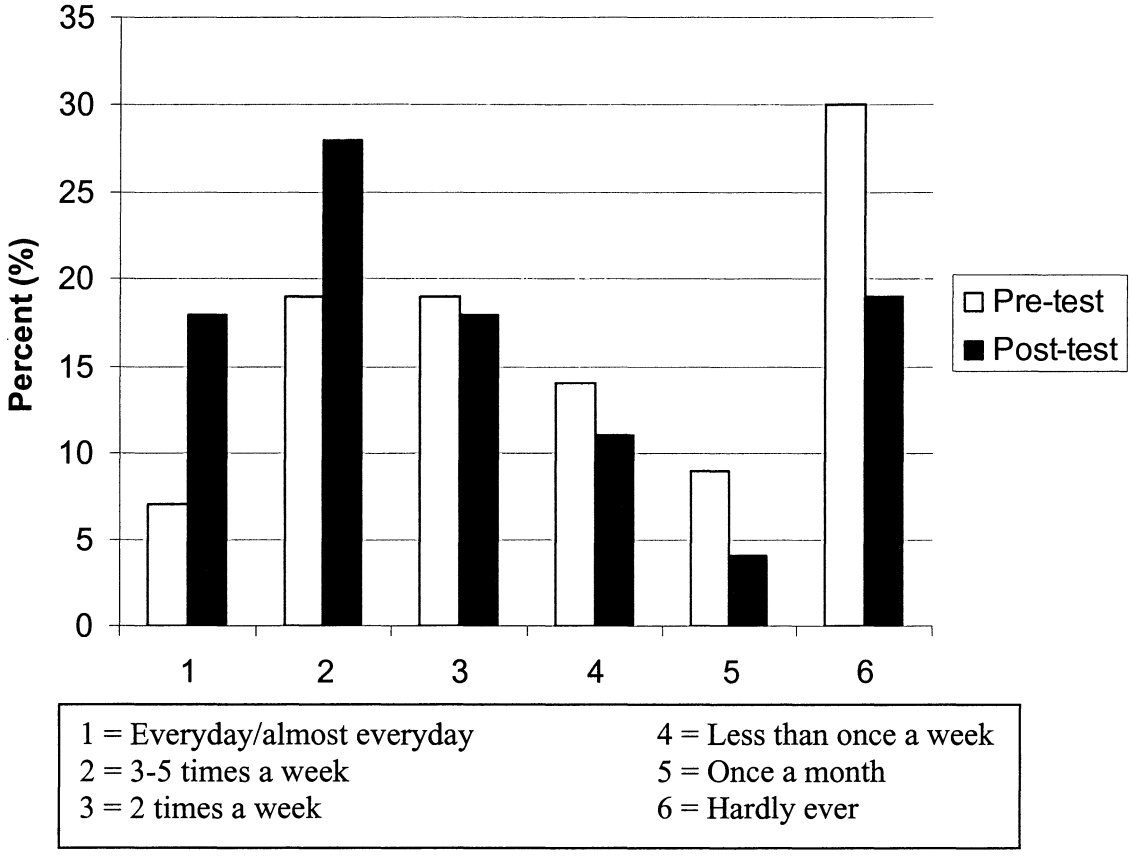
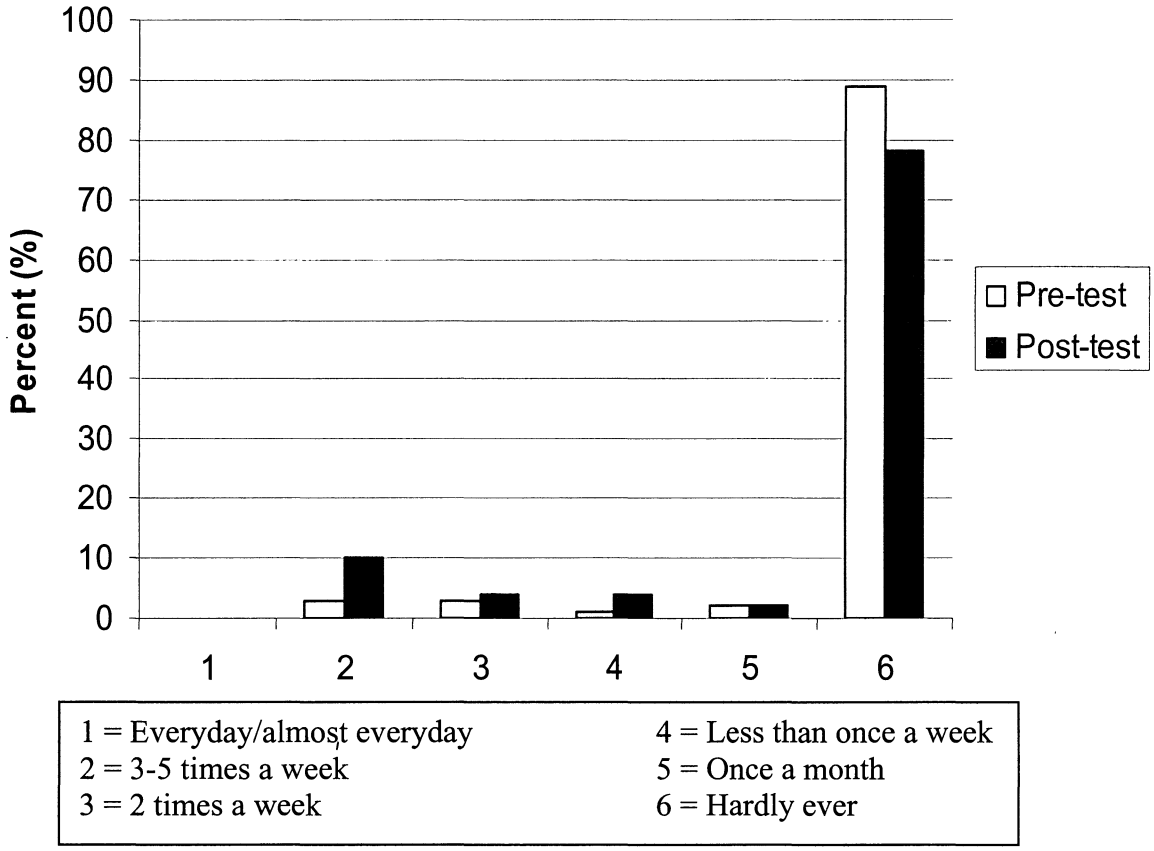


