2016

Gender-specific motivators and barriers to adopting healthful diets and losing weight among middle-aged West Virginians

Stephanie K. Thompson

Follow this and additional works at: <https://researchrepository.wvu.edu/etd>

Recommended Citation

Thompson, Stephanie K., "Gender-specific motivators and barriers to adopting healthful diets and losing weight among middle-aged West Virginians" (2016). *Graduate Theses, Dissertations, and Problem Reports*. 6799.

<https://researchrepository.wvu.edu/etd/6799>

This Thesis is protected by copyright and/or related rights. It has been brought to you by the The Research Repository @ WVU with permission from the rights-holder(s). You are free to use this Thesis in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you must obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This Thesis has been accepted for inclusion in WVU Graduate Theses, Dissertations, and Problem Reports collection by an authorized administrator of The Research Repository @ WVU. For more information, please contact researchrepository@mail.wvu.edu.

**Gender-specific motivators and barriers to adopting healthful diets and losing weight
among middle-aged West Virginians**

by

Stephanie K. Thompson

Thesis submitted to the Davis College of Agriculture, Natural Resources, and Design at

West Virginia University

in partial fulfillment of the requirements for the degree of

Master of Science

in

Nutritional and Food Science

Melissa Ventura-Marra, Ph.D, RD, Chair

Kenneth Blemings, Ph.D

Dina Jones, Ph.D, PT

Department of Animal and Nutritional Sciences

Morgantown, West Virginia

2016

Key words: middle-aged adults, focus groups, weight loss

Copyright 2016 Stephanie Thompson

ABSTRACT

Gender-specific motivators and barriers to adopting healthful diets and losing weight among middle-aged West Virginians

Stephanie K. Thompson

Background: About 70% of West Virginia adults are overweight and obese. Diet is a modifiable determinant of weight-related conditions. Innovative interventions are needed to help overcome the barriers to prevent and delay chronic conditions. In order to implement an intervention that is needed, learning the motivators and barriers to healthful eating and weight loss is the first step.

Objective: To learn what helps or hinders healthful eating and weight loss among middle-aged adults in West Virginia.

Methods: Gender-specific focus groups were conducted among 45 to 64 years old overweight or obese adults. Participants lived in either Harrison or Marion counties, were married or living with a companion, and had one of the following cardiovascular risk factors: high blood pressure, diabetes, pre-diabetes, high cholesterol, or high triglycerides. The data were analyzed by using a classical analysis approach with comparing the differences between genders by frequency of themes.

Results: Among 30 participants, the primary motivators were health, appearance and physical fitness, and family. The male primary motivators were health, appearance and physical fitness, and internal motivation while the female primary motivators were health, special events, and family and appearance and physical fitness were tied. The primary barriers were time, convenience of unhealthy foods, and temptation. The male primary barriers were time, convenience of unhealthy foods, and lack of self-control. For the females, the primary barriers were time, temptation, and lack of self-control.

Conclusion: Helping individuals learn how to better plan and prepare their meals can help them overcome time barriers. Interventions for males should include education and counseling on making healthful food choices when eating out, while interventions for females could include ways to help them overcome temptation barriers.

ACKNOWLEDGEMENTS

Throughout one of the hardest journeys of my education, there are many people who I would like to thank. I would like to thank Dr. Melissa Marra, my committee chair, for always answering my questions and all the support and guidance you provided through this journey for the past two years. I would like to thank my committee members, Dr. Kenneth Blemings and Dr. Dina Jones and also thank Dr. Jones for letting me use her transcriptions kits and recorder. I would like to thank the Davis College and all the wonderful faculty and staff who were always there to help. Thank you Michelle McGinley for your help in transcribing and reviewing my transcriptions for accuracy. To my mother and my father, thank you for always being there and supporting me. I would also like to thank my friends and my graduate colleagues for your continuing support and for always being there for me.

