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Barriers to participating in a community-based cardiovascular disease risk reduction program

Jody Catherine Gatewood
Iowa State University

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**Barriers to participating in a community-based cardiovascular disease risk reduction
program**

by

Jody Catherine Gatewood

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of:

MASTER OF SCIENCE

Major: Nutritional Sciences

Program of Study Committee:
Ruth Litchfield, Major Professor
Kevin Schalinske
Kim Greder

Iowa State University
Ames, Iowa
2006

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ABSTRACT

Quantitative and qualitative analysis were used to examine barriers to attending the Iowa WISEWOMAN program, and making health behavior changes. Subjects (N=161) represented three levels of program participation – full, minimum, and none. Scales of food security, barriers to attendance and health behavior change, and self-efficacy for nutrition and physical activity were administered via survey. Minimum and no exposure participants perceived significantly more barriers to attendance than the full exposure participants ($p<0.05$); barriers to health behavior change and self-efficacy for nutrition and physical activity were not significantly different among the groups.

Forty-seven subjects also participated in focus groups. Perceived lack of time was found to be a major barrier to both health behavior change and attending health promotion programs. Subjects mentioned lack of time as a barrier to physical activity, healthy eating, and attending WISEWOMAN sessions. Health promotion programs must identify and address perceived barriers of target audiences for program success.

CHAPTER 1. INTRODUCTION

Cardiovascular diseases (CVD) result in approximately one female death per minute in the United States, or a half-million women each year (American Heart Association, 2005). Several risk factors for CVD can be reduced through lifestyle change (tobacco use, high blood cholesterol, high blood pressure, physical inactivity, obesity and overweight, and diabetes mellitus). Under- or un-insured women may be especially vulnerable to cardiovascular disease because they are more likely than insured women to be overweight and less likely to engage in physical activity and be aware of their cholesterol levels (Ford, Will, Ford, and Mokdad, 1998)

In 1995, the Centers for Disease Control and Prevention began funding WISEWOMAN (**W**ell **I**ntegrated **S**creening and **E**valuation for **W**omen **A**cross the **N**ation), a cardiovascular risk reduction program. The Iowa WISEWOMAN program began in 2002. The program provides cardiovascular screening and interventions for obesity, sedentary behavior, poor dietary habits, high blood pressure, and high cholesterol to low-income, under- and un-insured women between 40-64 years of age.

Unfortunately, most individuals do not adhere to recommended health practices or make lifestyle behavior changes necessary to reduce disease risk. In the 1950's the Health Belief Model (HBM) was developed in an attempt to explain why people fail to take the steps necessary to prevent or detect asymptomatic disease (Janz and Becker, 1984). The variables of the HBM include perceived susceptibility, perceived severity, perceived benefits, and perceived barriers, self-efficacy, and cues to action (Janz, Champion, and Strecher, 2002). Perceived barriers have been identified as the most influential of the HBM variables. Thus, when designing and implementing interventions targeted at health behavior change, addressing barriers would appear to be a key determinant of success.

Self-efficacy is the belief about one's capability to perform a particular behavior to achieve a desired outcome (Stretcher, DeVellis, Becker, and Rosenstock, 1986). Self-efficacy has been shown to be a consistent predictor of short- and long-term successes with behavior

change (Stretcher et al., 1986). People who are confident in their ability to make a health behavior change often do so and are successful (Humphries and Krummel, 1999).

Unfortunately, approximately 57% of those eligible to participate in the Iowa WISEWOMAN intervention have never attended a session. Yet, previous research has shown that participants rated the sessions and educators an average of 4.3 on a 5.0 Likert scale and there were no significant differences among the sites, sessions, or educators (Vander Wel, Litchfield, Ryan, Geadelmann, Pendergast, and Ullom, 2005) Thus, based on this positive evaluation of the program, the purpose of this thesis is to report quantitative and qualitative analysis of the barriers to attending the Iowa WISEWOMAN program, and making health behavior changes, particularly healthy eating and physical activity. Quantitative analysis involved statistical analysis of a survey mailed to eligible WISEWOMAN participants. Qualitative analysis involved focus group discussions with eligible participants.

Research Objectives

The objectives addressed by this study were to:

1. Identify the personal and environmental barriers to participating in WISEWOMAN (Well Integrated Screening and Evaluation for Women Across the Nation)
2. Examine whether self-efficacy influences participation in WISEWOMAN.
3. Identify perceived barriers to making health behavior change, particularly healthy eating and physical activity.

Thesis Organization

This thesis includes an introduction, a review of literature, methods, and two manuscripts, followed by a general conclusion and references for the first three chapters.

CHAPTER 2. LITERATURE REVIEW

Cardiovascular diseases (CVD) result in approximately one female death per minute in the United States, or a half million women each year, which is more than the next six causes of death combined (American Heart Association, 2005). Although some risk factors for CVD cannot be modified (gender, age, and heredity), several risk factors can be reduced through lifestyle change (tobacco use, high blood cholesterol, high blood pressure, physical inactivity, obesity and overweight, and diabetes mellitus). Under- or un-insured women are especially vulnerable to CVD because they are more likely than insured women to be overweight and less likely to engage in physical activity and be aware of their cholesterol levels (Ford, Will, Ford, and Mokdad, 1998)

WISEWOMAN

In 1995, the Centers for Disease Control and Prevention (CDC) used a portion of National Breast and Cervical Cancer Early Detection Program (NBCCEDP) funds to launch three WISEWOMAN (**W**ell **I**ntegrated **S**creening and **E**valuation for **W**omen **A**cross the **N**ation) projects. Currently, the CDC supports 15 state and tribal WISEWOMAN projects that provide cardiovascular screening and interventions for obesity, sedentary behavior, poor dietary habits, high blood pressure, and high cholesterol to low-income, under- and un-insured women between 40-64 years of age (Centers for Disease Control and Prevention, 2004).

The Iowa WISEWOMAN program is a collaborative endeavor of the Iowa Department of Public Health, the University of Iowa College of Public Health, and Iowa State University Extension (ISUE). When the WISEWOMAN program began in Iowa in 2002, five local programs were designated as intervention counties. These counties included Cerro Gordo, Kossuth, Cass/Shelby, Polk, and Johnson. Nine additional counties served as controls, and included Woodbury, Sac, Carroll, Black Hawk, Linn, Dubuque, Clinton, Wayne and Appanoose.

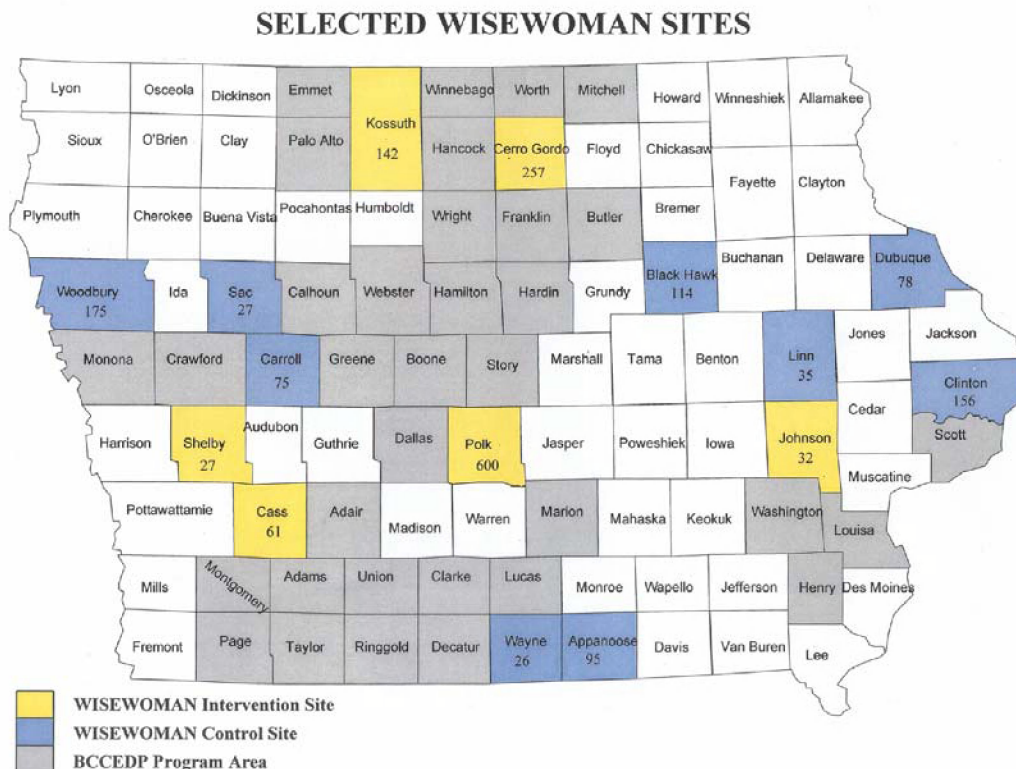


Figure 1: WISEWOMAN intervention and control counties in Iowa.

To be eligible to attend the WISEWOMAN group sessions, which are free of charge, women must be enrolled in the Iowa Breast and Cervical Cancer Early Detection Program (IBCCEDP). Women enrolled in IBCCEDP are 40-64 years of age, meet the financial criteria, and are under- or un-insured for healthcare. Eligible participants in the IBCCEDP are informed of the Iowa WISEWOMAN program by staff at the WISEWOMAN intervention and control sites. If interested, the participant signs an informed consent and release, completes an enrollment form, and schedules an appointment for baseline CVD screening. Screening is done annually as the participant's eligibility remains. Participants are assigned to either a control or intervention group based on the county of residence. All WISEWOMAN participants receive America's Women's Health Guide™ Health Begins With You booklet and four informational sheets that discuss blood pressure, cholesterol, tobacco, and heart health.

In the intervention counties, the WISEWOMAN program also includes a lifestyle intervention of 12 group sessions led by ISUE educators. Bi-weekly, a one and half-hour session is held in the late afternoon or early evening at a designated location in the local community. The sessions focus on improving nutrition, increasing physical activity, and maintaining behavior change. Each session is based on a topic related to nutrition, physical activity, or behavior change. Sessions begin with an opening activity, which includes taste-testing a heart healthy snack provided by the educator, and discussing progress and difficulties with mini-goals. A 20 minute presentation given by the ISUE educator on the session topic follows the opening activity. At the end of each session a physical activity is done for approximately 5-10 minutes, followed by a skill activity and setting goals for the following weeks. Before participants leave they are asked to complete an evaluation of both the educator and session.

Health Belief Model

Unfortunately, most individuals do not adhere to recommended health practices or make lifestyle behavior changes necessary to reduce disease risk. In fact, a review of 40 studies showed that compliance with diet behavior modifications ranged from 8-70% (Sackett and Snow, 1979). Less compliance was observed with weight reduction diets, while greater compliance was observed with diets prescribed for specific health reasons, such as hemodialysis. Thus, there was greater compliance with dietary recommendations when there was greater perceived severity (Sackett and Snow, 1979). And two out of three people do not get the recommended levels of physical activity (National Center for Chronic Disease and Health Promotion, 2006)

In the 1950's, social psychologists from the United States (US) Public Health Service developed the Health Belief Model (HBM) in an attempt to explain why people fail to take the steps necessary to prevent or detect asymptomatic disease (Janz and Becker, 1984). The four fundamental variables of the HBM include perceived susceptibility, perceived severity, perceived benefits, and perceived barriers (Janz, Champion, and Strecher, 2002). Additions to the model have resulted in its expansion to also include cues to action and self efficacy

(Figure 1). Collectively, these variables determine whether an individual will accept health recommendations to decrease her risk for a certain disease. For the purposes of this paper, the HBM will be discussed with CVD as the focus.

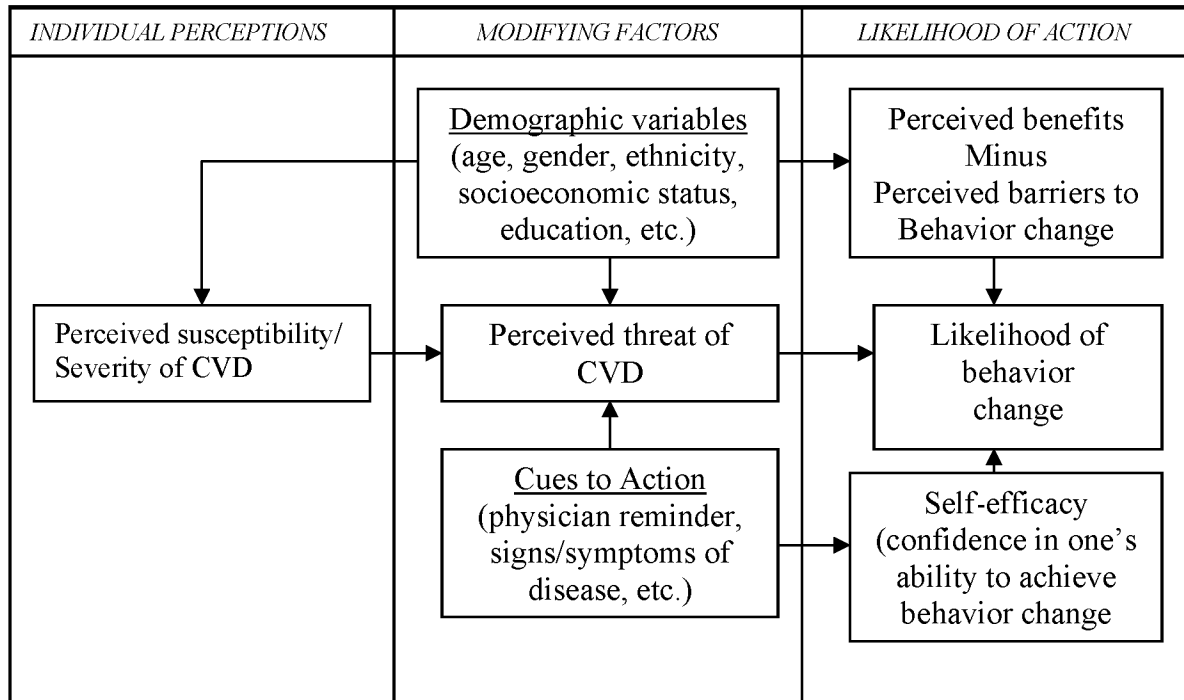


Figure 1. Health Belief Model including self-efficacy adapted from Janz, Champion, and Strecher (2002)

Perceived susceptibility refers to one's subjective perception of the risk of contracting a condition (Janz and Becker, 1984). Individuals vary widely in their perception of personal risk to disease. Some individuals may deny any possibility of contracting a disease while others feel real danger. A more moderate position would be an individual who admits the "statistical" possibility of developing a condition, but feels the possibility is small. *Perceived severity* is the feeling an individual has concerning the seriousness of contracting a condition, which also varies from person to person. The seriousness of a disease includes the evaluation of both medical consequences (e.g. death and disability) and social consequences (e.g. effects on work and family) of contracting a disease.

Perceived benefits influence the particular course of action an individual is likely to take (Janz and Becker, 1984). While feelings of susceptibility and severity may lead to

action, it is the beliefs regarding the effectiveness of a certain behavior in reducing the risk of disease that defines the course of action. *Perceived barriers* also influence the course of action. These potential negative aspects of a particular action may impede the recommended behavior from being carried out. It is thought that a cost-benefit analysis occurs where an individual weighs the effectiveness of an action against its perceived barriers, such as expense, when deciding on the course of action to take.

Cues to action are events, or triggers, that initiate action. The events might be internal, like perception of bodily states, or external, like receiving a postcard from the doctor. *Self-efficacy* is the belief an individual has in her capability to perform a particular behavior to achieve a desired outcome (Stretcher, DeVellis, Becker, and Rosenstock, 1986).

A critical review of 46 HBM studies has provided substantial support for the HBM (Janz and Becker, 1984). This review identified “perceived barriers” as the most influential of the HBM variables among the various study designs and behaviors. To estimate the impact each variable had on behavior, Janz and Becker created a “significance ratio” calculated by dividing the number of positive and statistically significant findings for a HBM variable by the total number of studies which reported significance levels for that variable. The significance ratios of the HBM factors were: “barriers” (89%), “susceptibility” (81%), “benefits” (78%), and “severity” (65%) (Janz and Becker, 1984). Thus, when designing and implementing interventions targeted at health behavior change, addressing barriers would appear to be a key determinant of success.

Barriers to Health Behavior Change

Barriers to health behavior change are a substantial problem for many. The perceived barriers to change are related to both environmental factors and personal characteristics. Some barriers are specific to either improved nutrition or increased physical activity, such as food security or safe environment to exercise. Other barriers, such as lack of time or social support, impede both nutrition and physical activity behavior changes.