Figure 2. Change in active sports or organized programs participation.



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CHAPTER 6. GENERAL CONCLUSIONS

Qualitative evaluation provided contextual insight into quantitative evaluation of the intervention. Instead of simply knowing through quantitative statistics that the cardiovascular risk-reduction intervention was successful and effective, it is now known how and why. Qualitative evaluation provided rich information as to the educational conditions of the intervention. For example, the study found that the intervention educators prompted conversation by asking non-academic questions. This created a non-threatening, relaxed environment in which participants felt comfortable to ask questions and give responses. Most of the participant-initiated questions were knowledge-based, indicating that participants were engaged in the intervention, comfortable in asking questions, and interested in learning more. Conversely, participant responses were mostly application. Participants sought more knowledge, were able to make sense of the material (comprehend), and used the information in new situations with minimal direction to solve problems (application).

The fact that participants applied the information was further demonstrated by quantitative evaluation of pre and post-tests involving self-reported dietary knowledge and behavior change. Evaluation revealed that participants significantly increased their dietary fiber intake while significantly decreasing their dietary fat intake, which is likely related to their significant increase in fruit and vegetable consumption and significant decrease in intake of fried foods. In addition, knowledge of the different types of fat increased significantly. As a result, eight of ten self-reported dietary knowledge and behaviors improved significantly because of the intervention. Participation in organized sports and walking for exercise also improved significantly because of the intervention. However,

awareness of portion size, saturated and *trans* fat intake, and sedentary leisure time activity remained unchanged.