TABLE OF CONTENTS

CHAPTER	PAGE
Abstract	ii
Acknowledgements	iii
Table of Contents	iv
List of Figures	v
List of Tables	vi
List of Abbreviations	vii
Chapter 1: Introduction	1
Chapter 2: Review of Literature	3
Motivators and Barriers to Healthful Eating	4
Motivators and Barriers to Weight Loss	10
Motivators and Barriers Related to Health in WV	14
Gender Differences	15
Review of Literature Tables	18
Chapter 3: Methods	28
Study Design	28
Recruitment and Participants	28
Focus Groups	29
Data Analysis	30
Chapter 4: Results	31
Chapter 5: Discussion	47
Chapter 6: Summary and Conclusions	51
References	53

LIST OF FIGURES

Figure 1 Focus Group Attendance.....	44
--------------------------------------	----

LIST OF TABLES

Table 1 Summary of Motivators and Barriers to Healthful Eating Studies	18
Table 2 Summary of Motivators and Barriers to Weight Loss Studies	20
Table 3 Summary of WV Focus Group Studies	22
Table 4 Summary of Motivators to Healthful Eating Outcomes	23
Table 5 Summary of Barriers to Healthful Eating Outcomes	24
Table 6 Summary of Motivators to Weight Loss Outcomes	26
Table 7 Summary of Barriers to Weight Loss Outcomes	27
Table 8 Focus Group Questions.....	29
Table 9 Focus Group Numbers and Lengths of Discussion	44
Table 10 Demographics	45
Table 11 Focus Group Motivators to Healthful Eating and Weight Loss	46
Table 12 Focus Group Barriers to Healthful Eating and Weight Loss	46
Table 13 Practice Applications	52

LIST OF ABBREVIATIONS

US –United States

WV –West Virginia

AHA –American Heart Association

CVD –Cardiovascular Disease

BMI –Body Mass Index

UK –United Kingdom

CHAPTER I: INTRODUCTION

PROBLEM STATEMENT

Nearly 64% of adults in the United States (US) and 70% in West Virginia (WV) are overweight or obese.^{1,2} Males have higher rates than females in WV (74.1% versus 63.5%, respectively).³ Middle-aged adults (45 to 64 year olds) have the highest rates of obesity in the nation and WV.^{4,5} Today, the baby boomer population (people born between 1946 and 1964) make up a large part of the middle-aged adults group. When compared to the previous generation of midlife adults, baby boomers have higher rates of chronic conditions such as cardiovascular disease (CVD), hypertension, and diabetes.⁶ Maintaining health and preventing chronic diseases in this population is an urgent public health challenge.

Diet is a potentially modifiable determinant of weight-related chronic conditions. New clinical care guidelines from the American Heart Association (AHA) recommend that patients who are overweight (BMI 25.0-29.9) with $\geq$ one CVD risk factor or obese (BMI $\geq$ 30) receive dietary counseling from a physician or nutrition professional.⁷ Implementing the recommendations in WV may be particularly difficult due to the large number people who are classified as overweight and obesity.⁸ Several potential barriers to implementing the guidelines include inadequate nutrition education in medical schools, low reimbursement rate, and lack of time to discuss diet with patients.⁹ Interventions that aim to overcome the barriers are needed in an effort to help West Virginians eat better and reach a healthful weight.

Telenutrition interventions that provide nutrition care through interactive technology such as video conferencing offers one solution.¹⁰ Telenutrition can benefit patients who don't have access to a Registered Dietitian in their area. It would allow patients to receive care from almost anywhere, such as their home or workplace. The first step in developing such an intervention is to identify the motivators and barriers of a healthful diet and weight loss among overweight and

obese middle-aged adults in WV. Focus groups provide one method to explore these issues. In WV, focus groups with health-related themes have been conducted, but they were mostly with females not males and diet was not the primary study focus.¹¹⁻¹⁶

RESEARCH OBJECTIVES

The primary purpose of this focus group study is to gain a better understanding of what motivates and deters healthful eating practices and weight loss among middle-aged adults in WV and how these factors differ between males and females. This study is part of a larger mixed methods study to inform a telenutrition intervention aimed at improving diet and reducing body weight among middle-aged West Virginians. The study aimed to answer the following research questions:

1. What are the perceived motivators to eating a healthful diet to lose weight?
2. What are the perceived barriers to eating a healthful diet to lose weight?
3. Are there differences between males and females in regard to their perceived motivators and barriers?

CHAPTER II: REVIEW OF LITERATURE

Motivators and barriers are an important aspect of learning what helps or hinders individuals from eating a healthful diet. Motivators are factors that promote individuals to perform an activity, such as promoting them to start eating healthfully or to lose weight.¹⁷ In contrast, barriers are factors that prevent individuals from reaching their goal. The primary purpose of this literature review is to learn what is known about motivators and barriers to healthful eating and weight loss specifically among middle-aged males and females.