Nutrition

Several major CVD risk factors in women, including elevated blood lipids and lipoproteins, body weight, and hypertension, respond positively to nutrition intervention (Kris-Etherton and Krummel, 1993). Although women believe that diet is important to cardiovascular health, barriers to eating a heart-healthy diet often keep them from doing so (Krummel, Humphries, and Tessaro, 2002). These barriers include, but are not limited to, lack of awareness of the relationship between blood cholesterol level and CVD risk, cost of heart-healthy food, belief that heart-healthy food does not taste good, lack of support from family (primarily food preferences of family members), and time needed for purchasing and preparing food

Perceived barriers appear to influence nutrition behavior more than perceived benefits among the less educated and low income (Dittus, Hillers, and Beerman, 1995). This survey used principles of the HBM to examine beliefs that may influence consumption of fruits and vegetables. Beliefs included in the survey included nutrition concern, perceived susceptibility to cancer, benefits of fruit and vegetable intake, and barriers to fruit and vegetable consumption. Barriers to fruit and vegetable consumption had the most impact on variability in actual fruit and vegetable consumption among those with less education and low income.

Financial Resources

Studies show that women face different barriers depending on demographics (Krummel et al., 2002). Income is a prominent factor affecting food consumption behavior among a large segment of the US population (Reicks, Randall, and Haynes, 1994). Persons with less education or lower incomes tend to spend less and eat fewer daily servings of fruits and vegetables than more affluent persons. On average low-income households, defined by the Economic Research Service as those with income no greater than 130 percent of the poverty line adjusted for household size, spent about \$1.43 less per person per week on fruits and vegetables than higher income households in 2000 (Blisard, Stewart, and Jolliffe, 2004). Low-income households spent \$3.59 per capita per week on fruits and vegetables while higher income households spent \$5.02.

Women with limited incomes often hesitate to adopt a heart-healthy diet because of the anticipated cost of the food (Krummel et al., 2002). Focus group participants, recruited from the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program (ages 19 to 30 or older), had positive perceptions about fruit, and considered vegetables to be healthy. Yet, they also thought that fruit was expensive and difficult to select and store and vegetables spoil quickly (Treiman et al., 1996). Similarly, Reicks et al. (1994) reported that female participants from the Expanded Food and Nutrition Education Program (EFNEP) preferred fresh and raw produce but perceived it as expensive. As a result, EFNEP participants purchased a limited amount of fruits and vegetables, primarily what was on sale, and were unable to purchase other food in order to buy fresh produce. These women also expressed concern about the appropriate quantity of produce to purchase because of limited storage space and the ability to use the food before the quality deteriorated.

Food security is defined as “access by all people at all times to enough food for an active, healthy life.” At minimum food security includes: a) the ready availability of nutritionally adequate and safe foods, and b) the assured ability to acquire acceptable foods in socially acceptable ways (e.g. without resorting to emergency food supplies, scavenging, stealing, and other coping strategies) (Roberts, 2003). When this is not possible, food insecurity is the outcome. When people have limited resources, including limited income, they may struggle with food security. To achieve food security, one out of six Americans with limited resources, turns to government food assistance programs (Roberts, 2003). Others respond to food insecurity by skipping meals, eating less expensive, less nutritious foods, or utilizing soup kitchens or food pantries.

In the United States, in 2004, the prevalence of food insecurity was 11.9 percent and food insecurity with hunger was 3.9 percent (Nord, Andrews, and Carlson, 2005). In Iowa, between 2001-2003, 9.5 percent of households were food insecure and 3.0 percent were food insecure with hunger at sometime during the previous year (Gunderson, 2005). An analysis of focus group discussions with participants from two rural and two urban counties in Iowa, found common characteristics of low-income individuals regarding their food security. These

included: 1) eating less food, less fresh fruit and vegetables, less meat, or lower quality food than desired because of limited resources, 2) paying bills before purchasing food, 3) perceiving public transportation as inconvenient and expensive, 4) traveling across town or out of town to shop at multiple stores in order to purchase food at the most affordable prices, and 5) getting social support, in the form of food and transportation, from family, friends, and churches to maintain household food security (Greder, Garasky, Jensen, and Morton, 2002).

Taste

Taste is important to food selection and can be a barrier to health behavior change (Reicks et al., 1994). In a study of WIC participants, two-thirds of women rated taste of food as very important (Treiman et al., 1996). Not liking fruits or vegetables, or preferring other foods, was often mentioned by the women as a barrier to consumption. These focus group participants also shared that canned vegetables look and taste bad; they did not know how to fix vegetables in ways that tasted good or in new ways.

Family Preferences

Foods that family members like because of their taste but are not heart healthy, can be a barrier for women trying to improve their eating habits. Women often do not spend money or time preparing heart-healthy meals because they fear it will be rejected by the family. Younger women with families often mention their children's food preferences when asked about barriers to eating a more heart-healthy diet. Marketing by the food industry challenges heart-healthy behaviors of mothers by enticing their children (Mein and Winkleby, 1998) with free toys, games, or other gimmicks. Once there, mothers are attracted to eating less heart healthy food too. Food preferences of husbands can also be a barrier to change (Mein and Winkleby, 1998). In focus groups with low-income Hispanic women, participants spoke of their significant others' desire for meat and low preference for vegetables, as barriers to changes in eating habits (Mein and Winkleby, 1998).

While some women feel obligated to prepare foods requested by their families, other women are comfortable asking their families to change with them (Krummel et al, 2002).

Some women are not comfortable making visible changes to the foods they prepare for their families, but they are comfortable making changes they can hide, such as using lower-fat margarine or mayonnaise. In a study examining the effects of significant others on health behavior change, Zimmerman and Connor (1989) found a significant positive ($p < 0.05$) relationship between change in significant others' support and habits and change in the participants' fat consumption and exercise. This study followed 84 hospital employees, of which 79% were female, throughout a 7-week worksite health promotion program.

Participants completed two questionnaires, one during the first session of the program and one at the end of the last session. The questionnaires examined demographic variables, health-related behaviors (salt use, cigarette use, exercise, fatty food consumption, and perceived overweight), and expected or amount of support given by friends, family, and co-workers for participant's health behavior changes. At baseline, the expected support of others was correlated with the participant's ability to change in exercise (0.00) and change in fat consumption (0.12). At follow-up, the correlation between the supportiveness of others and change in exercise (0.25) and change in fat consumption (0.26) were significant. In addition, actual change in the significant others' habits was significantly correlated with change in fat consumption (0.20). These correlations indicated that actual influence of others in supportiveness and/or behavior change was greater than the participant anticipated and played a significant role in an individual's ability to make health behavior changes.

Concern about the well-being of family can be a barrier to health behavior change for women. Women are more likely to consider other family members' health more important than their own. In focus group discussions and individual interviews with women enrolled in WIC, participants were consistently more concerned that their children ate healthy foods than about their own intake. In fact, it was difficult to keep the discussions focused on the women's eating habits; they were more interested in talking about what they fed their children (Treiman et al., 1996).

Time

Time is a recurrent barrier for women, especially those with families. Women feel that they have little time for themselves (Tessaro et al., 1998), and attempting to make nutrition and physical activity behavior changes only increases the stress of their lives. Time to purchase and prepare food can be a hindrance to cooking heart-healthy meals (Krummel et al., 2002). Women with some free time do not see the additional preparation as a barrier, but those who already feel stretched for time do. Even though focus group participants from EFNEP felt they would be motivated to change their eating habits for health concerns or to help their families develop healthy eating habits, they had limited time for food preparation and were interested in how convenience foods and fast foods could fit into a healthful diet (Hartman, McCarthy, Park, Schuster, and Kushi, 1994). WIC participants also cited time and effort necessary to prepare fruits and vegetables as a barrier to their consumption (Treiman et al., 1996).

Physical Activity

In addition to improved nutrition, being physically active can reduce the risk of CVD. Low-income populations have the highest rates of CVD and the lowest rates of leisure-time physical activity (Eyler et al., 2002). In addition, women tend to be more sedentary throughout their lives than men (Nies and Kershaw, 2002). This lack of physical activity is related to family priorities, time, energy, safety concerns, lack of support, and lack of past experience with exercise (Eyler et al., 2002). Personal motivation, inconvenient exercise facilities, and lack of money can also be barriers to physical activity (Johnson et al., 1990).

The CDC defines *physical activity* as any bodily movement produced by skeletal muscles that result in an expenditure of energy (CDC, 2004). *Exercise* is defined as physical activity that is planned or structured and involves repetitive bodily movement done to improve or maintain one or more components of physical fitness.

In focus groups with women between the ages of 20 and 50, Eyler et al. (2002) found that most participants considered themselves active but not exercisers. Although participants thought of themselves as physically active, they did not consider it enough for health

benefits. Most women knew that exercise was good for their health and said they “should” do it.

Time

Lack of time for physical activity is related both to family commitments and work commitments. Women who have jobs that do not have flexible hours or do not provide opportunities to increase their physical activity at work find it difficult to fit physical activity into their day (Elyer et al, 2002). In addition, women with physically demanding jobs shared they have little energy to engage in any physical activity after work.

Family and caregiving responsibilities are a priority in many women’s lives (Eylers et al., 2002). These responsibilities can be time-consuming, difficult, and limit physical activity. Additionally, women commonly feel guilty or selfish doing something for themselves because of family responsibilities such as child care, husband-care, cooking and cleaning (Eylers et al., 2002). Being a wife, mother, employee, and active community member leaves one with little time or energy to engage in physical activity (Eylers et al., 2002).

Time is a barrier to physical activity for women regardless of age, income, or ethnicity. It is an issue for women who regularly exercise as well as for those who would like to start a regular exercise program (Johnson, Corrigan, Dubbert, and Gramling, 1990). Women perceiving time as a barrier want to be able to fit changes into their current lifestyle without making drastic changes to their daily routine (Tessaro et al., 1998). The perceived lack of time depends on the stage of change a woman is in regarding physical activity (Jaffee et al, 1999). The Stages of Change construct, used in the Transtheoretical Model (TTM), depicts behavior change as a six stage process and is useful in determining a person’s readiness to make a health behavior change (Rollnick, Mason, and Butler, 1999). The stage construct signifies that change occurs over time and is not a finite event.

Incentives and barriers to physical activity may also be specific to the stage of change (Jaffee, Lutter, Rex, Hawkes, and Bucaccio, 1999). To examine incentives and barriers working women experience when attempting to incorporate physical activity into their lives, Jaffee et al. (1999) surveyed 750 women, aged 35 years or older, with an instrument based on

Prochaska's transtheoretical model. Precontemplators were less likely to report expecting positive benefits from being physical active compared to women in the other stages of change. Contemplators reported numerous positive expectations about physical activity but also reported more barriers than any other group. Barriers related to low self-confidence or self-consciousness when exercising in front of others was most frequently reported by women in the contemplation and preparation stages.

Safe Environment

Lack of a safe environment to be physically active is another barrier to increased physical activity (Eyler et al., 2002; Mein and Winkleby, 1998). In focus groups with White, African American, Latina, and American Indian women aged 20-50 years living in both urban and rural settings (Eyler et al., 2002), environmental and cultural barriers to physical activity were discussed. Women living in urban areas expressed concerns about being harassed by homeless persons and drug dealers or being a victim of a drive-by shooting. These women knew of places for exercise but they were outside of their immediate community. In addition, a lack of money to access facilities to exercise posed another barrier (Johnson et al., 1990). Women living in rural areas also had concerns about being harassed by strangers, and walking on roads without sidewalks because of uneven surfaces, dust, and traffic. Being attacked by unleashed dogs was a concern for both urban and rural women.

Social Support

Even when women want to make a health behavior change, the effort to find assistance is often a barrier. Perceived barriers that deter women from participating in health promotion programs include inconvenient program days and times, inaccessible location, lack of childcare, lack of time, and cost (Turner, Hunt, DiBrezza, Jones, 2004; Gettleman and Winkleby, 2000). Studies show that the more barriers women identify, the less likely they are to attend programs or make health behavior changes (Humphries and Krummel, 1999).

Even if women successfully complete a health promotion program they can easily fall back into old habits when faced with situations that encourage their old habits (Zimmerman and Connor, 1989). Health behavior change is not just an individual problem, it is a societal

problem. The difficulty in maintaining long-term health behavior change is that only an individual's attitudes or behaviors are changed without simultaneous support from the social environment. In order for health behavior change to be long term, the environment must be supportive of change.

Family support, an important component of social support, has been identified as a major factor discriminating those who are more successful and those who are less successful (Lloyd, Paisley, and Mela, 1995). Results of this study suggest that the only difference between those able to reduce their intake of cakes and biscuits from those who were not, was a lower level of family support for the less successful group (Lloyd et al., 1995). Participants did not anticipate lack of family support as a problem but did report it as a problem for them in the follow-up.

In their study on the effects of significant others on health behavior change, Zimmerman and Connor (1989) examined social support of family, friends, and coworkers. Participants of the study expected all three groups to be supportive if they attempted to improve their health habits, with 51 percent strongly agreeing that family members would be supportive. However, during follow-up, slightly less than 20 percent of participants strongly agreed that their family, friends, and co-workers had been supportive of their health habit change. Social support was greatest from family members and least from coworkers. Social and family support had the greatest impact on change. Zimmerman and Connor (1989) contend that there are a number of potential pathways between others in the social environment and health behavior change such that no one theory could reasonably explain.

Self-Efficacy

Self-efficacy is the belief about one's capability to perform a particular behavior to achieve a desired outcome (Stretcher, DeVellis, Becker, and Rosenstock, 1986), and was first postulated by Albert Bandura in 1977. According to Bandura, behavior change and maintenance are a function of 1) expectations about the outcomes that will result from engaging in a behavior; and 2) expectations about one's ability to execute the behavior

(Stretcher et al., 1986). The self-efficacy theory would suggest that belief in one's ability to make changes may be assisted by others' support during the change process.

“Outcome expectations” are beliefs about whether a particular behavior will lead to a given outcome, whereas “efficacy expectations” are beliefs about how capable one is of performing the particular behavior that leads to those outcomes. Both outcome expectations and efficacy expectations reflect a person's *beliefs* about capabilities and behavior-outcome links. It is these *perceptions*, not necessarily “true” capabilities, which influence behavior and behavior change.

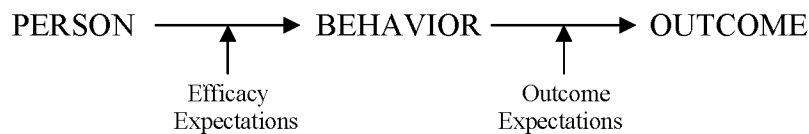


Figure 2. Role of self-efficacy in behavior change from Stretcher et al. (1986)

According to the self-efficacy model (Figure 2), in order for individuals (PERSON) to start exercising regularly (BEHAVIOR) to reduce CVD risk (OUTCOME), they must believe both that exercising regularly will benefit their cardiovascular health (OUTCOME EXPECTATION) and also that they are capable of exercising on a regular basis (EFFICACY EXPECTATION) (adapted from Rosenstock, Stretcher, and Becker, 1988).

Self-efficacy is behavior and situation specific (Stretcher et al, 1986). It is inappropriate to characterize an individual as having “low” or “high” self-efficacy without reference to a specific behavior and circumstance. Someone may believe they are capable of controlling the portions of food they eat when at home, but may not believe they are capable of exercising regularly when they have a busy schedule.

Expectations of personal efficacy are based on four sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological states (Bandura, 1977; Stretcher et al., 1986; Rosenstock et al., 1988). Performance accomplishments are when a person achieves mastery over difficult or previously feared tasks, and enjoys an increase in self-efficacy. These accomplishments are the most influential

source of efficacy expectations (Stretcher et al., 1986). The second source of information, vicarious experience, is learning that occurs through observation of other people succeeding at tasks. In order for this “modeling” to positively influence an observer’s self-efficacy, the model must be similar to the observer with regard to personal characteristics (e.g. age, sex) and the model must be viewed as overcoming difficulties through determined effort rather than with ease. Through the third source of information, verbal persuasion, people are led, through suggestion, into believing that they can cope successfully with what has overwhelmed them in the past (Bandura, 1977). Verbal persuasion is a weaker source of efficacy expectation than performance accomplishments because it does not provide a personal experience for the belief. Most health promotion programs address self-efficacy through verbal persuasion and thus are less successful. To increase effectiveness, the WISEWOMAN intervention uses modeling to address self-efficacy. Finally, one’s physiological state can provide information that influences efficacy expectations (Stretcher et al., 1986). High physiological arousal usually impairs performance, thus the individual is more likely to expect failure when they are tense and viscerally agitated.