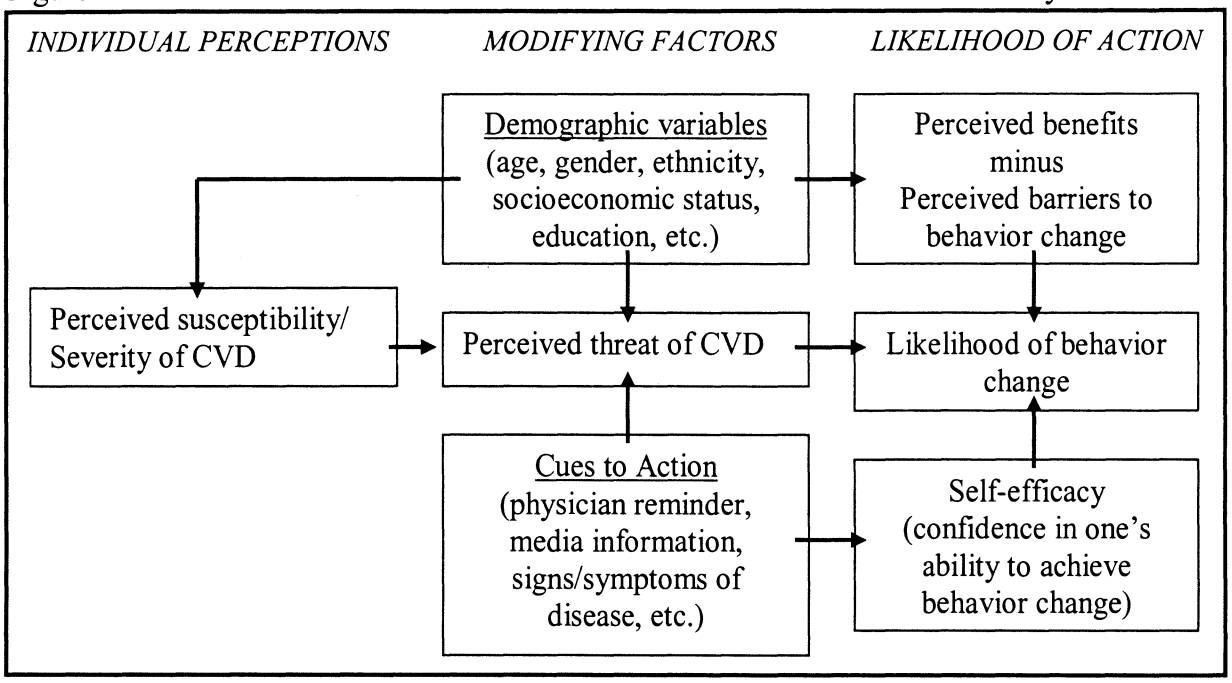
Together, quantitative and qualitative data strengthened the evaluation of the intervention program. Quantitative evaluation indicated a successful intervention, while qualitative evaluation provided contextual insight as to the type of learning environment that caused behavior change. This two-pronged evaluation approach provides an evaluation approach for future lifestyle intervention programs because it provides information about a successful program and the context as to how and why it was successful. Future intervention programs can use this evaluation study as part of their development and design for a successful program.

Evaluation of this program also identified that the Health Belief Model (HBM) is a good theoretical framework to use for group interventions because it is very comprehensive, including constructs that influence individual perceptions, modifying factors, and the likelihood of behavior change. Past studies, including this one, have demonstrated that the HBM enhances the understanding of health-related behavior (Janz, et al., 1984; Rosenstock, 1990; Shillitoe and Christie, 1989). In addition, many health educators find the HBM constructs useful in evaluating educational needs of a target group, assessing general interest in health, individual feelings of disease susceptibility and severity, and the likelihood that members will take action to reduce disease threat (Rosenstock et al., 1988).

Like other studies (Hanson et al., 2002; Hingson et al., 1990; Larson et al., 1979; Taplin et al., 1994; Hahn et al., 1996), this study found that cues to action construct were particularly effective at enhancing self-efficacy and thus, stimulating behavior change. For example, when participants learned to read food labels or calculate their target heart rate,

these skills worked as cues to action to enhance participants' confidence (self-efficacy) in achieving health related goals, thus stimulating behavior change and attaining goals. Figure 1 is a modified version of the HBM which illustrates the direct impact cues to action have on self-efficacy.

Figure 1. Health Belief Model with an arrow from 'cues to action' to 'self-efficacy'



Future Considerations

- Whether the higher level of cognition, application, actually leads to more health behavior change than cognition at the level of knowledge requires further investigation.
- Investigate other methods of applying qualitative evaluation, such as a focus group with program participants, which may provide other types of data in the evaluation of nutrition intervention.