METHODS

A search of PubMed and Scopus was conducted to identify peer-reviewed articles that identified barriers and motivators to either healthful eating or weight loss. Search terms included any and/or all of the following terms: motivators, barriers, healthful eating, weight loss, fruits, and vegetables. Only relevant articles that included participants 45 through 64 years of age were included in the review. Additionally, a snowball strategy was used in which references of identified articles were reviewed and included as appropriate.

RESULTS

Twenty-six articles were included in the review. Seven articles addressed both motivators and barriers to healthful eating including increasing fruit and vegetable intake, and an additional five articles addressed only barriers (**Table 1**). Seven articles addressed both motivators and barriers to weight loss, two addressed only motivators and five addressed only barriers (**Table 2**). Seven focus groups studies conducted in WV were also reviewed (**Table 3**). The results of the motivators to healthful eating studies are summarized in **Table 4** and barriers to healthful eating are summarized in **Table 5**. Commonly reported motivators and barriers to weight loss are summarized in **Tables 6 and 7** respectively.

MOTIVATORS AND BARRIERS TO HEALTHFUL EATING

Motivators to healthful eating

Improve health

In the seven studies reviewed on motivators, the most commonly cited motivator to eating better was health problems and health benefits.^{18–21} McGee *et al.* found that in a focus group of mostly females that health problems were a main reason participants chose to eat healthier.¹⁸ A survey conducted with 797 participants (62% female) identified health, health maintenance and to treat a disease among their top five reasons to eat a healthier diet.¹⁹ A focus group study was conducted to develop a web-based intervention to increase fruit and vegetables consumption noted that concern for personal and family health, and noticing health benefits motivated them.²⁰ Yeh *et al.* reported that participants were motivated to eat fruits and vegetables if they knew of their health benefits diet.²¹

Healthcare provider

In three of the seven studies reviewed regarding motivators to eating healthfully, healthcare provider advice was identified as a motivator influencing an individual's choice to eat healthier.^{18,22,23} In the Lower Mississippi Delta area, the researchers found that the participant's physician was important for the individuals to decide to change their diet.¹⁸ For example, one participant said that if the doctor told them to stop eating hamburgers and fries, or that their cholesterol and blood pressure were high, they would be motivated to change their diet.¹⁸ Males in the United Kingdom (UK) said they needed a recommendation from a person of medical authority in order to eat a more healthful diet.²²

Feel better/More energy

Two related motivators, feeling better and having more energy, were identified in three of the seven studies.^{19,20,24} Peterson *et al.* found that having more energy helped facilitate participants to make healthful lifestyle choices.²⁴ In a survey of 796 participants from low-income Minnesota communities, to feel good and better was the second most common motivator (15.3%) to eat healthful.¹⁹ Individuals who participated in focus groups to help inform an intervention to increase fruit and vegetable intake felt having more energy would motivate them to eat more fruits and vegetables.²⁰

Additional motivators

Less commonly reported motivators included: role model for children and family, children's health, and to live longer.^{18–21,23} Being a role model for children and other family members was a motivator in two focus group studies of mostly females.^{18,20} Being motivated to participate more with their children or help the children pick up healthful habits was how children's health was another motivator that appeared in the review.^{20,23} In two of the nine studies aimed at identifying motivators, 12% in a survey study and 5% in interviews said they would eat more of a healthful diet to live a longer life.^{19,23}

Barriers to Healthful Eating

Time

Time was the most commonly listed barrier; it was identified in eleven of the twelve articles reviewed on barriers to healthful eating.^{18–29} Lack of time affected individuals in different ways. In a study of females over 39 years old, time was a barrier in regard to participants feeling they didn't have enough time to cook, or they were tired of cooking meals.²⁵ A study of females from a disadvantaged neighborhood reported they lacked time for planning

and cooking meals.²⁸ Male focus group participants perceived time as a barrier for them because of their work schedules and lifestyle choices.²² Work patterns and family commitments made it hard for participants to have time to shop, prepare, and consume a healthful meal.²⁶ Preparation time was a barrier for participants specifically in relation to consuming more fruits and vegetables.²¹ For example, an individual had mentioned in the study that they arrived home late and did not want to prepare a meal late.²¹

Cost

Cost was the second most dominant barrier perceived as preventing individuals from eating healthfully.^{19–24,26–29} In focus groups and interviews with females, cost was perceived to affect their ability to buy more healthful food choices.^{22,27} Female focus groups reported that the cost of fresh foods in a rural area were too high due to transportation costs and this made it difficult for them to have a healthful lifestyle.²⁴ A barrier the researchers found for some females was choosing between cheap, unhealthy foods or expensive, healthful foods that were available in larger quantities.²⁸ In another study, participants didn't think the healthful foods were expensive but thought they would get more unhealthy foods than healthful foods for their money.²⁶