How and if these various sources of information will influence perceived efficacy depends on how the information is attended to, weighted, and interpreted (Stretcher et al., 1986). Selective self-monitoring is an example of an attentional factor. If a person only focuses on the positive aspects of their performance, and overlooks the negative ones, this overestimation may lead individuals to attempt tasks beyond their capability, which can lead to failure. On the other hand, if a person dwells on their failures they may underestimate what they can do and be reluctant to try new behaviors at which they could succeed. Even when people accurately self-monitor positive and negative aspects of their performance, they may discount the importance of one aspect (Stretcher et al., 1986). Thus, a person with low self-esteem may tend to discount positive efficacy information. Interpretation is best described by the attribution processes (Stretcher et al., 1986). Self-efficacy will be enhanced by an achievement only if it is attributed to one’s own ability and not to external chance or temporary factors.

Health Specific Self-Efficacy

Health-specific self-efficacy is the optimistic belief that one is capable of resisting temptations and adopting a healthy lifestyle (Schwarzer and Renner, 2001). In health-related studies reviewed by Stretcher et al. (1986) and colleagues, self-efficacy appeared to be a consistent predictor of short- and long-term successes. People who are confident in their ability to make a health behavior change often do so and are successful (Humphries and Krummel, 1999). According to social-cognitive theory, perceived self-efficacy is a suitable predictor of behavioral intentions and reported health behaviors (Schwarzer and Renner, 2001). Health-specific self-efficacy was significantly ($p < 0.01$) related to motivation to adopt or maintain corresponding health behaviors. Health-specific self-efficacy was also significantly related to corresponding health behaviors ($p < 0.01$).

Various health-specific self-efficacy scales have been developed including the Osteoporosis Self-Efficacy Scale (Horan, Kim, Gendler, Froman, and Patel, 1998), Oral Hygiene Self-Efficacy Scale (Stewart, Strack, and Graves, 1997), and the Cardiac Diet and Cardiac Exercise Self-Efficacy Instruments (Hickey, Owen, and Froman, 1992). Health specific self-efficacy scales developed by Schwarzer and Renner (2001) examine the relationship between self-efficacy, intentions, and behaviors in the context of large-scale field studies designed to screen diverse populations. The brief scales assess perceived self-efficacy for preventive nutrition, physical exercise, and alcohol resistance.

These scales were tested in the “Berlin Risk Appraisal and Health Motivation Study” (BRAHMS), a large ($N=2,549$) longitudinal study in Germany (Schwarzer and Renner, 2001). BRAHMS was designed to examine the social-cognitive determinants of health behaviors, such as physical exercise, alcohol consumption, and preventive nutrition. Individuals, ranging in age from 14 to 90 years old, participated in the study at four different locations (two universities and two city halls).

Each scale has been designed to represent a unique dimension that is statistically distinct from the other scales (Schwarzer and Renner, 2001). The dimensionality of the three measures was examined by performing a principal component analysis on the basis of the 13

items. According to the Eigen values and scree test, a three component solution was extracted and accounted for 68% of the total variance.

Item analyses were conducted separately for each health self-efficacy scale; nutrition, physical activity, and alcohol consumption where a scale with a response range from 1 to 4 was used (Schwarzer and Renner, 2001). All of the coefficients turned out to be satisfactory and no overall improvement was possible by eliminating any particular item. The internal consistency (Cronbach's alpha) for the nutrition self-efficacy scale was $\alpha = .87$ ($n=1,722$), and for the exercise self-efficacy scale $\alpha = .88$ ($n=1,726$).

One health behavior change considered a desirable goal, but difficult to achieve, is weight control. A barrier to its achievement may be a lack of self-efficacy with regard to engaging in the required behaviors (Stretcher et al., 1986). Studies show that women who have higher self-efficacy have dietary intakes closer to the national recommendations for fat, saturated fat, and fiber (Humphries and Krummel, 1999).

Perceived self-efficacy has also been found to be a key component in forming intentions to exercise and maintaining exercise for an extended time (Schwarzer and Renner, 2001). Self-efficacy can also influence performance, or the aptitude or ability to perform an activity (Nies and Kershaw, 2002). Nies and Kershaw (2002) found that as women's self-efficacy increased, performance increased (time to walk 1 mile) and Body Mass Indexes (BMI) were lower. Theoretically, this makes sense, the greater one's belief in ability to perform a task, the better the performance. Finally, self-confident participants in intervention programs were less likely to relapse into previously unhealthy diet behaviors (Schwarzer and Renner, 2001).

Qualitative & Quantitative Social Research

Historically, there have been two distinguishable research traditions-qualitative and quantitative (Reichardt and Rallis, 1994). Each tradition is based on very different premises about both the nature of the world and the nature of our understanding of the world (Draper, 2004). Qualitative research has been called naturalistic and interpretive. Qualitative research aims to describe and explain social phenomena as they occur in natural settings to produce

‘thick descriptions’. In contrast, quantitative research is rooted in the materialist and positivist traditions. It is concerned with understanding and describing the world in terms of observable physical phenomena, focusing on the quantitative measure of these phenomena. The ideal goal of quantitative research is to test hypotheses in order to establish universal laws of cause and effect, and to use these laws to predict future outcomes.

With its emphasis on measuring and quantifying phenomena, quantitative research tends to ask ‘how much’ or ‘how many’ questions (Draper, 2004). Seeking to understand human experiences and the meanings humans give to them, qualitative researchers tend to ask ‘what’, ‘how’, and ‘why’ type questions. As a result, the methods used and data collected is different for the different research traditions. For qualitative research, interviews, focus groups, and observations are the primary methods of data collection (Reichardt and Rallis, 1994; Draper, 2004). To collect data for quantitative research a range of specific data collection techniques are employed, including questionnaires, with an emphasis on measurement yielding numeric data (Draper, 2004).

The different methods of data collection require that different methods of subject recruitment also be employed. In qualitative studies, researchers most often use purposive or purposeful sampling, which is done by selecting a sample from which the most can be learned about the issue being researched (Merriam, 2002). To employ purposive sampling, criteria which are essential to the purpose of the research are determined and participants are then chosen based on the criteria. Purposive sampling ensures that “information-rich cases” related to the purpose of the research are recruited. The number of participants in qualitative studies tends to be small, allowing for more in-depth research to be conducted. In contrast, random sampling is where participants are randomly chosen from a population. Random sampling is often used in quantitative research.

The analytical process, or how theory or explanations are generated, also differs between the research methods. Qualitative research is broadly characterized by the process of analytical induction (Draper, 2004). Using an analytical approach, the researcher moves from observation to generalization. Thus, a theory or hypothesis is not used to guide the research

but rather is constructed from the data collected. In contrast, quantitative research is characterized by the process of deductive reasoning (Draper, 2004). Here, a theory guides the process of observation and data are collected and analyzed to test a predefined hypothesis.

These differences in methods and data collected have caused debate between researchers from both traditions. Qualitative researchers criticize quantitative studies for being irrelevant, stating that the quantitative research approach emphasizes numbers that misrepresent socially relevant reality (Reichardt and Rallis, 1994). Quantitative researchers often suspect qualitative studies of being unreliable. Quantitative researchers also suspect that qualitative researchers are often merely confirming preconceived notions, blind to alternative explanations (Reichardt and Rallis, 1994).

Even though there may be differences between the two research traditions, both have a common goal, to understand and improve the human condition (Reichardt and Rallis, 1994). More researchers are recognizing the benefits of combining qualitative and quantitative procedures, which result in greater methodological mixes that strengthen the research design (Krueger, 1994). Focus groups can be combined in four different ways with quantitative methods. These include conducting focus groups 1) before quantitative procedures, 2) at the same time as quantitative procedures, 3) following quantitative procedures, and 4) alone (Krueger, 1994). When qualitative and quantitative research methods are combined there are a number of possible outcomes concerning the data collected (Brannen, 2005). These include:

- *Corroboration*: The ‘same results’ are derived from both qualitative and quantitative methods.
- *Elaboration*: The qualitative data analysis exemplifies how the quantitative findings apply in particular studies.
- *Complementary*: The qualitative and quantitative results differ but together they generate insights.
- *Contradiction*: Where qualitative data and quantitative findings conflict.

Focus Groups

Since qualitative research seeks to understand and explain beliefs and behaviors of individuals it is being increasingly accepted within public health and nutrition to understand the complexity of human behavior and the interaction between disease and society (Draper, 2004). Focus group interviews are becoming more popular in health research for exploring why individuals behave in the way they do (Rabiee, 2004).

According to Lederman, a focus group is ‘a technique involving the use of in-depth group interviews in which participants are selected because they are a purposive, although not necessarily representative, sampling of a specific population; this group being ‘focused’ on a given topic (Rabiee, 2004). The aim of a focus group interview is to gain an understanding of the participants’ experiences, feelings, and attitudes, and how these influence their health behavior. Because there are many emotions tied to food and other health behaviors, the focus group interview is ideal for exploring how lived experiences influence dietary habits and other lifestyle behaviors.

Focus groups originated in marketing research to test consumer perceptions of new products (Brotherson and Goldstein, 1992). Today social scientists often use focus groups to evaluate programs (Esterberg, 2002). Public health researchers, and individuals interested in “social marketing,” or encouraging desired behaviors also use focus groups.

Focus groups are typically composed of 6 to 10 people, but can range from 4 to 12 participants (Krueger, 1994). The size of the group must be small enough to allow everyone the opportunity to share their opinion, yet large enough to obtain a variety of perceptions. In order to recruit enough participants, experienced researchers often use extensive follow-up procedures (such as written and telephone reminders), offer incentives, and typically over-recruit (Esterberg, 2002). One of the advantages of focus groups is that they allow for the collection of a fairly large amount of data in a relatively short amount of time.

One of the distinct features of focus groups is their group dynamics. Through the social interaction of the group, the data that is generated is often deeper and richer than that obtained from one-to-one interviews (Rabiee, 2004). In a focus group, participants influence,

and are influenced by others, representing a more natural environment. In the permissive group environment, individuals are likely to be more open to sharing emotions that they may guard during other forms of questioning (Krueger, 1994). Some feminist researchers believe that focus groups are helpful in reducing the imbalances of power between researcher and those being researched (Esterberg, 2002). Focus groups are useful in eliciting opinions from people who have historically had limited power and influence (Mein and Winkleby, 1998).

In order to detect patterns and trends across groups, multiple focus groups with similar participants must be conducted (Krueger, 1994). It is recommended that the researcher be engaged in the data collection phase long enough to ensure an in-depth understanding of the phenomenon. It is difficult to say how many focus groups should be conducted, but the best rule of thumb is that the data and emerging findings must feel saturated; the same things heard over and over again (Merriam, 2002). If only a single focus group is conducted, the researcher runs the risk of encountering a quiet and reluctant group or a group influenced by a dominating participant.

Focus groups are composed of people who are similar to each other. The homogeneity of the group may be broadly or narrowly defined (Krueger, 1994) and is controlled through purposive sampling. Participants may be similar in the fact that they have all participated in some educational program or they may be similar in age, gender, ethnicity, or social class. In order for participants to feel comfortable fully engaging in the discussion, homogeneity is important. Caution should be used when forming focus groups with close friends, relatives, or work groups as this tends to inhibit discussion (Rabiee, 2004).

The topics of discussion in a focus group are carefully predetermined (Krueger, 1994). Questions are the heart of the focus group interview. In order to get quality answers, quality questions must be asked. Thus, careful thought is put into deciding what questions to ask. Typically, a focused interview will include approximately a dozen questions (Krueger, 1994). Focus group interviews use open-ended questions, providing a stimulus for participants and provoking group discussion. Unlike other group interactions, focus groups are not intended to reach a consensus.

Focus group research is essentially an act of interpretation; the researcher attempts to convey the meanings people construct from shared and individual experiences (Brotherson and Goldstein, 1992). In order for focus group research to be successful it must be credible. Three ways of ensuring credibility are: 1) multiple methods, 2) multiple researchers, and 3) progressive subjectivity.

Using the multiple methods strategy, the researcher collects data through a combination of interviews, observations, and surveys. By using multiple methods cross-checks between multiple sources of data can be conducted (Merriam, 2002). Using multiple researchers can also help strengthen the reliability of the study results (Brotherson and Goldstein, 1992) by helping to limit the bias that can be introduced by a single investigator. Different investigators can compare their perceptions and interpretations to check for personal bias and establish consistency in reporting the focus group data. Multiple methods and multiple researchers are forms of triangulation, which can help confirm research findings (Merriam, 2002).

Progressive subjectivity helps qualitative researchers see personal assumptions they bring to the focus group research (Brotherson and Goldstein, 1992). In order to reflect on the self as researcher, the 'human as instrument,' researchers keep an observer's journal (Merriam, 2002). By writing down assumptions prior to the focus group, the researcher can identify ways in which personal assumptions influence the interpretation of the data.

CHAPTER 3. METHODS

Subjects

To recruit subjects for the study, a random sample of women eligible to participate in the Iowa WISEWOMAN intervention between March 2003 and January 2006 was obtained from the Center for Public Health Statistics at the University of Iowa, where all WISEWOMAN data is stored. The random sample included 20 potential subjects representing each of three levels of intervention participation from each of the five intervention sites (15 cells). The categories of intervention participation included: 1) full exposure, 2) minimum exposure, and 3) no exposure. Full exposure was defined as having attended six or more WISEWOMAN group sessions while minimum exposure was defined as having attended only one group session. Subjects in the no exposure category were those eligible to participate in WISEWOMAN but choosing not to attend any sessions. If 20 subjects did not exist in a cell, all subjects from that cell were provided. Demographic information collected at annual physical exams, including age, monthly income, educational status, family size, weight, and height in addition to contact information was provided for the sample.

The random sample provided 252 potential subjects and the initial contact resulted in a response rate of 54% (N=137). To increase the response rate an additional 120 surveys were sent to another random sample of subjects, using the same criteria, from the two largest intervention sites. Overall, 372 eligible subjects were contacted to participate in the study; 33 surveys were undeliverable, resulting in a final sample of 339.

Procedures

Survey

A cover letter (Appendix A), informed consent (Appendix B), 4-page survey (Appendix C), and a stamped and addressed envelope were sent to all potential subjects. To increase the survey response rate and recruit more subjects for the focus group discussions, postcards (Appendix D) were sent to all subjects reminding and encouraging them to complete and return their surveys three weeks after the initial mailing. The subjects were

asked to read and sign the informed consent, complete the survey, and return the survey and informed consent in the envelope provided. Of the 339 subjects contacted, 161 responded (47%), which represented 14% of all eligible WISEWOMAN participants (N=1160). Fourteen surveys could not be used in statistical analyses with demographic characteristics because of missing data.

The informed consent asked the subjects to indicate their preferred level of participation in the study. Subjects could choose to complete the survey only or complete the survey and participate in a focus group discussion. To encourage participation in the focus group discussion, a \$35 gift card to a local grocery store was provided as an incentive. Subjects indicating that they only wanted to complete the survey had no further contact with the researchers.

The survey tool included scales of social support, food insecurity, barriers to health behavior change, and self-efficacy. Six questions on social support were taken from the Third National Health and Nutrition Examination Survey (NHANES III) developed by the National Center for Health Statistics (2001). Food security was determined using the United States Department of Agriculture's (USDA) six core questions to determine food secure, food insecure without hunger, and food insecure with hunger among households (Nord and Andrews 1999). Questions addressing barriers to health behavior change were adapted from other studies, which examined barriers to health behavior change populations with similar demographics (Krummel, Humphries, and Tessaro 2002; Eyster et al. 2002). Self-efficacy was examined using the scales developed by Schwarzer and Renner (2001) including self-efficacy for preventive nutrition and physical exercise.

Focus Groups

Subjects who agreed to participate in a focus group discussion were categorized according to intervention site and level of participation (full, minimum, and no exposure). Focus group discussions were scheduled based on participants' availability as indicated on the informed consent. After the day and time was selected for the focus group discussion, participants were contacted by phone (Appendix E). Following the phone call, a letter

(Appendix F) providing the date, time, and location of the discussion and a map to the discussion location was sent to participants. Two days prior to the focus group discussion, participants were again contacted by phone (Appendix G) to remind them of the meeting and to answer any questions about the focus group discussion. A total of nine focus groups were conducted.

Six focus groups were conducted with participants categorized as full exposure; one at each intervention site with an additional focus group at the largest intervention site. A total of 33 subjects attended the focus group discussions, with a range of two to nine participants in each group.

A limited number of participants in the minimum/no exposure groups indicated interest in participating in the focus group discussion. To increase the attendance at these focus groups, minimum and no exposure groups were combined. Three focus groups were conducted with participants in the minimum/no exposure category at three intervention sites. A total of 14 participants attended these focus group discussions, with a range of two to eight participants in each group.