- Further examination into whether a relaxed, non-threatening, friendly learning environment leads to more knowledge and health behavior retention in the long-term is warranted.
- Investigate whether biochemical indices (blood cholesterol levels, homocysteine, C-reactive protein, etc.) improve in conjunction with improved self-reported dietary knowledge and behavior.

APPENDIX A

OPERATING WISEWOMAN PROGRAMS

Operating WISEWomAN Programs. Adapted from Will et al. (2004) and Centers for Disease Control and Prevention (2004).

Program	*Year Funded*	*Sites*	*Participant Eligibility*	*Lifestyle Intervention*
California	2001	Five pilot sites -- Full-scale study sites to be selected in the future	Latina women ages 40-64 already enrolled in the BCCEDP program with high blood pressure or cholesterol, or those taking medications for previous diagnosis of these conditions.	Includes more frequent clinical tests. Features Spanish version of *New Leaf...Choices for Healthy Living.* Is a 3-session intervention led by bilingual community health workers. Focuses on individual tailoring, self-efficacy, social support, self-monitoring, readiness for change, setting goals, and overcoming barriers.
Illinois	2001	Three county health departments and one hospital that make up a total of 20 sites of both suburban and rural counties.	All recruited BCCEDP participants aged 40-64.	A 12 week intervention entitled *Women with Heart* comprised of 12 group sessions. Led by health educators and emphasizes moderate physical activity, reading food labels, portion control, and managing stress. Focuses on social support, overcoming barriers, and self-efficacy.
Southcentral Foundation in Alaska	1999	One family medicine clinic involving 23 physicians at Southcentral Foundation serving Anchorage Bowl area.	All recruited BCCEDP participants aged 40-64 living within 50 miles of the family medicine clinic.	Based on *Traditions of the Heart*, a cultural adaptation of *New Leaf...Choices for Healthy Living for Alaska Natives.* This is a 12-session intervention in a group format that also involves some individual counseling and structured diet and physical activity assessments. The 12 sessions are team taught by health educators, exercise physiologists, and nutritionists. The primary focus of the sessions is on traditional wellness, nutrition, physical activity, and tobacco cessation. Women also receive monthly

				newsletters and the opportunity to attend quarterly reunion gatherings.
Southeast Alaska Regional Consortium	2000	Eight sites throughout the southeastern region of Alaska that provide BCCEDP and WISEWomAN services.	Women enrolled in BCCEDP aged 40-64. Some sites require women to be Native (90% are Alaska Native or American Indian).	Based on *Traditions of the Heart*, which is a cultural adaptation of *New Leaf...Choices for Healthy Living for Alaska Natives*. The intervention is composed of multiple group nutrition and physical activity sessions led by patient educators.
Vermont	2000	A total of six pilot sites made up of mostly community health centers.	Women enrolled in BCCEDP aged 40-64.	Individual counseling by nutritionists using the *New Leaf* guide. Women were referred to an eight week community-based walking program called *Active Living Every Day* and were given the opportunity to participate in the Governor's Walking Challenge.
Michigan	2000	Nine sites made up of local health departments, qualified health centers, and local health care providers.	Women enrolled in BCCEDP aged 40-64 at the 250% poverty level and who are under- or uninsured without Medicare Part B or Managed Care Medicaid.	Based on screening results, women can participate in 1-5 lifestyle counseling session that focus on the DASH diet which encourages increased consumption of fruits and vegetables, whole grains, and non-fat dairy products along with regular physical activity. Incentives and Lifestyle Contracts are given to the women to promote behavior change.
Connecticut	2000	Nine sites, including hospitals and a community health center.	Women enrolled in BCCEDP aged 50-64, at the 200% poverty level, uninsured.	Is entitled *Stay Healthy for Life* and consists of individual counseling and group physical activity sessions. The intervention incorporates the *New Leaf* program for the nutrition component and the PACE Program (Patient-Centered Assessment for Counseling for Exercise and Nutrition) for physical activity. component.