Lack of knowledge

Lack of knowledge was identified as preventing some from consuming healthful meals.^{18,23,26–28} In the Lower Mississippi Delta area, the researchers found that the participants lacked knowledge and skills in aspects such as preparing appealing food, time management, meal planning, portion control, and behavior modifications.¹⁸ Farahmand *et al.* reported from a male focus group that males lacked knowledge in regard to being able to tell the difference between foods that are healthful or unhealthy.²⁷ Females who live in disadvantage

neighborhoods said they lack knowledge as they didn't know how to cook or what foods to eat which deterred them from eating healthful.²⁸

Taste/Appeal/Dislike

In five out of twelve studies reviewed for barriers to healthful eating, participants discussed not liking the taste of foods they considered healthful preventing them from consuming healthful meals.^{19,20,25,27,29} Disliking the taste of fruits and vegetables hindered the individuals from eating healthfully.^{25,29} When trying to learn ways to increase fruit and vegetable intake, focus group participants said taste and freshness of fruits and vegetables prevented them from eating them in the winter.²⁰

Lazy/Tired

Feeling lazy and being tired were two barriers that participants perceived as barriers hindering them from eating a nutritious meal.^{19,20,28,29} Participants from disadvantaged neighborhoods discussed how being tired hindered their efforts toward planning and cooking healthfully.²⁸ Lazy was found to be the fourth overall choice (29.8%) in why the participants in a survey from a low-income Minnesota community could not eat healthful.¹⁹ Individuals also mentioned that they were lazy when it came to the eating fruits and vegetables due to the preparation involved.^{20,29}

Family/Spouse

In four studies, family and spouses were thought to be a barrier to participants when they tried to incorporate healthful meals into their daily lives.²⁶⁻²⁹ Macdiarmid *et al.* found that individuals wanted to fit in with their family members who were not eating healthful, thus preventing them from consuming more healthful meals.²⁶ Among a male focus group, it was

perceived as the females job in the family to prepare the meals.²⁶ Females felt their male partners were external barriers and hindered their efforts to eat fruits and vegetables.²⁹

Lack cooking skills/Dislike cooking

Research has also shown that individuals lack cooking skills or they dislike cooking altogether.^{18,20,26,29} When looking at the perceptions of healthful eating, individual interviews showed that the participants had a lack of desire to cook.²⁶ Individuals lacked recipes which could mean that they did not know how to cook without a recipe for fruit and vegetable consumption.²⁰ An internal barrier found among males and females was they lack cooking skills to prepare vegetarian dishes.²⁹

Healthful food accessibility

The accessibility of healthful food was a barrier in several studies.^{20,24,27,29} In one focus group study conducted with Tehranian males, the participants talked about the unhygienic processing and distribution of poultry and fowl.²⁷ Peterson *et al.* discussed in their focus group findings how living in a rural area makes it hard for them to access fresh fruits and vegetables.²⁴ Participants said they found it difficult to eat healthfully when at work or traveling.²⁰

Additional barriers

Lack of meal planning and seasonality of healthful foods were two additional barriers that were found in the review.^{18,20,25,28,29} In a female focus group study, it was found how the participants lacked planning their meals which in turn led them to go out for dinner instead of fixing home cooked meals.²⁵ Seasonality of foods was also a barrier to individuals in the winter months due to not being able to always have fresh produce.²⁵ The taste and freshness followed by the limited selection of fruits and vegetables in the winter prevented individuals from consuming them.^{20,29}

Not being satisfied with healthful food choices was another barrier that prevented individuals from consuming healthful meals.^{20,22,25} Rolnick *et al.* also reported that individuals perceived fruits and vegetables as not filling.²⁰ Females also perceived they had trouble refraining from eating snacks that were considered high-calorie foods, which could be related to why they did not see healthful foods as satisfying due to most healthful foods having lower calories.²⁵ Individuals reported being confused and conflicted with health messages.^{20,23,25} Interestingly, an interview study showed that participants were confused by the health messages from different diet companies.²³ Other barriers reported in the studies reviewed were social activities and pressures with other individuals, emotions and stress from life, and comfort in foods.^{23,26,28}