Methods recommended by Krueger (1994) and Esterberg (2002) were used for the focus groups. Participants for the focus group were purposively recruited from WISEWOMAN so that they were similar to each other regarding participation in the same educational program, age, gender, and social class to increase comfort level and sharing in the discussion. Focus groups were kept small enough to allow everyone an opportunity to share her opinion, yet large enough to obtain a variety of perceptions. In addition, multiple focus groups were conducted so that patterns could be detected across the groups.

Focus group discussions were held in conference rooms at ISUE offices in the intervention counties. Focus groups were conducted in the morning, afternoon, and evening according to participant availability. Those present in the room during the focus groups included the participants, one researcher serving as the facilitator, and a member from the IDPH associated with WISEWOMAN serving as an observer who took notes during the focus group. Notes included information on remarks made during the discussion as well as

any significant body language (i.e. rolling eyes or crossed arms) displayed by the participants. The same researcher and observer attended all focus groups. The focus groups lasted 30 to 90 minutes in length and were audio recorded. The rooms in which focus group discussions were conducted had chairs placed in a circle with the audio cassette player in the center. The facilitator and observer sat among the participants.

As participants arrived for the focus group, the facilitator asked them to read and sign a second informed consent (Appendix H). After signing the informed consent, participants were provided a \$35 gift card to a local grocery store. After all participants arrived or at five minutes past the designated start time, the discussion was initiated by the facilitator.

To begin each discussion, the facilitator read an explanation of the procedures for the focus group discussion (Appendix I). Then, the audio cassette player was started and the facilitator moved systematically through a list of questions (Appendix J). The questions were adapted from previous focus group research conducted on cardiovascular health and barriers to healthful eating (Krummel, Humphries, and Tessaro 2002; Young, Anderson, Beckstrom, Bellows, and Johnson, 2004) in addition to questions developed by the research team based on participant evaluations of the WISEWOMAN intervention. Questions probed participants on constructs of the HBM and included (a) physical activity and good nutrition, (b) *barriers* to physical activity and healthy eating, (c) *perceived benefits* of behavior change for CVD prevention, (d) *self-efficacy* for following a heart-healthy diet, (e) *perceived susceptibility and severity* of CVD, and (f) *barriers* to attending WISEWOMAN sessions. The observer remained silent throughout the discussion and the facilitator spoke only to ask the next focus group question, answer a question asked by a participant, or redirect participants back to the topic at hand. Participants were allowed to discuss the question and the next question was asked only after participants had completed sharing their thoughts and there was a significant pause in their speaking. After all questions were answered the participants were thanked for their participation and excused from the focus group discussion.

All study procedures were approved by the CDC and Iowa State University Human Subjects Review Boards.

Data Analysis

Survey

Each section of the survey food security, barriers to health behavior change, and self-efficacy were scored independently. Social support items do not have standardized scoring and were examined as independent items. Food security scores were tabulated by summing the number of affirmative (“yes”) responses to the six core food security questions. Responses considered affirmative were sometimes, often, yes, some months but not every month, and almost every month. If a respondent answered no to the stem question, a “no” response was inferred for all follow-up questions. The food security score was interpreted as:

- Food secure—‘yes’ response for 0 to 1 questions;
- Food insecure without hunger—‘yes’ response for 2 to 4 questions; and
- Food insecure with hunger—‘yes’ response for 5 to 6 questions.

Four scores were tabulated for the barriers to health behavior change statements according to factor analysis results: 1) barriers to attending WISEWOMAN, 2) barriers to healthy eating (internal cues), 3) barriers to healthy eating (external cues), and 4) barriers to being physical activity. Perceived barriers to attending WISEWOMAN scored .871 for the Kaiser-Meyer-Olkin Measure of Sampling Adequacy, thus all statements were scored together. Perceived barriers to healthy eating statements scored .678 and were subsequently split into two separate scores- internal and external cues. Two statements that appeared to differ from the group referred to external barriers (i.e. family) whereas the remaining four statements were internal barriers (i.e. do not taste good). Statements of perceived barriers to physical activity scored .725, thus all statements were scored together. All scores were based on a Likert scale (1 “strongly disagree” to 5 “strongly agree”). Scores represented the mean of each subject’s responses; the closer the mean was to ‘5’ the more barriers perceived.

Two self-efficacy scores, a preventive nutrition score and a physical activity score, were tabulated by summing the responses to each set of statements corresponding to either nutrition or physical activity. Possible responses ranged from 1 “very uncertain” to 4 “very

certain”. The highest score possible was 20 points per scale. Higher scores reflected more self-efficacy for that behavior.

Statistical Analysis

All statistical analyses were conducted using Statistical Package for Social Sciences for Windows (SPSS version 14.0; Chicago, IL) and data were analyzed according to level of participation (full, minimum, or no exposure). Statistics conducted included frequencies, descriptive statistics, Pearson’s Correlation, One-way Anova, General Linear Model Univariate Analysis of Variance, and Multinomial Logistical Regression.

Focus Groups

The audio tape of each focus group was transcribed verbatim by an experienced transcriptionist. The transcripts were grouped according to the level of participation of subjects in the focus groups. Using an inductive approach, two researchers and three colleagues looked for patterns, themes, and categories that emerged from the data. Differences in coding were discussed among the researchers and colleagues and an agreement on the major themes was reached. Primary emphasis was placed on themes concerning barriers to health behavior change mentioned by the subjects. Of interest were overall themes among all focus groups and differences in themes seen between the full exposure and minimum/no exposure focus groups.

NVivo 7 (QSR International, Australia, 2006), a text analysis software, was used to organize the data for analysis. The focus group transcripts were imported into the software. The software allows researchers to organizing material into folders of various nodes, which represent people, ideas, and other significant items. Memos, thoughts, and observations, were recorded after each focus group discussion. This material was also imported into NVivo 7 and linked to the corresponding transcript. All transcripts were coded on the computer.

CHAPTER 4. BARRIERS TO PARTICIPATING IN A COMMUNITY-BASED HEALTH PROMOTION PROGRAM

A paper to be submitted to American Journal of Health Behavior

Jody Gatewood¹, Ruth Litchfield¹ PhD RD LD, Sandra Ryan² MS RD LD, Jill Myers
Geadelmann² BS RN, Jane Pendergast² PhD

Abstract

Barriers and self-efficacy were examined relative to attendance at a cardiovascular risk reduction program. Subjects (N=161) represented three levels of program participation – full, minimum, and none. Scales of food security, barriers to attendance and health behavior change, and self-efficacy for nutrition and physical activity were administered via survey. Minimum and no exposure participants perceived significantly more barriers to attendance than the full exposure participants ($p<0.05$); barriers to health behavior change were not significantly different. Self-efficacy for nutrition and physical activity were not significantly different among the groups. Health promotion programs must identify and address perceived barriers of target audiences for program success.

Key Words: health promotion program, barriers, self-efficacy, cardiovascular disease, Health Belief Model

Introduction

Cardiovascular diseases (CVD) result in approximately one female death per minute in the United States, or a half million women each year, which is more than the next six causes of death combined.¹ Although some risk factors for CVD cannot be modified (gender, age, and heredity), several risk factors can be reduced through lifestyle change (tobacco use, high blood cholesterol, high blood pressure, physical inactivity, overweight/obesity, and diabetes mellitus). Under- or un-insured women may be especially vulnerable to cardiovascular disease because they are more likely than insured women to be overweight and less likely to engage in physical activity and be aware of their cholesterol levels.²

In 1995 the Centers for Disease Control and Prevention (CDC) launched WISEWOMAN (**Well Integrated Screening and Evaluation for Women Across the Nation**), an experimental study providing cardiovascular screening and interventions for obesity, sedentary behavior, poor dietary habits, high blood pressure, and high cholesterol to low-income, under- and un-insured women between 40-64 years of age.³ The Iowa WISEWOMAN program began in 2002 as a collaborative endeavor of the Iowa Department of Public Health, Iowa State University Extension (ISUE), and the University of Iowa College of Public Health. When it began, five local programs were designated as intervention sites. The intervention consists of 12 bi-weekly, one and one half hour group sessions led by ISUE educators. The sessions are held in the local program communities and focus on improving nutrition knowledge and behaviors, increasing physical activity, and building self-efficacy for health behavior change.

Approximately 57% of those eligible to participate in the Iowa WISEWOMAN intervention have never attended a session despite positive evaluations of the intervention. WISEWOMAN participants rated the intervention sessions and educators an average of 4.3 on a 5.0 Likert scale with no significant differences among the sites, sessions, or educators.⁴ This trend is indicative of most individuals not adhering to recommended health practices or lifestyle behavior changes to reduce disease risk, which includes attending a health promotion program

The Health Belief Model (HBM) was developed to explain why many fail to take the steps necessary to prevent or detect asymptomatic disease.⁵ This model identifies a number of variables that influence health behavior change including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.⁶ Collectively, these variables determine whether an individual is likely to adopt health behaviors to decrease his/her risk for a certain disease. Of the model's variables, perceived barriers have been identified as the most influential.⁵ Perceived barriers include both personal and environmental factors.

Personal barriers tend to be associated with demographics⁷ such as income⁸ and education. The perception that healthful foods are more expensive and do not taste good are personal barriers that can impede nutrition behavior changes. Lack of experience with physical activity and perception that physical activity will not affect one's health⁹ are personal barriers to physical activity. Perceived lack of time is a personal barrier that can prevent individuals from eating healthfully, being physically active, and attending health promotion programs. Time to purchase and prepare food can be a hindrance to cooking heart-healthy meals.⁷

Environmental barriers to health behavior change include social environments such as school, work, family, and friends.¹⁰ These environments can greatly influence an individual's eating habits and level of physical activity. Previous research has shown that family food preferences are the most common environmental barrier women identify to following a heart-healthy diet. Perceived lack of time for physical activity has been related both to family and work commitments.⁹ Safety concerns, including crime and automobile traffic, are also significant environmental barriers to physical activity.¹⁰ Environmental barriers to participation in health promotion programs include inconvenient program days and times, inaccessible location, and cost.^{11, 12} Ultimately, the greater the number of personal and environmental barriers identified, the less likely an individual is to make health behavior changes or attend health promotion programs.¹³

Health specific self-efficacy, another variable of the HBM, is the optimistic belief that one is capable of adopting a healthy lifestyle¹⁴ or making health behavior change. Self-efficacy is a consistent predictor of short- and long-term successes¹⁵ Individuals who are confident in their ability to make a health behavior change often do so and are successful.¹³

The purpose of this study was to examine two variables of the HBM, barriers and self-efficacy, and participation in a community-based cardiovascular (CV) risk reduction program. The study sought to: 1.) identify the personal and environmental barriers to participating in WISEWOMAN; and, 2.) examine the relationship between self-efficacy and participation.

Methods

Subjects

Subjects for this study were recruited from a random sample of all women eligible to participate (N=1160) in the Iowa WISEWOMAN intervention between March 2003 and January 2006. The random sample included potential subjects from three categories of intervention participation from each of the five intervention sites (15 cells). The categories of intervention participation included: 1) full exposure (attended 6 or more WISEWOMAN sessions), 2) minimum exposure (attended only 1 WISEWOMAN session), and 3) no exposure (eligible to participate but did not attend any sessions). The goal was to have 20 potential subjects in each of the three categories of intervention participation at each of the intervention sites. Not all of the cells had 20 potential subjects, thus the initial sample contained 252 contacts. After the initial sample was contacted, an additional 120 potential subjects were added from the two largest intervention sites to increase participation and response rate. Overall, 372 surveys were sent to eligible subjects to participate in the study. Demographic information was collected on the subjects from the database of all eligible WISEWOMAN participants and included age, monthly income, educational status, family size, weight, and height. All study protocols were approved by CDC and Iowa State University Human Subjects Review Boards.

Survey

A cover letter, informed consent, 4-page survey, and stamped/addressed envelope were sent to all potential subjects. The survey included scales of social support, food insecurity, barriers to health behavior change, and self-efficacy. Six questions on social support were taken from the Third National Health and Nutrition Examination Survey (NHANES III) developed by the National Center for Health Statistics, a division of the CDC.¹⁶ Food security was assessed by including the six core questions used by the United States Department of Agriculture (USDA) to determine food security.¹⁷ Items addressing barriers to health behavior change were adapted from other studies^{7,9} with demographics similar to this study. Self-efficacy was examined using the scales developed by Schwarzer and Renner¹⁴ including self-efficacy for preventive nutrition and physical activity. Three weeks after the survey was sent, postcards were sent to all subjects reminding and encouraging them to complete and return their surveys.

Each section of the survey (social support, food security, barriers to health behavior change, and self-efficacy) was scored independently. Social support items did not have a standardized scoring and were examined as independent items. Food security scores were tabulated to classify participants as food secure, food insecure without hunger, or food insecure with hunger according to the protocol developed by the USDA.¹⁷

Responses to the questions concerning barriers to attending WISEWOMAN sessions, healthy eating, and physical activity were coded on a 5-point Likert scale (1 being “strongly disagree” and 5 being “strongly agree”). Scores were tabulated by calculating an unweighted average of each subject’s responses. The higher the score was, the more perceived barriers to that health behavior. Four scores were tabulated for the barriers to: 1) attending WISEWOMAN, 2) healthy eating (internal), 3) healthy eating (external), and 4) physical activity. Two scores were tabulated for the barriers to healthy eating questions after factor analysis indicated that two questions referring to family (external barriers) differed from the remaining questions reflecting internal barriers (healthy foods do not taste good). The self-efficacy scores, nutrition and physical activity, were scored according to protocol by

Schwarzer and Renner¹⁴, where the highest score possible was 20 points per scale. Higher scores reflected more self-efficacy the behavior.

Data Analysis

All statistical analyses were conducted using Statistical Package for Social Sciences for Windows (SPSS version 14.0; Chicago, IL) by level of participation (full, minimum, or no exposure). Statistics conducted included frequencies, descriptive statistics, Pearson's Correlation, One-way Anova, General Linear Model Univariate Analysis of Variance, and Multinomial Logistical Regression. Univariate analysis was used to explore demographic characteristics and survey scales that might influence attendance. Multinomial logistical regression (Logit) was conducted to develop regression equations to classify participants as full, minimum, or no exposure.

Results

Of the 372 surveys sent, 33 were undeliverable resulting in a viable sample of 339 potential subjects. Of these, 161 (47%) were returned, which represented 14% of all eligible WISEWOMAN participants (N=1160). Subject demographics are presented in Table 1. Fourteen surveys could not be used in statistical analyses with demographic characteristics because of missing data. One-way Anova of the demographics by level of exposure revealed significant differences ($p < 0.05$) in age, income, and Body Mass Index (BMI). The age of full exposure subjects was significantly greater ($p < 0.05$) than no exposure subjects and full exposure subjects had significantly higher ($p < 0.05$) BMI than minimum exposure. Finally, minimum exposure subjects had significantly lower ($p < 0.05$) monthly income than no exposure. The remaining demographics were not statistically different among the groups.

Figure 1 displays food security status by level of exposure. There were no significant differences among the three levels regarding food security. However, 33% of all subjects were food insecure and 15.5% were food insecure with hunger. Mean composite scores for perceived barriers to attending WISEWOMAN, healthy eating (internal and external), and physical activity are presented in Figure 2. There were no significant differences in barriers to healthy eating (external and internal) and physical activity among the three levels of

exposure. However, the minimum and no exposure groups reported significantly more barriers to attending WISEWOMAN than the full exposure group. A Univariate analysis of the individual items within the barriers to attending WISEWOMAN score revealed that “program time and day” may influence attendance. Figure 3 includes the self-efficacy scores among the three groups. There were no significant differences in self-efficacy scores among the groups but all three exposure groups had significantly ($p < 0.01$) higher nutrition self-efficacy scores than physical activity scores.