South Dakota	2000	Approximately 250 BCCEDP sites.	Women enrolled in BCCEDP aged 30-64.	Women receive four individual counseling sessions annually based on the *New Leaf* program. The intervention that focuses on physical activity is based on the *"Active Living Every Day"* from the Cooper Institute.
Nebraska	2000	Approximately 600 BCCEDP sites.	Women enrolled in BCCEDP aged 40-64.	Women are offered the choice of participating in a four week community intervention called ABCs for Good Health led by university extension educators and a self-study called Be a WISEWOMAN -- Get Heart Smart!. They also receive monthly phone calls for six months to help with assessing goals and setting new goals.
West Virginia	2003	The pilot test will take place in three primary care clinics. In the four years following, there will be an additional 20 clinics that will be randomized to either control or intervention sites.	N/A	The intervention is called *Cookin' Up Health* consisting of an individually-tailored interactive computer nutrition program and six health letters. Materials are culturally sensitive and the health letters reinforce nutrition behavior and offer staged-based education for physical activity.
Minnesota	2004	Planning to use providers, primary care clinics, and community clinics to implement the program.	N/A	Telephone counseling and connecting women to community resources.

APPENDIX B

STRUCTURED OBSERVATION CHECKLIST

County:
Session #:
Date:

Structured Observation Checklist

Table indicating whether interaction is educator-initiated or participant-initiated

Educator-initiated Questions	Participant-initiated Questions

Question Coding:

K=knowledge-level (Recall, fact-based) (Ex: What is your cholesterol level?)
U=upper-level (Ex: Can you show me how you calculated your heart rate?)
P=procedural (Ex: How do you plan to incorporate physical activity in the upcoming week?)
N=nonacademic (Ex: How are you doing today?)
D=disciplinary (Ex: Could you please stop talking to your neighbor?)
C=clarification (Ex: So are you saying…?)

Participant Responses

Participant Response Coding:
P=paraphrasing
Ah=ah-ha!
E=emotional
Ap=application

Does the session accommodate different types of learning styles?

Linguistic (reading)	Auditory (listening)	Visual (seeing)	Logical (problem solving)	Kinesthetic (doing)

Observational Questions:

1. Describe the consistency/inconsistency of educator's interactions over time.

2. How does the educator encourage participation?

3. Describe verbal cues that indicate the participants are engaged in learning (ie: one person talking at a time, paraphrasing, asking/answering questions).

4. Describe non-verbal cues that indicate the participants are engaged in learning (ie: head-nodding, eye contact, sitting forward, note taking, agreeing, disagreeing, looks of concentration).

5. Describe the social interaction between participants. Does there seem to be a feeling of group support? Do their interactions seem to enhance their learning?

APPENDIX C

LIFESTYLE QUESTIONNAIRE

WISEWOMAN LIFESTYLE QUESTIONNAIRE *(page 1 of 4)*

Client Identification

1. Program # ___ ___ ___

5. Today's Date: ___ ___ / ___ ___ / ___ ___ ___ ___ *(mm / dd / yyyy)*

2. Client # ___ ___ ___ ___ ___ ___ ___ ___ ___

3. Last Name _____
Please PRINT

4. First Name _____
Please PRINT

INSTRUCTIONS FOR QUESTIONNAIRE COMPLETION ***(Do not read these instructions to the participant)*:**
Please complete this questionnaire at the Initial Visit and each Annual Visit. Read each question, with its possible responses, ***aloud*** to the participant (EXCEPT, DO NOT read the "Don't know/not sure" and "Refused" categories), and record her answers in the spaces provided. The brief descriptions between sets of questions should be read to the participant. Notes in parentheses are intended for the interviewer, and should not be read aloud.

6. Does anyone live with you in your home?

- ○ 1. Yes → Other than yourself, what are the ages of the other persons living in your home? ***(Please enter the number of people for each category)***
  - ____ 6a. under 6 years old
  - ____ 6b. 6-12 years
  - ____ 6c. 13-18 years
  - ____ 6d. 19-30 years
  - ____ 6e. 31-50 years
  - ____ 6f. 51-65 years
  - ____ 6g. 66-74 years
  - ____ 6h. 75 years and older
- ○ 2. No

7. When you are at work, which of the following best describes what you do?
(If respondent has multiple jobs, include all jobs.)

- ○ 1. Mostly sitting or standing
- ○ 2. Mostly walking
- ○ 3. Mostly heavy labor or physically demanding work
- ○ 4. Don't know/not sure
- ○ 5. Refused

The next questions are about physical activities you do in a usual week. Please think about all your physical activities including work and leisure time.