Lack of willpower, discipline, and self-control were barriers found in the studies reviewed along with individuals having personal preference or are picky.^{19,22,23} Individuals who tried to lose weight perceived lack of willpower and not strong or committed enough as a barrier to when they tried to diet.²³ Males would rather eat their preferred foods than take government advice on food selection.²²

Temptation of unhealthy foods, persuasive advertisements, and boring diets and bored of the same taste were reported in five of the articles reviewed.^{20,21,23,25,27} Females found it difficult to stop eating tempting foods such as high-calorie snacks.²⁵ A male focus group study on healthful eating perceived that the influence of others not eating healthful hindered them when it came to unhealthy foods.²⁷

MOTIVATORS AND BARRIERS TO WEIGHT LOSS

Motivators to Weight Loss

Appearance

The dominant motivator to weight loss found in the studies was appearance.^{30–35} A study that conducted focus groups with individuals before and after dieting found motivators to improve their appearance such as them feeling self-disgust at being overweight, seeing self in mirrors and photographs, and to increase their self-esteem.³⁰ A study of males only found that males wanted to have a lean appearance and this could be due to them wanting a girlfriend or a job.³¹ Overweight males responded in a survey with 69.4% that they were unhappy with their appearance.³⁴ In focus groups with African American females, the researchers found that they were motivated to lose weight to be physically attractive to others and avoid being unappealing to self and others.³³

Health problems

Health problem was the second commonly mentioned motivator in the review of studies.^{31–33,36,37} Three studies that were conducted with only males found that weight loss for their health was beneficial and motivated them.^{31,32,36} Males were motivated to make changes if they had a family member with a health condition that they wanted to prevent.³⁶ In two female studies, wanting to lose weight or maintain weight for health-related reasons or prevention was also found as a motivator to healthful eating.^{33,37}

Clothes

Individuals were also perceived to be motivated to lose weight so they could fit in their clothes.^{30,33–35} In a focus group study participants were motivated to lose weight by wanting to buy nice clothes, buy smaller sizes, and fit into older clothes.³⁰ African-American females

wanted to lose weight to be able to look good in their clothes.³³ A survey study with males found the individuals (50%) had trouble buying clothes as one of their motivators to lose weight.³⁴ A survey conducted by telephone found that women were motivated to lose weight when their clothes no longer fit or to fit a smaller size.³⁵

Support

Support was found among the review four times as a motivator to weight loss.^{30,33,37,38} Females who had already been part of an intervention participated afterwards in focus groups and support from family, friends, and co-workers were seen to help keep them motivated to lose weight or to maintain their weight loss.³⁸ Herriot *et al.* saw in their study that the participants talked about receiving support from others who were participating in the study and the researchers helped motivate them.³⁰ Among female participants, support from commercial weight-loss group, health professional, family, and friends were seen to be an impact on the individuals maintaining their weight loss.³⁷ One of the major themes found in the female focus groups was the influence from their family and friends attitudes about weight to motivate them to lose weight.³³

Additional motivators

To improve and increase physical activity was found in two male studies.^{32,34} Specifically, the motivators for the males to lose weight that was mentioned were to improve fitness and wanting to feel stronger and fitter.^{32,34} Also, focus groups and interviews with males saw how they were motivated to lose weight to be effective and meet their work requirements.^{31,36} Sabinsky *et al.* found that the males would take cue to action by wanting to be effective and valuable for work while Wirth *et al.* discussed how there were jobs that required the males to be in shape.^{31,36} Males also ended up attempting weight loss as a result of support

from their wives.³¹ In the telephone survey with Appalachian Kentucky Adults, it was seen that the individuals wanted to lose weight for their family.³⁵

Barriers to Weight Loss

Expense

The expense of trying to lose weight was found among five of the twelve studies.^{31,33,36,39,40} In a focus group with overweight males, the individuals perceived expense with using fitness centers as barrier to weight loss.³¹ A focus group study with African American females perceived the expense of maintaining a healthful lifestyle was found to be a hindering effect on their weight loss.³³ Hammarström *et al.* looked at the barriers associated with participants who took part of a diet intervention.³⁹ Cost was perceived to be a barrier that would hinder individuals from trying to lose weight which is consistent with why some of the participants may have stopped the diet intervention.³⁹ Also, individuals said the expense of vegetables and protein-rich foods deterred them from completing the intervention.³⁹

Lack of exercise/Physical activity

Participants in several studies mentioned how a lack of exercise and physical activity prevented them from losing weight.^{31,35,38,39,41} Female focus groups perceived lack of exercise to hinder their success in weight loss maintenance.³⁸ Males mentioned they had trouble prioritizing exercise over spending time with their family.³¹