Multinomial logistical regression was used to develop prediction equations for attendance due to the categorical nature of the dependent variable. The regression model identified ten factors to classify attendance (Table 2). The Chi-Square for the model was 74.53 (20 df; $p < 0.01$) and Nagelkerke’s R-square was .54. Two equations were created to differentiate full and minimum exposure from no exposure; no exposure served as the reference group. These equations were:

$$\text{(Full) } y = -3.668 + .074(X_1)^{1.07} + .000004(X_2)^{1.0} - .032(X_3)^{.97} + .042(X_4)^{1.04} - .017(X_5)^{.98} + .009(X_6)^{1.1} - .343(X_7)^{.71} - .382(X_8)^{.68} - .224(X_9)^{.80} + .978(X_{10})^{2.66}$$

$$\text{(Minimum) } y = -4.964 - .070(X_1)^{.93} - .001(X_2)^{.99} - .796(X_3)^{.45} - .191(X_4)^{.83} + 1.263(X_5)^{3.53} + .294(X_6)^{1.34} + .699(X_7)^{2.01} - .931(X_8)^{.39} - .811(X_9)^{.44} + 1.286(X_{10})^{3.61}$$

Where:

X_1 = age

X_2 = income

X_3 = educational status

X_4 = Body Mass Index

X_5 = internal barriers to healthy eating

X_6 = nutrition self-efficacy

X_7 = program time/day

X_8 = lack of time

X_9 = not feel at risk

X_{10} = not enjoy the session

The same factors were used in both equations; however, the significance of the factors differed between the equations. For both equations, ‘did not enjoy the session’ and perceived ‘lack of time’ were the two most significant factors in both equations. Differences in demographics became a factor as age and educational status appeared as the third factor in the two equations. Differences among the groups regarding perceived barriers were highlighted by the significance of ‘program time and day’. ‘Program time and day’ was the

fourth significant factor in the full exposure equation but it was the ninth factor in the minimum exposure equation.

Discussion

The purpose of this study was to: 1. identify the personal and environmental barriers to participating in WISEWOMAN; and 2. examine the relationship between self-efficacy and participation. This study found that subjects attending WISEWOMAN tend to be older with a higher BMI. Older subjects may have been more likely to attend the intervention related to an increased perceived susceptibility to CVD or having more time due to fewer family or job commitments. In fact, there was a significant negative correlation ($p < 0.05$) between age and family size. The researchers were concerned that subjects may not attend the intervention related to self-consciousness regarding weight status; however, this was not observed. The full exposure group had a significantly higher BMI ($p < 0.05$), which meant the intervention was successful in reaching a higher risk group. These subjects may have been more likely to attend related to an increased perceived susceptibility to CVD or wanting to lose weight through the intervention. The higher BMI is consistent with data from the National Health Interview Survey 2002-04, which showed that overweight was most prevalent among adults 45-64 years of age (67.1%) and 65-74 years of age (66.3%).¹⁸ Furthermore, among women, the prevalence of obesity was highest for those aged 45-64 years (28.4%) and 64-74 years (27.8%).

Interestingly, those with the highest and lowest incomes were less likely to attend the intervention. It is possible that those with the highest income (no exposure group) may not have attended because of working multiple jobs (generating higher income), did not feel they needed the information, or were able to access the information in another manner because of the higher income. Those with the lowest income (minimum exposure) may not have attended due to transportation costs or working multiple jobs related to financial constraints.

Likely related to income, the minimum exposure group had the highest percentage of food insecurity with hunger (24.1%). Within the minimum exposure group, there was a significant ($p = 0.005$) positive correlation between food insecurity and BMI, which has been

reported elsewhere.¹⁹ Thus, as food insecurity increased, so did BMI. Among all participants in the three categories of exposure, almost 33% were food insecure, with 15.5% being food insecure with hunger. This data suggests greater food insecurity in this population than the general population in Iowa, (9.5 % of households food insecure and 3.0 % food insecure with hunger)²⁰ and the United States, (11.9 % of households food insecure and 3.9 % food insecure with hunger).²³ When categorizing the intervention sites as urban (N=2) and rural (N=3) according to Metropolitan Statistical Area guidelines²², subjects living in urban areas were more food insecure than those living in rural areas. According to statistical reports from USDA's Economic Research Service, the prevalence of food insecurity is more common in central cities and rural areas than in suburbs.²³

As hypothesized, significant negative correlations between level of self-efficacy, both nutrition and physical activity, and perceived barriers to healthy eating (internal/external) ($p < 0.05$) and physical activity ($p < 0.01$) were observed. As perceived barriers to healthy eating and physical activity increased, level of nutrition and physical activity self-efficacy decreased. There was also a significant negative correlation between physical activity self-efficacy and family size ($p < 0.01$). As family sized increased, level of physical activity self-efficacy decreased. This significant correlation was not seen between nutrition self-efficacy and family size, thus, it appears that family size has more impact on physical activity self-efficacy than nutrition self-efficacy.

All subjects, regardless of level of exposure had significantly higher self-efficacy scores for nutrition than for physical activity ($p < 0.01$), yet perceived more barriers to healthy eating than physical activity. These findings coincide with data from the National Health Interview Survey which revealed that men (64.0%) are more likely than women (60.2%) to engage in at least some leisure-time physical activity.¹⁸ Performance accomplishments (previous experiences or mastery) are the most influential source of efficacy expectations.¹⁵ It is possible that the subjects' lower self-efficacy scores for physical activity are related to limited experiences with physical activity. The subjects in this study may not have benefited from the dynamic growth in women's sports that occurred in the late 1960's²⁴ and have not

had the opportunity to participate in sports or other forms of physical activity. These subjects may have more experience with food preparation, which has influenced their self-efficacy scores for nutrition and physical activity. A positive correlation between nutrition self-efficacy and age as well as educational status ($p < 0.05$) was observed; however, no correlations were seen with self-efficacy for physical activity. These factors that modulate self-efficacy require further study and may be used to help increase individuals' levels of self-efficacy for health behavior change.

Not surprisingly, the minimum and no exposure groups reported more perceived barriers ($p < 0.05$) to attending WISEWOMAN than the full exposure group. Univariate analysis of the eight components of the WISEWOMAN barriers score suggested that 'program time and day' (minimum and no exposure) influenced intervention attendance and a significant ($p < 0.01$) negative correlation between 'program time and day' and attendance was also observed. In addition, significant negative ($p < 0.01$) correlation was seen between 'do not have time to attend' and attendance. Thus, the more subjects perceived 'program time and day' and 'not having time to attend' as barriers to attending the likelihood of attendance decreased. Indeed, the final regression model included both of these factors as well as 'did not enjoy the session' and 'not feeling at risk'. Previous studies^{11, 12} have also found that inconvenient program time and day and lack of time deter women from participating in health promotion programs. Focus groups conducted as part of this study also confirm lack of time as a significant deterrent.

In the development of the Iowa WISEWOMAN intervention, potential barriers to attendance were identified and addressed, including 'program time and day'. The 'program day and time' at each intervention site was established using data from a pilot study and survey conducted with potential participants. Although, inconvenient 'program time and day' remained a primary barrier to participating in WISEWOMAN, demographic factors (age, BMI, and income) and other perceived barriers identified in the regression model, magnify these barriers and ultimately determine program participation. These findings confirm

previous findings that the more barriers women identify, the less likely they are to attend programs or make health behavior changes.¹³

Self-efficacy for nutrition and educational status did not influence participation independently but when combined with other factors in a regression model were used to classify subjects as full, minimum, and no exposure. A negative correlation ($p < 0.01$) between attendance and nutrition self-efficacy; thus, subjects with greater nutrition self-efficacy were less likely to attend WISEWOMAN. Those with higher levels of nutrition self-efficacy may not feel they need more information to improve nutrition. This research suggests that participant information readily available at the time of program enrollment (demographics and conflict with program time and day) may be useful in predicting program participation.

Research has identified barriers as the most influential variable of predicting behavior change in the HBM.⁵ Thus, health promotion programs must identify and address perceived barriers of the target population for successful program delivery. These survey results, in addition to unpublished focus group data suggest that perceived lack of time is a major barrier to health behavior change and attending health promotion programs. Future research needs to investigate methods to overcome perceived lack of time for attending health promotion programs and making health behavior changes.

Another approach may be to increase *perceived susceptibility* of potential health program participants. Research that identified barriers as the most influential variable of the HBM also found that *perceived susceptibility* is the second most influential variable.⁵ Increasing an individual's perception of susceptibility to a disease will increase the likelihood that he/she will attend a health promotion program and/or make a health behavior change.

Table 1. Subject demographics by level of exposure given as mean \pm SD or %

Demographic Characteristics	Full (N=75)	Minimum (N=29)	None (N=43)
Age	53.4 \pm 5.9 ^a	51.6 \pm 6.6 ^{ab}	50.2 \pm 6.4 ^b
Height	63.6 \pm 2.5	64.3 \pm 3.1	64.4 \pm 2.8
Weight	188.5 \pm 43.0	169.8 \pm 30.1	179.0 \pm 49.5
BMI	32.7 \pm 7.3 ^a	28.8 \pm 5.2 ^b	30.2 \pm 7.9 ^{ab}
Family unit size	2.0 \pm 1.1	1.9 \pm 1.2	2.3 \pm 1.6
Monthly income	1292.0 \pm 751.4 ^{ab}	916.3 \pm 857.5 ^a	1582.1 \pm 1101.2 ^b
Educational status			
Less than 9 th grade	0.0%	6.9%	2.3%
Some high school	6.7%	6.9%	4.7%
High school graduate or equivalent	42.7%	41.1%	37.2%
Some college	29.3%	34.5%	34.9%
Associate degree	5.3%	3.4%	7.0%
Bachelor's degree	12.0%	6.9%	11.6%
Graduate degree	4.0%	0.0%	2.3%

^{ab}Variables with different letters indicate significant difference at a p-value of <0.05

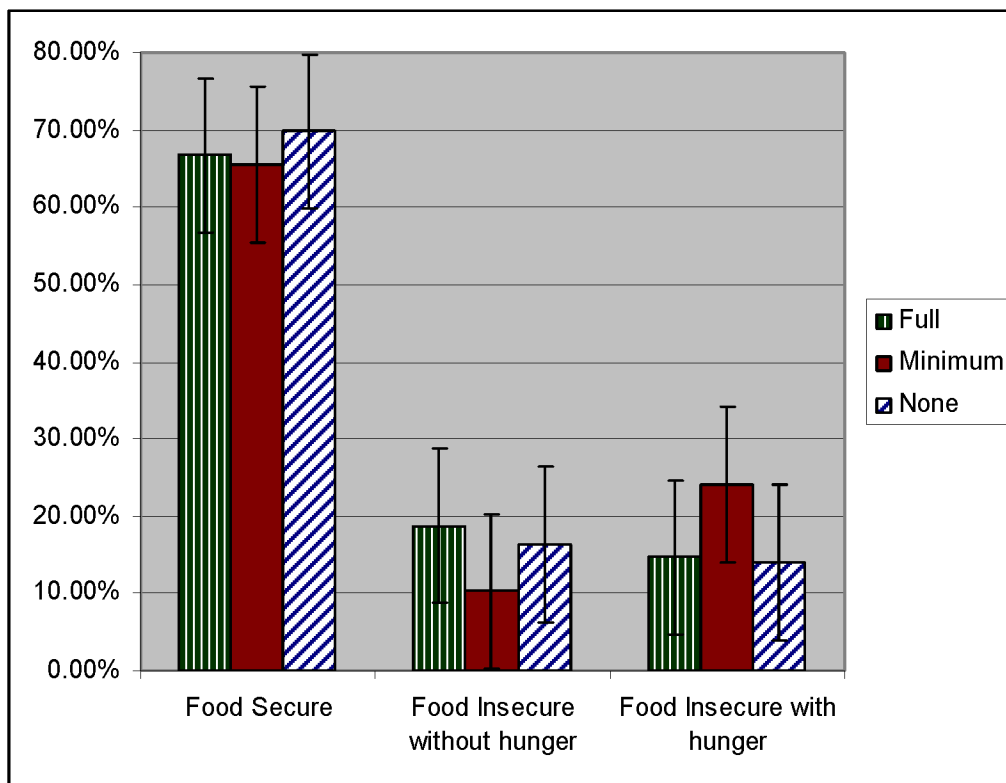


Figure 1. Percent of subjects at each level of food security among three levels of exposure

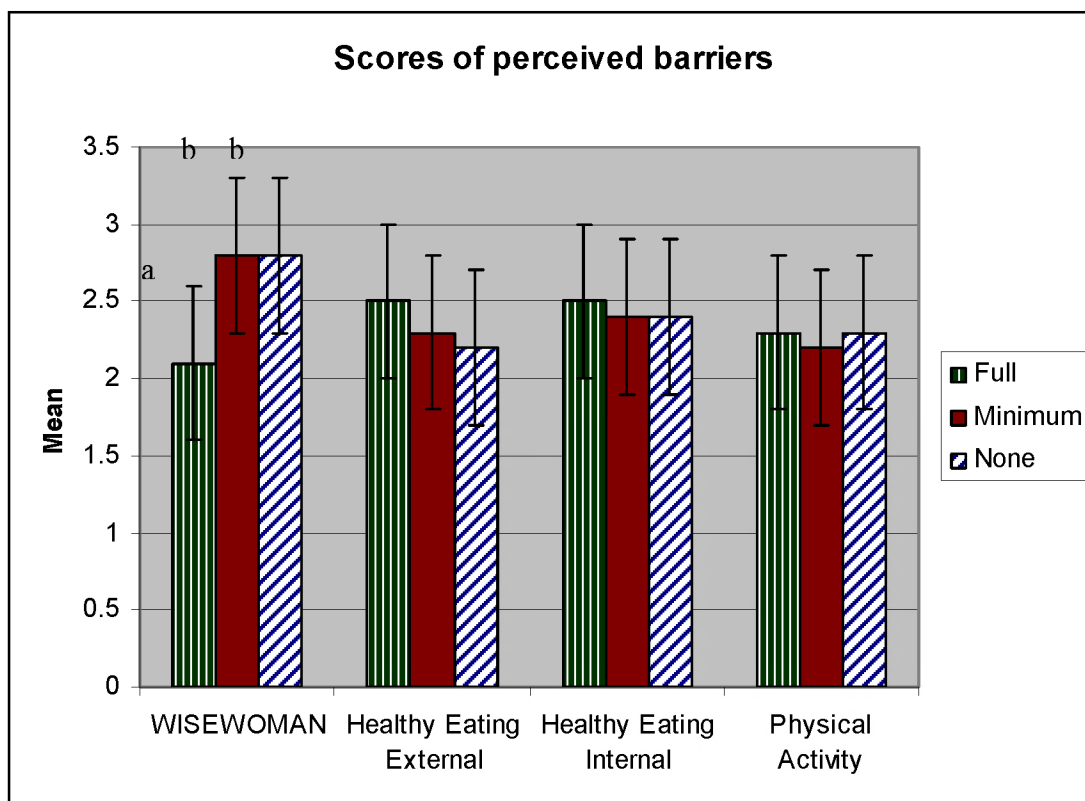


Figure 2. Mean scores of perceived barriers among three levels of exposure
^{ab}Variables with different letters indicate significant difference at a p-value of <0.05

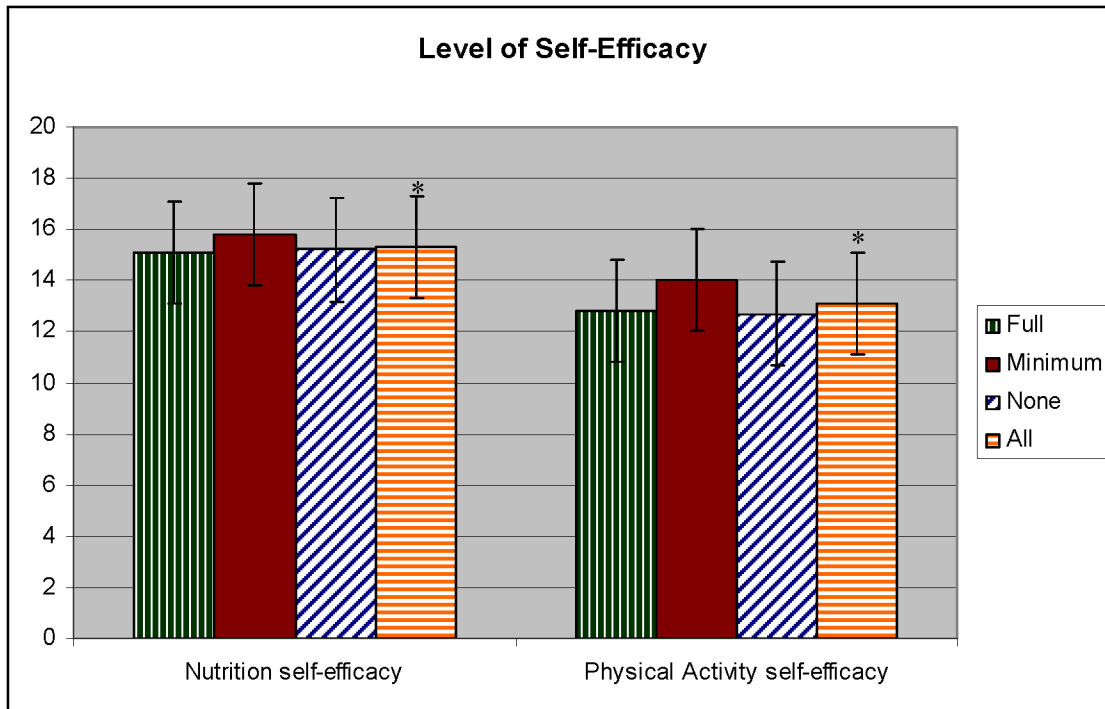


Figure 3. Mean self-efficacy scores among three levels of exposure

*Significant differences between nutrition and physical activity self-efficacy score at a p-value of <0.01

Table 2. Multinomial Logistical Regression

Attendance ^a		B	Std. Error	Wald	df	Sig.	Exp(B)	
full	Intercept	-3.668	3.126	1.377	1	.241		
	age	.074	.042	3.143	1	.076	1.076	
	income	.000	.000	.000	1	.988	1.000	
	education status	-.032	.210	.023	1	.878	.968	
	BMI	.042	.039	1.145	1	.285	1.043	
	internal barriers	-.017	.386	.002	1	.965	.983	
	Nutrition self-efficacy	.009	.083	.013	1	.910	1.009	
	Program time/day	-.343	.213	2.598	1	.107	.710	
	No time	-.382	.203	3.562	1	.059	.682	
	Not feel at risk	-.224	.244	.840	1	.359	.799	
	Not enjoy session	.978	.338	8.401	1	.004	2.660	
	minimum	Intercept	4.946	4.931	1.006	1	.316	
		age	-.070	.069	1.035	1	.309	.933
income		-.001	.000	3.845	1	.050	.999	
education status		-.796	.334	5.671	1	.017	.451	
BMI		-.191	.081	5.611	1	.018	.826	
internal barriers		1.263	.663	3.623	1	.057	3.535	
Nutrition self-efficacy		.294	.124	5.647	1	.017	1.341	
Program time/day		.699	.331	4.475	1	.034	2.012	
No time		-.931	.349	7.103	1	.008	.394	
Not feel at risk		-.811	.419	3.744	1	.053	.444	
Not enjoy session		1.286	.439	8.571	1	.003	3.619	

a. The reference category is: none.