8. In a usual week do you do any vigorous activities for at least 10 minutes that cause heavy sweating, or large increases in breathing or heart rate? Some examples are running, lap swimming, aerobics classes, or fast bicycling.

- ○ 1. Yes → 8a. How many days per week do you do these vigorous activities for at least 10 minutes at a time?
  ____ days per week
- ○ 2. No
- ○ 3. Don't know/not sure
- ○ 4. Refused

9. In a usual week do you do any moderate activities for at least 10 minutes that cause only light sweating or a slight to moderate increase in breathing or heart rate? Some examples are brisk walking, bicycling for pleasure, golfing, or dancing.

- ○ 1. Yes → 9a. How many days per week do you do these moderate activities for at least 10 minutes at a time?
  ____ days per week
- ○ 2. No
- ○ 3. Don't know/not sure
- ○ 4. Refused

WISEWOMAN LIFESTYLE QUESTIONNAIRE *(page 2 of 4)*

Client Identification

Program # ___ ___ ___ Today's Date: ___ ___ / ___ ___ / ___ ___ ___ ___
(mm / dd / yyyy)

Client # ___ ___ ___ ___ ___ ___ ___ ___ ___

10. How often do you take a walk to get exercise?

- ◯ 1. Every day or almost every day
- ◯ 2. 3 - 5 times a week
- ◯ 3. 2 times a week
- ◯ 4. Less than once a week
- ◯ 5. Once a month
- ◯ 6. Hardly ever

11. How often do you participate in active sports or organized exercise programs?

- ◯ 1. Every day or almost every day
- ◯ 2. 3 - 5 times a week
- ◯ 3. 2 times a week
- ◯ 4. Less than once a week
- ◯ 5. Once a month
- ◯ 6. Hardly ever

12. How often do you watch TV or videos or use the computer for leisure activities?

- ◯ 1. Every day or almost every day → 12a. How many hours per day do you watch TV or videos or use the computer for leisure activities?
  ____ hours per day
- ◯ 2. 3 - 5 times a week
- ◯ 3. 2 times a week
- ◯ 4. Less than once a week
- ◯ 5. Once a month
- ◯ 6. Hardly ever

13. Are you trying to

- ◯ 1. Lose weight → 13a. Are you eating **fewer calories** to lose weight or keep from gaining weight?
  - ◯ 1. Yes
  - ◯ 2. No
  - ◯ 3. Don't know/not sure
  - ◯ 4. Refused

  13b. Are you eating **less fat** to lose weight or keep from gaining weight?
  - ◯ 1. Yes
  - ◯ 2. No
  - ◯ 3. Don't know/not sure
  - ◯ 4. Refused

  13c. Are you using physical activity or exercise to lose weight or keep from gaining weight?
  - ◯ 1. Yes
  - ◯ 2. No
  - ◯ 3. Don't know/not sure
  - ◯ 4. Refused
- ◯ 2. Maintain your current weight →
- ◯ 3. Neither lose weight nor maintain current weight
- ◯ 4. Don't know/not sure
- ◯ 5. Refused

14. How much would you like to weigh?

- ◯ 1. ___ ___ ___ pounds
- ◯ 2. Don't know/not sure
- ◯ 3. Refused

WISEWOMAN LIFESTYLE QUESTIONNAIRE *(page 3 of 4)*

Client Identification

Program # ___ ___ ___ Today's Date: ___ ___ / ___ ___ / ___ ___ ___ ___ *(mm / dd / yyyy)*

Client # ___ ___ ___ ___ ___ ___ ___ ___ ___

Now for the following questions, I want you to think about your eating habits over the past year. About how often do you eat each of the following foods? Remember to include foods from breakfast, lunch, dinner, snacks, and eating out.

		Less than once/week	Once a week	2-3 times/week	4-6 times/week	Once a day	2+ a day
15.	Fruit juice, like orange, apple, grape, fresh, frozen or canned (not sodas or other drinks)?						
16.	How often do you eat any fruit, fresh or canned (not counting juice)?						
17.	Vegetable juice, like tomato juice, V-8, carrot?						
18.	Green salad?						
19.	Potatoes, any kind, including baked, mashed or french-fried?						
20.	Vegetable soup, or stew with vegetables?						
21.	Any other vegetables, including string beans, peas, corn, broccoli, or any other kind?						
22.	How often do you eat whole grain products such as whole-wheat breads or pasta, oatmeal, or bran cereal?						
23.	How often do you add salt to your food?						
24.	How often do you use canned soups or frozen meals?						