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CHAPTER 5. FOCUS GROUPS TO EXAMINE BARRIERS TO HEALTH BEHAVIOR
CHANGE AND HEALTH PROMOTION PROGRAMS

A paper to be submitted to Journal of Nutrition Education and Behavior

Jody Gatewood¹, Ruth Litchfield¹ PhD RD LD, Sandra Ryan² MS RD LD, Jill Myers
Geadelmann² BS RN, Jane Pendergast² PhD

Abstract

Objective: To identify barriers to: 1.) making health behavior changes; and 2.) attending a health promotion program.

Design: Focus groups representing two levels of program participation

Setting: Five Iowa communities offering a health promotion program.

Participants: A random sample (N=339) of women eligible to participate (N=1160) in the Iowa WISEWOMAN cohort between March 2003 and January 2006. Forty-seven percent (N=161) of the sample responded to a survey; 68 (42%) expressed interest in a focus group. Nine focus groups with 47 women were conducted.

Intervention(s): Twelve bi-weekly sessions, held in local communities, focusing on improving nutrition knowledge and behaviors, increasing physical activity, and building self-efficacy for behavior change to reduce cardiovascular disease risk.

Phenomenon of Interest: Barriers to health behavior change and WISEWOMAN attendance.

Analysis: Audiotapes of focus groups were transcribed and imported into NVivo 7. Using an inductive approach patterns, themes, and categories were identified.

Results: Barriers to physical activity identified were physical limitations and time. Cost, family, and time were identified as barriers to healthy eating. Barriers to attending WISEWOMAN identified were program time, transportation, and family caregiving.

Conclusions and Implications: Time was the major theme identified as a barrier to health behavior changes and WISEWOMAN attendance. Health promotion programs must identify strategies to overcome this perceived barrier.

Introduction

Cardiovascular diseases (CVD) result in approximately one female death per minute in the United States, or a half million women each year (1). Although some risk factors for CVD cannot be modified (gender, age, and heredity), several risk factors can be reduced through lifestyle change (tobacco use, high blood cholesterol, high blood pressure, physical inactivity, obesity and overweight, and diabetes mellitus). Under- or un-insured women may be especially vulnerable to cardiovascular disease because they are more likely than insured women to be overweight and less likely to engage in physical activity and be aware of their cholesterol levels (2). The WISEWOMAN (**W**ell **I**ntegrated **S**creening and **E**valuation for **W**omen **A**cross the **N**ation) program is an experimental study of the Centers for Disease Control and Prevention on ways to reduce CVD risk in under- and un-insured women between 40-64 years of age. The *Iowa Care for Yourself*/WISEWOMAN program is a collaborative endeavor of the Iowa Department of Public Health, the University of Iowa College of Public Health, and the Iowa State University Extension (ISUE); it consists of 12 bi-weekly sessions which focus on improving nutrition knowledge and behaviors, increasing physical activity, and building self-efficacy for health behavior change to reduce cardiovascular disease risk.

Unfortunately, most individuals do not adhere to recommended health practices or make lifestyle behavior changes necessary to reduce disease risk. Qualitative research seeks to understand and explain beliefs and behaviors of individuals and is used within public health and nutrition education to examine the complexity of human behavior and the interaction between disease and society (3). In addition, focus group interviews are becoming more popular in health research for exploring why individuals behave in the manner they do (4). The aim of a focus group interview is to gain an understanding of the participants' experiences, feelings, and attitudes, and how these influence their health behavior. Because there are many emotions tied to food and other health behaviors, the focus group interview is ideal for exploring how lived experiences influence dietary habits and other lifestyle behaviors. In addition, social scientists often use focus groups to evaluate programs (5).

Public health researchers, and individuals interested in “social marketing,” or encouraging desired behaviors also use focus groups.

The Health Belief Model (HBM) was created to explain why many fail to take the steps necessary to prevent or detect asymptomatic disease (6). The HBM identifies a number of variables that influence behavior change including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (7). Collectively, these variables determine whether an individual will accept health recommendations to decrease his/her risk for a certain disease. Perceived barriers, including personal and environmental factors, have been identified as the most influential variable of the model (6).

Personal barriers tend to be associated with demographics (8) such as income (9) and education. The perception that healthful foods are more expensive and do not taste good are personal barriers that can impede nutrition behavior changes. Lack of past experience with physical activity and belief that it will not affect one’s health (10) are personal barriers to physical activity. Time to purchase and prepare food can be a hindrance to cooking heart-healthy meals. Perceived lack of time for physical activity can be related both to family and work commitments (10). Thus, perceived lack of time is a personal barrier that can prevent individuals from eating healthy (6), being physically active (8), and attending health promotion programs(10).

Environmental barriers to health behavior change include social environments such as school, work, family, and friends (11). These environments can greatly influence an individual’s healthy eating habits and level of physical activity. Previous research has shown that family food preferences are the most common environmental barrier women describe to following a heart-healthy diet (8). Safety concerns, including crime and automobile traffic, are significant environmental barriers to physical activity (11). Environmental barriers that prevent participation in health promotion programs include inconvenient program days and times, inaccessible location, and cost (12, 13). Ultimately, the greater the number of personal and environmental barriers identified, the less likely an individual is to make health behavior

changes or attend health promotion programs (14). In the Iowa *Care for Yourself*/WISEWOMAN program, approximately 57% of eligible women never attended a session. Thus, the objectives of this study were to use focus groups to examine the barriers women perceive to 1) making health behavior changes, particularly healthy eating and physical activity; and 2) attending WISEWOMAN intervention sessions.

Methods

Participants

Participants (N=47) included women who participated or had the opportunity to participate in the Iowa *Care for Yourself*/WISEWOMAN. Names, addresses, and phone numbers of potential participants were obtained from the Center for Public Health Statistics at the University of Iowa, where all program data is stored. The participants were part of a random sample of women who completed and returned a mailed survey about their perceived barriers to health behavior change and attending the WISEWOMAN intervention program. The survey informed consent asked participants to indicate their preferred level of participation in the study, where they could choose to complete the survey only or complete the survey and participate in a focus group discussion. To encourage participants to attend a focus group discussion, they were informed that all focus group participants would receive a \$35 gift card to a local grocery store at the time of the focus group. Participants who agreed to participate in a focus group discussion were grouped according to intervention site and level of participation (full, minimum, and no exposure). Full exposure was defined as having attended six or more intervention sessions while minimum exposure was defined as having attended only one session. Participants in the no exposure category were those eligible to participate in the intervention but choosing not to attend any sessions.

Study Protocol

A total of nine focus group discussions were conducted in this study. Six focus groups were conducted with subjects categorized as full exposure; one at each intervention site with an additional focus group at the largest intervention site. A total of 33 participants attended the focus group discussion, with a range of two to nine women in each group.

A limited number of participants in the minimum/no exposure groups indicated interest in participating in the focus group discussion. To increase the attendance at these focus groups, minimum and no exposure groups were combined. Three focus groups were conducted with participants in the minimum/no exposure category at three intervention sites. A total of 14 participants attended these focus group discussions, with a range of two to eight women in each group.

The day and time for the focus group discussion were based on participants' preferences designated on the informed consent. Participants were contacted by phone to participate in the focus group discussion and a letter providing the date, time, and location and map was sent to participants. Two days prior to the focus group discussion, participants were again contacted by phone to remind them of the meeting and to answer any questions.

Methods recommended by Krueger (15) and Esterberg (5) were implemented for the focus group discussions. Participants for the focus group were purposively recruited from WISEWOMAN, thus represented a homogeneous sample by participation in the same educational program, age, gender, and social class, which increases comfort and sharing in the discussion. Focus groups were kept small enough to allow everyone an opportunity to share their opinion, yet large enough to obtain a variety of perceptions. In addition, multiple focus groups were conducted so that patterns could be detected across groups.

Focus group interviews were held in conference rooms at ISUE offices in the intervention communities. Focus groups were conducted in the morning, afternoon, or evening according to participants' preferred availability. As participants arrived for the focus group, the facilitator asked them to read and sign a second informed consent. After signing the informed consent, participants were provided the \$35 gift card to a local grocery store.

During the focus group discussions, those present in the room included the participants, one researcher serving as the facilitator, and a member from the IDPH associated with WISEWOMAN serving as an observer taking notes. The same researcher and observer attended all nine focus groups. The rooms where focus group discussions were conducted had chairs placed in a circle where the facilitator and observer sat among the

participants and an audio cassette player in the center. The focus group discussions lasted 30 to 90 minutes in length and were audio recorded. The discussions included: a) welcome and introductions, b) explanation of the procedures, c) guided discussion, and d) debriefing between the facilitator and observer.

Guided discussion questions were adapted from previous focus group research conducted on cardiovascular health and barriers to healthful eating in a similar population (8, 16), in addition to questions developed by the research team based on participant evaluations of the WISEWOMAN intervention. Questions probed participants on desired health behavior changes of the intervention and variables (in italics) of the HBM including: (a) knowledge of physical activity and good nutrition; (b) *barriers* to physical activity and healthy eating; (c) *perceived benefits* of behavior change for CVD prevention; (d) *self-efficacy* for following a heart-healthy diet; (e) *perceived susceptibility and severity* of CVD; and (f) *perceived barriers* to attending WISEWOMAN sessions. Guided discussion questions appear in Table 1. All study protocols were approved by the CDC and Iowa State University Human Subjects Review Boards.

Data Analysis

The audio tape of each focus group was transcribed verbatim by an experienced transcriptionist. Transcripts were grouped according to the level of participation of participants in the focus groups. Using an inductive approach, two researchers and three colleagues identified patterns, themes, and categories that emerged from the data. Differences in coding were discussed among the researchers and colleagues until agreement on major themes was achieved. Primary emphasis was placed on themes related to barriers to health behavior change with particular attention to the differences in themes between the full exposure and minimum/no exposure focus groups.

NVivo 7 (QSR International, Australia, 2006), a text analysis software, was used to organize the data for analysis. The focus group transcripts, memos, thoughts, and observations, from each focus group were imported into NVivo 7 and linked to the corresponding transcript. All transcripts were coded on the computer.

Results

Demographic data of the participants are presented in Table 2. The demographics of the participants are grouped according to level of intervention participation represented in the focus group discussions (full and minimum/none) and no significant differences in demographics were seen. Following is a discussion of the major themes which emerged in the focus group discussions.

Cardiovascular Disease Prevention

Health Behaviors. Although knowledge cannot be determined from focus group discussions, participants from both groups appeared knowledgeable on what was considered physically active and good nutrition. Participants seemed to understand that physical activity is any body movement produced by skeletal muscles that result in an expenditure of energy.¹⁸ Walking was most often mentioned as a form of physical activity. The minimum/no participation focus groups did not mention any professionally recognized recommendations for exercise, such as frequency (at least 3 days of the week) or duration (at least 30 minutes), whereas the full participation groups did identify these recommendations.

-I think doing any activity that raises your heartbeat and stretches your muscles is being physically active. (minimum/no)

-Walking, exercise, and eating properly every day, but walking and exercise probably three times a week. (full)

Participants in both groups considered good nutrition to include eating fruits, vegetables, and whole grains, and practicing portion control; however, when asked about eating a low-fat, high fiber eating plan, one minimum/no focus group was unsure what high fiber meant or what foods were high in fiber. In addition, when asked in what ways they felt they did a good job of eating healthy, both groups mentioned reading food labels.

-And I do check the labels. Bread, I buy whole wheat. I always try to buy whole wheat and make sure the label says it is whole wheat and check the fiber content. But basically, yeah, more fruits and vegetables and whole wheat, whole grains.

-I started reading the labels more to see what's in it, because I thought I was eating healthy, and my health started deteriorating, and it's like I don't know what I'm doing wrong, and then I found out I was not eating that healthy because I wasn't reading the labels.

Perceived Susceptibility. All participants also appeared knowledgeable about behaviors increasing the risk of heart disease; sedentary lifestyle was most often mentioned along with smoking, stress, diet, and genetics. Even though participants were aware of modifiable risk factors such as sedentary lifestyle and diet, most perceived their susceptibility for heart disease related primarily to family history. Participants also frequently mentioned that they would be shocked and surprised if they found out they had heart disease.

Barriers to Physical Activity

Physical limitations. Participants in both groups stated that medical conditions such as arthritis, diabetes, muscle disease, and joint problems made it difficult to be physically active. They reported physical pain caused by medical problems as a barrier to being more physically active.

-I have a lot of leg problems, so some days it's hard to move around, actually even walk.

-I could be more active if I could get away from pain sometimes.

-I have a bad hip, so I don't get out and walk. That's what hurts me worst is that.

-Well, my arches are fallen right now, so I've got -- I've been to the doctor and had a cortisone shot, and I've got arch supports in. If my feet didn't hurt as much, maybe I could get to the hospital [to swim] on my days off again.

Time. Not having enough time to engage in physical activity was also a recurrent barrier to physical activity among the participants in both groups. Participants found it difficult to fit physical activity into their already busy schedules.

-But for some reason when my schedule gets really hectic or burdened down, one of the first things that I eliminate -- I hate to say it -- is I don't have time to go down over the noon hour to the fitness center, you know.

- I think scheduling sometimes just gets just -- busy life, you know. That sometimes impedes my workouts a little.

Barriers to Good Nutrition

Cost. All participants felt that the cost of food made it difficult to eat healthy. They mentioned that foods considered healthy, such as fresh fruits and vegetables, whole grains, and low-fat or sugar-free foods, were more expensive than other foods. Thus, related to budget constraints, they buy what they feel they can afford. Some participants mentioned purchasing foods that are on sale to keep the cost down and serving foods that are on sale at the grocery store at mealtimes.

-That's the big thing. The fresh is so much more expensive than the canned and the frozen or whatever. It really is.

-I think the thing about being on any kind of a diet or eating routine or whatever you want to call it is that when you start to eat the good foods, you're putting out twice the money, you know.

- If you look at prices of things, there isn't very many things that are under a buck number one. And it's like you take out the fat and the cholesterol, and the price goes up.

-A lot of times I'll just go through the produce aisle and get just things that are on sale and then, you know, make whatever out of that to kind of cut back on the grocery list and our grocery bill.

-... see what the grocery stores have on sale, and kind of plan my meals around some of the stuff that's on sale...

Family. Participants with families, in both groups, often mentioned family preferences (husbands and children) for less healthy foods as a barrier to good nutrition. Yet, participants without families also mentioned that it was hard to eat healthy when they were not cooking for others or concerned about others' health. These participants mentioned it was easy to eat convenience foods when it was just themselves and not others eating the meal. Participants from both groups mentioned getting frustrated and discouraged when they tried to eat healthy; they felt like they had to fix two meals because their family wouldn't eat what they were eating.

-Sometimes it's hard to improve your eating habits when you have, like, a husband or kids at home that only eat certain things or a husband who thinks that only good food is fried.

- See, I have a problem with vegetables at home, because my husband, he's just cottage cheese and corn...

- Well, I have to cook for myself. It's just me. So it's really hard for me to cook healthy. So then I go get these TV dinners and stuff. And then I find out that they're not the answer either. So I go home and still cook something because there's the fats and the sodium and stuff in it, so it's just that I eat leftovers for a whole week then.

- Then there's times when sometimes I get perturbed about it where I'm making one meal for them and then I'm making something for myself.

-And sometimes you have to fix two separate things because nobody else in the house is going to eat it.

Time. Lack of time to purchase and prepare foods was mentioned by all of the participants as a barrier to good nutrition. Even though the participants felt that reading food labels was a positive behavior, they felt that it took more time to grocery shop. Preparing healthier foods was also seen as time consuming. Lack of time related to work, including working nights, was frequently mentioned by participants when discussing barriers to healthy eating.

- Now I'm catching myself reading the labels, you know.

- It's a bad habit, but it's also a good habit. It takes you twice as long in the grocery store because you're reading all the labels. It's a very good habit to get into.

- Sometimes it takes a little longer to fix that steamed vegetable versus a can of vegetables with salt and all that sodium in there.

-You know, fixing it on Sunday so you'll have it for the rest of the week that's a lot of work. I mean I work six days a week, so there's a lot going on Sunday to squeeze in, so I don't really have time.

-... the work schedule for the days when I have to sleep during the day and then when I have the days off that are my normal days, you just seem to go from one extreme to the other on eating because you go from where you almost don't have any breakfast because you're sleeping... So mine really is my schedule is the big problem for my eating.

Barriers to Attending WISEWOMAN

Transportation. Various barriers related to transportation were mentioned by participants in both groups, particularly the cost of gas. Not having a car, or reliable car, was also a barrier for some. Even where public transportation was available, the availability did not always coordinate with the intervention session times. Finally, the driving distance to and from the session location was problematic for some participants. Some traveled over an hour to the sessions and this was perceived as a barrier to attending.

-The biggest problem for me was the time they met because I didn't have a car, and to catch the bus to get back home again, it was borderline. If it went over at all, I would have been stuck.

-Mostly it would be schedules, transportation. I didn't always have a car, so...

Family caregiving. Several participants from the minimum/no exposure groups mentioned family caregiving responsibilities as preventing them from attending WISEWOMAN. Caring for ill spouses or grandchildren was frequently mentioned, and having others provide care was not always considered feasible.

-I wanted to come more, but my husband became ill, and so I spent quite a bit of time at the hospital with him and, you know, at home with him because I can't leave him, you know, for a certain length of time.

-Mine was sometimes, like now, I have to get a babysitter. I keep my grandson most of the time. I've been having him for some months now because his mom is in Chicago working. So I have to end up getting a babysitter.

Program time. Time conflicts were most often mentioned by participants in both groups as a barrier to attending the WISEWOMAN intervention sessions with work conflicts being most prevalent. Some participants who attended some WISEWOMAN sessions stopped coming because of getting or changing jobs that conflicted with the session time. Other participants worked two jobs that prevented them from attending.

- And then halfway through I got employed full-time and so couldn't go in the afternoons, and the evenings were on the night that I did this other job.

- I live an hour away, and I work two jobs, so it isn't always... So it's just not feasible to go to different things.

Discussion

Overall, all participants appeared knowledgeable on what constituted good nutrition and physical activity. They were also knowledgeable about health behaviors related to heart disease, including a sedentary lifestyle and diet. Although aware of these modifiable risk factors for heart disease (sedentary lifestyle and diet,) most participants' perceived susceptibility to heart disease risk was related primarily to family history.

Similar to others (8, 10) we found that lack of time was a barrier to physical activity. Even though participants identified that physical activity included daily activities such as housework and taking the stairs, their perceived lack of time for physical activity was related to structured activities such as 'going to the gym' or getting in a 'workout'. Participants of focus group discussions in urban areas mentioned having a membership to a fitness facility making it easier to be physically active, but financially this was not always considered feasible. Participants in focus group discussions in rural areas mentioned having an indoor facility (school, mall etc.) to walk in making it easier to be physically active but this was not typically an option in these communities.

Physical limitations were also a common barrier to physical activity among the participants. This limitation had not been explored as a barrier in the survey conducted as part of this research, thus the focus group discussions identified new knowledge to the research. As one participant mentioned 'when it's age, it's things like arthritis'. The age of the participants in this study likely contributed to this perceived barrier, which was consistent with results from the 1999-2002 National Health and Nutrition Examination Survey (NHANES) (17). Slightly more than 40 percent of older adults (≥ 60 years of age) reported some level of difficulty being on their feet for two hours, and over one-half (51%) of them reported some level of difficulty stooping, crouching or kneeling. Body Mass Index (BMI) also influences functional limitations according to the NHANES data. Older adults in the highest BMI category (>32.4) reported more difficulties performing functional activities, such as performing household chores and lifting or carrying something as heavy as 10

pounds, compared to those with mid-range BMI (22.3-32.4). Therefore, in this study where the mean BMI and age was 33.4 and 53.0 for full exposure and 32.5 and 51.1 for minimum/no exposure focus groups, respectively, the reports of limited physical activity are not unusual.

Cost and family were the most common barriers to healthy eating reported. Participants perceived 'healthy' foods to be more expensive than 'regular' foods. In two separate focus groups, participants mentioned that 'they take out all the good stuff and then raise the price'. Participants also felt that fresh fruits and vegetables and whole grain breads were more costly. This confirms findings of previous research where women with limited incomes hesitated to adopt a heart-healthy diet because of the anticipated cost of the food (8). On the other hand, participants also mentioned that controlling portion sizes, one behavior associated with healthy eating, decreased their food cost.

Family was another barrier to healthy eating. Participants with families perceived their husband's and children's food preferences as a barrier to healthy, which is consistent with other studies (8). Participants felt that if their families were more receptive to eating heart healthy foods it would be easier for them to do so. Yet, participants who lived alone felt that not having anyone to cook for also made it difficult for them to eat healthy. Thus, family size in general affected perceived barriers to healthy eating. Participants also mentioned difficulty changing food behaviors acquired in childhood. For example, having dessert after most meals as a child was common for some participants and they felt this was why they still desired something sweet after their meals.

Barriers to attending WISEWOMAN included lack of time, transportation, and family care. Lack of time was most often related to work; the participants had limited financial resources and working two jobs was not uncommon. Finances were also related to transportation issues including the cost of gas and not having a car. Family care that presented a barrier for participants from the minimum/no exposure group included caring for ill spouses or grandchildren.

The results of this study are limited in that regional and cultural differences, as well as participation in WISEWOMAN, may influence perceived barriers to intervention attendance and health behavior change. In addition, the sample was small and limited to participants eligible to participate in the Iowa *Care for Yourself*/WISEWOMAN cohort.

Yet, the results of this study can be used to help reach this target audience with other health promotion programming efforts. Barriers to attendance identified by this study that should be considered by other programs include program day and time, perceived lack of time, transportation, and family care giving responsibilities. When developing the Iowa *Care for Yourself*/WISEWOMAN intervention, potential barriers to attendance were identified and addressed, including program day and time and transportation. The program day and time at each intervention site was determined using data from a pilot study and survey conducted with potential participants. To minimize cost of transportation as a barrier to attending, participants who attend the WISEWOMAN sessions were provided \$35 to help with the cost of gas. Yet, despite identifying and addressing these barriers, only 43% of eligible women have participated.

These focus group results also found that perceived lack of time is a major barrier to both health behavior change and attending health promotion programs. Participants mentioned lack of time as a barrier to physical activity, healthy eating, and attending WISEWOMAN sessions. Future research needs to investigate methods to help individuals overcome perceived lack of time for making health behavior changes and attending health promotion programs.

The findings of these focus group discussions confirm previous findings that the more barriers women identify, the less likely they are to attend programs or make health behavior changes (14). Health promotion programs need to help reduce the number of barriers perceived by participants, thus increasing the likelihood of program attendance and behavior change. Specifically, barriers to health behavior change that should be considered when working with this target population include physical limitations, family food preferences, cost of food, and perceived lack of time.

In the future, health promotion programs may want to consider increasing perceived susceptibility to disease so that individuals will make more time for health behavior changes to reduce their risk of disease. Perceived susceptibility has been identified as the second most influential variable of the HBM (6). Thus, if an individual has increased perception of susceptibility to a disease, he/she is more likely to make a behavior change to reduce his/her risk. Related to perceived risk, this research found that the primary source of perceived susceptibility to CVD was family history. Therefore, women need to be made more aware of the modifiable risk factors for CVD (sedentary lifestyle, poor dietary habits, overweight/obesity, hypertension, high cholesterol, and tobacco use) and their effectiveness of reducing their risk for CVD.

Table 1. Discussion Guide Questions

1. Please describe to me what you consider to be physically active.
2. In what ways do you feel you do a good job of being physically active? In what ways do you feel you could improve your level of physical activity?
3. Thinking about the amount of your daily physical activity, what, if anything, makes it difficult for you to be physically active?
4. If you would like to be more physically active, what would make it easier for you to do so?
5. Please describe to me what you consider to be good nutrition.
6. In what ways do you feel you do a good job of eating healthfully? In what ways do you feel you could improve your eating habits?
7. What, if anything, makes it difficult for you to eat healthfully? **(16)**
8. Think about the foods you and your family eat at mealtimes. How do you decide what foods to serve?**(16)**
9. To what extent do you feel you could follow a low-fat, high-fiber eating plan? **(8)**
10. What health behaviors increase the risk of heart disease?**(8)**
11. To what extent are you concerned about getting heart disease?**(8)**
12. Describe to me how you think you would feel if you found out that you had heart disease?**(8)**
13. Is there anything else you would like to share about your physical activity and eating behaviors?
14. Of the WISEWOMAN sessions you attended, what did you like most about them? What keeps you coming to the sessions? (for full and minimal exposure participants)
15. When deciding if you will attend WISEWOMAN sessions, what keeps you from attending? (full and minimal exposure)
16. When told you were eligible to be a participant of WISEWOMAN, what kept you from participating? (no exposure)

Table 2. Participant demographics by level of participation given as mean \pm SD or %

Demographic Characteristics	Full (N=33)	Minimum/None (N=14)
Age	53.0 \pm 5.6	51.1 \pm 6.1
Height	63.7 \pm 2.0	63.5 \pm 2.8
Weight	192.3 \pm 41.8	187.1 \pm 41.8
BMI	33.4 \pm 7.5	32.5 \pm 6.7
Family unit size	1.9 \pm 1.1	1.8 \pm 1.0
Monthly income	11360.0 \pm 638.4	1051.3 \pm 985.6
Educational status		
Less than 9 th grade	0.0%	0.0%
Some high school	0.0%	0.0%
High school graduate or equivalent	37.5%	57.1%
Some college	37.5%	42.9%
Associate degree	12.5%	0.0%
Bachelor's degree	9.5%	0.0%
Graduate degree	3.1%	0.0%

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CHAPTER 6. GENERAL CONCLUSION

Inconvenient program time and day was identified by quantitative analysis as a primary barrier to participating in a cardiovascular risk reduction program. Age, BMI, and income were also related to participation and may in fact present barriers in and of themselves. Women who were older and had a higher BMI were more likely to participate, while those with the highest and lowest incomes were less likely to participate.

Interestingly, self-efficacy scores and educational status alone were not correlated with attendance; however, both were included as a factor in the final regression model to categorize level of attendance. Thus, self-efficacy and education alone cannot be used to categorize attendance, but in combination with other factors exert a positive influence on attendance.

Qualitative analysis also identified perceived lack of time as a barrier to attending WISEWOMAN as well as a barrier to making health behavior changes. Transportation and family responsibilities were also found to be barriers to attending WISEWOMAN.

Physical limitations were a common barrier to physical activity among focus group participants. Since age and BMI influence functional limitations (Ervin, 2006), in this study where the mean BMI and age was 33.4 and 53.0 for full exposure and 32.5 and 51.1 for the minimum/no exposure groups, respectively, the reports of limited physical activity are not unusual.

Cost and family were the most common barriers to healthy eating reported in the focus groups, which is consistent with previous research (Krummel et al., 2002). Participants perceived 'healthy' foods to be more expensive than 'regular' food. Participants with families perceived their husbands' and children's food preferences as a barrier to healthy eating. Yet, participants who lived alone felt that not having anyone to cook for also made it difficult for them to eat healthy. Thus, family size in general affected perceived barriers to healthy eating.

Ultimately, the greater the number of personal and environmental barriers identified, the less likely an individual is to make health behavior changes or attend programs

(Humphries and Krummel, 1999). Health promotion programs must identify perceived barriers and address those barriers of the target population for successful program delivery.

Future Considerations

- Identify factors that influence level of self-efficacy and explore ways to use those factors to increase level of self-efficacy.
- Investigate methods to help women overcome perceived lack of time for making health behavior changes.

APPENDIX A. COVER LETTER

March 5, 2006

Jane Doe
123 ABC Avenue
Anytown, IA 12345

Dear Ms. Doe:

For three years, the Iowa *Care for Yourself*/WISEWOMAN Cardiovascular Study has helped women learn to reduce heart disease risk. **Now we'd like you to share your thoughts about how we've done. You are receiving this letter because you have attended one or more WISEWOMAN group sessions, or because you chose not to attend.**

Changing health habits is not easy. Sometimes life's pressures make changing harder. We would like you to tell us what might keep you from changing how you eat and exercise.

Please sign the enclosed Informed Consent, complete the survey, and return both to us in the enclosed envelope.

WISEWOMAN will hold a discussion group in your county to help you share your thoughts about making healthy changes. You can choose to share your thoughts by signing the enclosed Informed Consent, and checking "Survey and Discussion Group" at the bottom of the form. We will ask a group of six to eight women to meet for about 90 minutes. Each woman at the meeting will receive a \$35 gift card after she signs another consent form.

We will call women chosen for the discussion group in seven to ten days with the time and meeting place. If we do not call, we have found enough women for the group.

If you do not want to join us to share your thoughts, please check "Survey Only" at the bottom of the Informed Consent. **Please return the enclosed consent form, designating your wishes to attend the discussion group, and survey form by March 10, 2006.**

If you have questions, please call Jody Garrett at (515) 294-6507, or e-mail her at jodyg@iastate.edu. Thank you for taking the time to help us make WISEWOMAN a better program.

Sincerely,

Jody Garrett

APPENDIX B. SURVEY INFORMED CONSENT

ISU IKB #1 02-341
 Approved Date: February 10, 2006
 Expiration Date: February 20, 2007
 Initial by ge

Title: WISEWOMAN

Researchers: Ruth Litchfield, PhD, RD, LD
 Extension Specialist/Assistant Professor
 Iowa State University

Jody Garrett
 Graduate Student
 Iowa State University

Why do women attend or not attend health programs? How do you feel about changing health habits? Please share your thoughts about these issues.

We chose you to fill out the enclosed survey because you have been part of the Iowa *Care for your-self*/WISEWOMAN Cardiovascular Study, conducted by the Iowa Department of Public Health (IDPH), the University of Iowa College of Public Health (UICPH), Iowa State University Extension (ISUE), and the Centers for Disease Control and Prevention (CDC). This research is part of the WISEWOMAN study.

Please read this form and call Ruth Litchfield at (515) 294-9484 or Jody Garrett at (515) 294-6507 with any questions before you consent to be part of this project.

What will you be asked to do?

This project includes the enclosed survey and a meeting where you can share your thoughts on these issues. You may choose to just complete the survey, or to complete the survey and attend the meeting.

We ask that you

1. Sign this consent form.
2. Check the space on this form to show whether you want to just fill out the enclosed survey, or fill out the survey and attend the meeting.
3. Complete the enclosed survey.
4. Mail this form and the completed survey in the enclosed envelope.

You may skip any question on the survey that makes you feel uneasy.

Does the study involve risks?

There is a slight risk that you may not understand a question, or that answering a question may make you feel uneasy.

What are the benefits of being part of the study?

You will receive no benefit for filling out the enclosed survey. We hope the information gathered will help those who plan health programs better understand why some women change habits to improve their health and others don't.

If your survey is returned early and you are chosen to attend the meeting, you will receive a \$35 grocery gift card when you sign the meeting consent form.

What will the study cost?

There is no cost for filling out the survey. If you are chosen and attend the meeting, you will need to pay for travel from your house to the meeting and back home.

What are your rights?

You may choose not to be part of this project. You may choose to skip questions on the survey. You may choose not to attend the meeting. You will still be part of the Iowa *Care for Yourself/WISEWOMAN* Cardiovascular Study.