		1/month or less	2-3 times a month	1-2 times a week	3-4 times a week	5+ times a week
25.	Hamburgers, ground beef, meat burritos, tacos?					
26.	Beef or pork, such as steaks, roasts, ribs, or in sandwiches?					
27.	Fried chicken?					
28.	Hot dogs, or Polish or Italian sausage?					
29.	Cold cuts, lunch meats, ham (not low-fat)?					
30.	Bacon or breakfast sausage?					
31.	Salad dressing (not low-fat)?					
32.	Margarine, butter, or mayo on bread or potatoes?					
33.	Margarine, butter, or oil in cooking?					
34.	Eggs (not egg beaters or just egg whites)?					
35.	Pizza?					
36.	Cheese, cheese spread (not low-fat)?					
37.	Whole milk?					
38.	French fries, fried potatoes?					
39.	Corn chips, potato chips, popcorn, crackers?					
40.	Doughnuts, pastries, cake, cookies (not low-fat)?					
41.	Ice cream (not sherbet or non-fat)?					

WISEWOMAN LIFESTYLE QUESTIONNAIRE *(page 4 of 4)*

Client Identification

Program # ___ ___ ___ Today's Date: ___ ___ / ___ ___ / ___ ___ ___ ___
(mm / dd / yyyy)

Client # ___ ___ ___ ___ ___ ___ ___ ___ ___

For the following questions, please answer YES or NO to each question.

42. Do you eat 5 or more servings of fruits and vegetables most days?
    - ○ 1. Yes
    - ○ 2. No

43. Do you eat fish at least twice a week (not fried), for example, a tuna fish sandwich or broiled fish?
    - ○ 1. Yes
    - ○ 2. No

44. Do you try to limit fried foods?
    - ○ 1. Yes
    - ○ 2. No

45. Do you know the risk factors for heart disease?
    - ○ 1. Yes
    - ○ 2. No

46. When selecting a food, do you think about the size of the serving?
    - ○ 1. Yes
    - ○ 2. No

47. Do you know the four types of fat in foods?
    - ○ 1. Yes
    - ○ 2. No

48. Do you know in general which foods are high in saturated and trans fat?
    - ○ 1. Yes → 48a. Do you try to limit foods you know are high in saturated and trans fats?
      - ○ 1. Yes
      - ○ 2. No
    - ○ 2. No

APPENDIX D

FOCUS GROUP QUESTIONS

Focus Group Questions

1. Introductory question – provides focus group participants the opportunity to reflect on past experiences – usually not critical to the analysis but is intended to foster conversation.

   Describe one of your most favorite experiences with WW.

2. Transition question – moves the discussion into the key questions of the focus group

   Now that we have talked about your favorite experiences, what do you think were some of the activities in which the women learned most and why?

3. What were some of the activities that you think the women learned the least and how could these be improved?

4. What session do you think the women learned most and why?

5. What session do you think the women learned least and why?

6. Being engaged in learning is critical to changing behavior. What were some methods you used to help engage the participants in learning?

7. What were some problems you faced with WW?

8. What intervention strategies were especially useful in helping the women make behavioral changes?

9. How do you feel about WW overall?

10. Ending question

    Of all the issues that were discussed, which one do you feel is most critical in improving WW?

APPENDIX E

SESSION EVALUATION FORM

Evaluation

Please rate the INSTRUCTOR using the scale below:

	far below average	below average	average	above average	far above average
1. Preparation and organization	1	2	3	4	5
2. Enthusiasm in teaching	1	2	3	4	5
3. Ability to clearly explain items	1	2	3	4	5
4. Teaching methods	1	2	3	4	5
5. Overall, the INSTRUCTOR was	1	2	3	4	5

Please rate the CONTENT of the session using the scale below:

	strongly disagree	disagree	neutral	agree	strongly agree
6. I learned a lot	1	2	3	4	5
7. I will be able to use the information	1	2	3	4	5
8. I will probably change the way I do things	1	2	3	4	5
9. Overall, this was a good SESSION	1	2	3	4	5

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