We will make every effort to protect all information about you and your part in this study. We will not share your personal information with anyone outside the study. It is possible, but very unlikely, that a court order may force us to give our records to others.

We will code your survey form with your WISEWOMAN client number. The researchers will receive your written personal information without your name. It will be stored in a locked file cabinet. Only the two researchers will have access to the locked file. We will destroy all surveys within five years.

Because this study is part of a national study, we will share information with the Centers for Disease Control and Prevention (CDC). Information shared with CDC will not have your name on it, and will be combined with information about other women in the study. We will not share your personal information with or sell it to anyone. We will use it only for purposes of the study.

We will make reports and write articles about this study so others can learn from us. We will not use your name in these reports or articles. Your information will be combined with information about other women.

You have the right to be treated fairly. If you have any concerns about how you are treated in this study, please call Jill Myers Gadelmann, WISEWOMAN Director, at (515) 242-6067. If you have questions about your rights as a WISEWOMAN participant, please contact the office of CDC's Deputy Associate Director for Science at (800) 584-8814. Leave a brief message including your name and phone number, and mention that you are calling about CDC protocol # 3566. Someone will return your call as soon as possible.

Please check one option below to show how you would like to be involved in this project.

Survey Only

Thank you for filling out the survey. We will not contact you to attend the meeting.

Survey and Meeting

Thank you for filling out the survey. If you are chosen to attend the meeting, you will receive a phone call with the date, time, and location of the meeting. A letter sent after the call will confirm the date, time, and meeting location (with map). You will also receive a reminder phone call one to two days before the meeting.

To ensure we hear and remember all answers, we will tape record and transcribe the meeting. You can ask any questions about the meeting during our phone call. If you choose to attend the meeting, you will need to sign another consent form when you arrive.

Please mark the days and times you are available to attend a meeting. Check all that apply.

Monday: Morning Afternoon Evening

Tuesday: Morning Afternoon Evening

Wednesday: Morning Afternoon Evening

Thursday: Morning Afternoon Evening

Friday: Morning Afternoon Evening

SIGNATURE

I have read this form, and I agree to be part of the study.

Check here to request a copy of this form for your records.

Name (please print) _____

Signature

Date

Please return this entire form with your survey in the enclosed envelope. You do not need a stamp.

APPENDIX C. SURVEY

ISUIRBS1	02-341
Approved Date:	February 10, 2006
Expiration Date:	February 20, 2007
Initial by	ge

Client#

Please indicate the most appropriate response for each of the following questions.

1. Can you count on anyone to provide you with emotional support such as talking over problems or helping you make a difficult decision?
 - Yes
 - No
 - I don't need help
 - Don't know

2. In the last 12 months, could you have used more emotional support than you received?
 - Yes
 - No
 - Don't know

3. Would you say that you could have used...
 - a lot more
 - some, or
 - a little more emotional support?
 - Don't know

4. If you need some extra help financially, could you count on anyone to help you; for example, by paying bills, housing costs, hospital visits, or providing you with food or clothes?
 - Yes
 - No
 - Offered help but wouldn't accept it
 - Don't know

5. In general, how many close friends do you have? (Here, a close friend is considered relatives or non-relatives that you feel at ease with, can talk to about private matters, and can call on for help.)

___ (Enter number of close friends)

 - Don't know

6. In the last 12 months, who was most helpful in providing you with emotional support?

- | | |
|---|---|
| <input type="checkbox"/> Spouse | <input type="checkbox"/> Daughter |
| <input type="checkbox"/> Son | <input type="checkbox"/> Sister/Brother |
| <input type="checkbox"/> Parent | <input type="checkbox"/> Other relative |
| <input type="checkbox"/> Neighbors | <input type="checkbox"/> Co-workers |
| <input type="checkbox"/> Church members | <input type="checkbox"/> Club members |
| <input type="checkbox"/> Professionals | <input type="checkbox"/> Friends |
| <input type="checkbox"/> Other | <input type="checkbox"/> No one |

7. Which statement best describes the food eaten in your household in the past 12 months?
(Mark one response.)

- Had enough of the kinds of food I wanted to eat
- Had enough, but not always the kinds of foods I wanted to eat
- Sometimes did not have enough to eat
- Often did not have enough to eat

8. How often have the following statements been true for you or your household during the past 12 months?

	<u>Never</u>	<u>Sometimes</u>	<u>Often</u>
a. I/we couldn't afford to eat balance meals	1	2	3
b. The food that I/we bought didn't last and I/we didn't have money to get more.....	1	2	3

9. In the past 12 months, have you or other adults in your household ever cut the size of your meals or skipped meals because there wasn't enough money or food?

- No
- Yes

If Yes, how often did this happen?

- In only 1 or 2 months
- Some months but not every month
- Almost every month

If Yes, in the past 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?

- No
- Yes

If Yes, in the past 12 months, were you ever hungry but didn't eat because you couldn't afford enough food?

- No
- Yes

For each of the following items, mark the number that best describes your current beliefs.

(5-strongly agree; 4-agree; 3-neither agree nor disagree; 2-disagree; 1-strongly disagree; NA-does not apply to me)

I am unable to attend WISEWOMAN sessions because:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not applicable
The time and day they are offered does not fit into my schedule.	5	4	3	2	1	NA
I am not able to get to the location where sessions are held.	5	4	3	2	1	NA
I do not have someone to provide care for my family.	5	4	3	2	1	NA
I do not have time.	5	4	3	2	1	NA
I do not feel I am at risk for heart disease.	5	4	3	2	1	NA
I do not think the sessions will help me reduce my risk of heart disease.	5	4	3	2	1	NA
I did not enjoy the session I did attend.	5	4	3	2	1	NA
I am uncomfortable and/or self-conscious around others.	5	4	3	2	1	NA

It is difficult to eat healthy because:

Healthful foods are more expensive.	5	4	3	2	1	NA
It takes too much time to prepare healthy meals.	5	4	3	2	1	NA
Healthy foods do not taste good.	5	4	3	2	1	NA
My family will not change what they eat.	5	4	3	2	1	NA
My family will not support me in improving my eating habits.	5	4	3	2	1	NA
I do not think that what I eat affects my health.	5	4	3	2	1	NA

It is difficult to be physically active because:

I do not have time to be physically active.	5	4	3	2	1	NA
I do not have a safe place to be physically active.	5	4	3	2	1	NA
My family will not support me in being physically active.	5	4	3	2	1	NA
I do not have enough energy to be physically active.	5	4	3	2	1	NA
I do not think that being physically active is important.	5	4	3	2	1	NA

Comments:

**For each of the following items, mark the number that best describes your current beliefs.
 How certain are you that you could overcome the following barriers?
 (4-very certain 3-rather certain 2-rather uncertain 1-very uncertain)**

I can manage to stick to healthful foods.....	Very certain	Rather certain	Rather uncertain	Very uncertain
....even if I need a long time to develop the necessary routines.	4	3	2	1
....even if I have to try several times until it works.	4	3	2	1
....even if I have to rethink my entire way of eating.	4	3	2	1
....even if I do not receive a great deal of support from others when making my first attempts.	4	3	2	1
....even if I have to make a detailed plan.	4	3	2	1
 I can manage to carry out my exercise intentions.....	 Very certain	 Rather certain	 Rather uncertain	 Very uncertain
....even when I have worries and problems.	4	3	2	1
....even if I feel depressed.	4	3	2	1
....even when I feel tense.	4	3	2	1
....even when I am tired.	4	3	2	1
....even when I am busy.	4	3	2	1

APPENDIX D. REMINDER POSTCARD

A few weeks ago you received a WISEWOMAN survey from the Iowa State University Extension. If you have returned the survey, thank you for your time! If you have not returned the survey, please complete and return it in the stamped envelope that was provided. If you have questions about or need another survey, please contact Jody Garrett at (515)294-6507. Thank you.

APPENDIX E. INITIAL PHONE CALL FOR FOCUS GROUP

Hello! May I speak with _____.

Hi! My name is Jody Garrett. I'm a graduate student at Iowa State University. I'm calling because you have indicated you are willing to participate in a discussion group about the barriers women face in attending group sessions to improve their health and changing their health habits. Am I correct that you would like to participate?

According to my records you (attended ___ / did not attend any) WISEWOMAN lifestyle sessions. Is this correct?

I want to thank you for choosing to be part of a discussion group. We really appreciate you taking the time to share your thoughts with the researchers.

Your discussion group will be held on _____ at _____. You will need to come to the _____, located at (give directions). The discussion will begin at _____, but please plan to arrive 15 minutes early so you'll have time to sign an informed consent form and receive your \$35 gift card. The discussion will last about 90 minutes.

Do you have any questions?

If you find you can't come to the discussion group, I'd like you to call or e-mail me. Do you have a pencil to jot down my phone number and e-mail address? Okay. You can call me at 515-294-6507, or email jodyg@iastate.edu. Again, thank you for your time and I look forward to seeing you the _____. Goodbye.

APPENDIX F. FOCUS GROUP LETTER

April 5, 2006

Ms. Jane Doe
123 ABC Avenue
Anytown, IA, 12345

Dear Ms. Doe:

Thank you for filling out and returning the WISEWOMAN survey. We are pleased that you are willing to be part of the meeting in your county. A group of six to eight women will meet for about 90 minutes. Each woman will receive a \$35 gift card at the beginning of the meeting.

The **meeting will be held on (day, date) at (time) at (location)**. Enclosed you will find directions to (location).

You will receive a reminder phone call one or two days before the meeting. Please ask any questions about the meeting during the call.

Please call me at (515) 294-6507, or e-mail jodyg@iastate.edu with questions about this letter.

Thank you for taking the time to help us make WISEWOMAN a better program. I look forward to seeing you on (date).

Sincerely,

Jody Garrett
Graduate Student
Iowa State University

APPENDIX G. REMINDER PHONE CALL FOR FOCUS GROUP

Hello! May I speak with_____.

Hi! This is Jody Garrett from Iowa State University. I'm calling to remind you that tomorrow is the day you agreed to come to the discussion group on women's barriers to attending group sessions to improve their health and changing health habits. I hope we can count on you to be there!

We will be meeting at _____ and will begin promptly at _____. Please plan to arrive 15 minutes early to sign the informed consent form and receive your \$35 gift card. Do you have any questions?

If not, I will see you tomorrow at _____. Have a good day. Goodbye.

APPENDIX H. FOCUS GROUP INFORMED CONSENT

ISU IRB #1	02-341
Approved Date:	February 10, 2006
Expiration Date:	February 20, 2007
Initial by	ge

Title: WISEWOMAN

Researchers: Ruth Litchfield, PhD, RD, LD
 Extension Specialist/Assistant Professor
 Iowa State University

Jody Garrett
 Graduate Student
 Iowa State University

Why do women attend or not attend health programs? How do you feel about changing health habits? Please join us to share your thoughts about these issues.

We chose you for this meeting because you have attended WISEWOMAN lifestyle sessions.

Please read this form and ask any questions before you consent to be part of this meeting. This research is part of the Iowa *Care for Yourself*/WISEWOMAN Cardiovascular Study conducted by the Iowa Department of Public Health (IDPH), the University of Iowa College of Public Health (UICPH), Iowa State University Extension (ISUE), and the Centers for Disease Control and Prevention (CDC).

What will you be asked to do?

You will attend this meeting. You will be part of the study until the meeting ends, about 1 ½ to 2 hours. During the meeting the leader will ask 10 to 15 questions about why you attended the WISEWOMAN lifestyle sessions, and how you feel about making changes in your health habits. You should answer the questions based on how you feel at the time of the meeting. We want you to share any thoughts you'd like, but please answer a question only once until others have had a chance to share. You may choose not to answer a question if it makes you feel uneasy. If you do not understand a question, ask the leader to explain it. There are no wrong answers. To ensure we hear and remember all answers, we will tape record and transcribe the meeting.

Does the study involve risks?

There is a slight risk that you may not understand a question, or that talking about these issues with a group of people may make you feel uneasy.

What are the benefits of being part of the study?

You will receive a \$35 grocery gift card after you sign the consent form. We hope the information gathered will help those who plan health programs better understand why some women change habits to improve their health and others don't.

What will the study cost?

You will need to pay for travel from your house to the meeting, and back home.

What are your rights?

You may choose not to answer a question. You may refuse to be part of the group or leave the meeting at any time. You will still be part of the Iowa *Care for Yourself/WISEWOMAN* Cardiovascular Study.

We ask that no names be used during the meeting. This will mean that no person will be identified on the tape or in the transcript of the meeting. The tape and transcript will only be reviewed by the two researchers. Names of those present at the meeting will not be matched with the tape from the group.

We will make every effort to protect all information about you and your part in this study. We will not share your personal Information with anyone outside the study. It is possible, but very unlikely, that a court order may force us to give our records to others.

Because this study is part of a national study, we will share information with the Centers for Disease Control and Prevention (CDC). Information shared with CDC will not have your name on it, and will be combined with information about other women in the study. We will not share your personal information with or sell it to anyone. We will use it only for purposes of the study.

We will make reports and write articles about this study so others can learn from us. We will not use your name in these reports or articles. Your information will be combined with information about other women.

If you have questions about this project, you may call Ruth Litchfield at (515) 294-9484 or Jody Garrett at (515) 294-6507.

You have the right to be treated fairly. If you have any concerns about how you are treated in this study, please call Jill Myers Gadelmann, WISEWOMAN Director, at (515) 242-6067. If you have questions about your rights as a WISEWOMAN participant, please contact the office of CDC's Deputy Associate Director for Science at (800) 584-8814. Leave a brief message including your name and phone number, and mention that you are calling about CDC protocol # 3566. Someone will return your call as soon as possible.

SIGNATURE

This study has been explained to me, I have read this form, my questions have been answered, and I agree to be part of this study. (You will receive a copy of this form for your records.)

Name (please print) _____

Signature

Date

Signature of Person Obtaining
Informed Consent

Date

APPENDIX I. FOCUS GROUP PROCEDURES

Good Evening. I want to thank everyone for taking time out of their busy schedule to come and participate in this discussion group. My name is Jody Garrett and I am a graduate student in nutrition at Iowa State University. First, did everyone read and sign an informed consent form and receive their gift card?

Currently I am working with the WISEWOMAN program and we are interested in your thoughts and opinions about your WISEWOMAN experience. What did and did not work for you as a WISEWOMAN participant?

For this discussion I will be asking approximately 16 questions. Please answer any of the questions that you would like. You do not have to answer any question that you do not want to, but we appreciate any feedback that you can give us. If you do not hear a question or do not understand a question, you are welcome to ask me to repeat it. Because this is a discussion, if someone says something that reminds you of something else you would like to share, please do so. You are not limited to only responding once to a question. But I do ask that you be considerate of others and allow everyone to give a response if they so wish.

To make sure that we accurately capture everything that is said here this evening we will be audio taping the discussion. The audiotape will be used to transcribe the discussion and the only people that will read the transcription will be the researchers. To ensure confidentiality we ask that no names be used during the discussion.

Karen is here to assist me and will be taking notes throughout the evening so that she can help me identify some key ideas and thoughts shared during the discussion.

Does anyone have any questions before we begin?

If not, we will begin.

APPENDIX J. FOCUS GROUP DISCUSSION GUIDE

1. Please describe to me what you consider to be physically active.
2. In what ways do you feel you do a good job of being physically active? In what ways do you feel you could improve your level of physical activity?
3. Thinking about the amount of your daily physical activity, what, if anything, makes it difficult for you to be physically active?
4. If you would like to be more physically active, what would make it easier for you to do so?
5. Please describe to me what you consider to be good nutrition.
6. In what ways do you feel you do a good job of eating healthfully? In what ways do you feel you could improve your eating habits?
7. What, if anything, makes it difficult for you to eat healthfully? (Young et al., 2004)
8. Think about the foods you and your family eat at mealtimes. How do you decide what foods to serve? (Young et al., 2004)
9. To what extent do you feel you could follow a low-fat, high-fiber eating plan? (Krummel et al., 2002)
10. What health behaviors increase the risk of heart disease? (Krummel et al., 2002)
11. To what extent are you concerned about getting heart disease? (Krummel et al., 2002)
12. Describe to me how you think you would feel if you found out that you had heart disease? (Krummel et al., 2002)
13. Is there anything else you would like to share about your physical activity and eating behaviors?
14. Of the WISEWOMAN sessions you attended, what did you like most about them? What keeps you coming to the sessions? (for full and minimal exposure participants)
15. When deciding if you will attend WISEWOMAN sessions, what keeps you from attending? (full and minimal exposure)
16. When told you were eligible to be a participant of WISEWOMAN, what kept you from participating? (no exposure)

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