Time

As seen in the studies reviewed on healthful eating, time was also a barrier to participants in trying to lose weight.^{33,35,36,39} Baby boomer males perceived lacking time to exercise as a hindrance to losing weight.³⁶ A quote mentioned by a baby boomer man said due to his long

hours at work he did not have the time.³⁶ A survey conducted with Appalachian adults found lacking time to exercise and to shop and cook for healthful foods as barriers to weight loss.³⁵

Lack support

Lack of support was perceived as a barrier in four of the twelve studies reviewed.^{30,33,38,42} Two female focus group studies looked at what was preventative in weight loss and/or weight maintenance which was perceived as a lack of support would hinder individuals efforts.^{33,38} Ely *et al.* participants mentioned how they perceive there is a lack of support from their primary care providers in weight control.⁴²

Social life/Pressure

Social life and pressure was another barrier perceived in deterring weight loss.^{30,39-41} Social life was a barrier that was perceived by individuals in baseline before participating in a weight loss program.³⁰ Weight loss barriers perceived by females who had participated in a diet intervention mentioned different social aspects that made it challenging.³⁹ The females discussed how coffee with a bakery item was a social activity and how attending dinners with others as hostess would hinder their weight loss.³⁹

Emotions/Stress/Depression

Among four studies, emotions, stress, and depression were found to hinder individuals efforts in trying to lose weight.^{30,33,39,40} The emotions that were mentioned were unhappy, upset, stressed, depressed, and bored.³⁰ African-American females and females from Northern Sweden perceived the impact of stressful life events as making it hard for the participants to lose weight.^{39,33} Stress and depression were important barriers perceived by the overweight and obese females who mentioned how emotions made them eat too much.⁴⁰

Additional barriers

Additional barriers that were perceived in the literature were work, habits, lack of knowledge, and temptation.^{30,33,35,39,43} Female participants discussed how if they were traveling or working at night it could deter their diet.³⁹ The Northern Sweden females perceived it was hard to change their food habits and had a hard time not to go back to their old habits.³⁹

Lack of knowledge and temptation were reported in four of the studies reviewed.^{33,35,39,43} Morgan *et al.* found that the participants had lacked knowledge as to the relationship between energy balance and weight change.⁴³

MOTIVATORS AND BARRIERS RELATED TO HEALTH IN WV

Several health-related focus group studies have been conducted in WV giving insight to the culture of the state. However, none of the focus groups specifically looked at motivators and barriers to healthful eating in middle-aged adults.^{11-14,16} Among three of the six focus group studies conducted in WV that were reviewed, participants perceived lack of knowledge in areas regarding diet, diabetes and medical knowledge.^{12,13,15} Lack of support was also a factor in the WV residents lives as well.^{11,12,16} One study that aimed to inform the design of an intervention to reduce CVD, found that lack of support was a barrier and the presence of support a facilitator for the individuals to be able to eat healthful.¹¹ In another focus group study conducted to learn about views on CVD from females living in rural areas in WV, lack of support was perceived among females due to the foods the family likes to consume but it was also found how support from family and others would help them change their eating habits.¹² In a survey of females, 52.4% said lack of support hindered them from being able to engage in physical activities.¹⁶

Among the six focus groups reviewed, two looked at barriers and facilitators to changing their diet related to CVD.^{11,12} Common barriers included culture, time, and cost.^{11,12} Barriers

found in a focus group conducted to develop a CVD program reported convenience, eating food for comfort, lack of willpower, and lack of confidence as deterrents from eating healthfully.¹¹ Other barriers found in the study looking at females views on CVD were family preference and taste.¹² In the study looking at the barriers to physical activity the barriers were lack of willpower (50.8%), money (35.2%), time (30.1%), place (19.2%), and don't need more (6.8%).¹⁶ Interestingly, 15% reported that they did not have any barriers.¹⁶ The initiating motivators to the participants were an emotional arousal such as a drastic event and the desire to lose weight.¹² The sustaining motivators were support of others, food availability, and feeling better physically and mentally.¹² Most of the focus group participants were female, thus it was difficult to determine if male and females perceive motivators and barriers differently. It is important to understand the differences between the genders to tailor an intervention to help people overcome their barriers in the Appalachian population.¹¹⁻¹⁶

GENDER DIFFERENCES IN MOTIVATORS AND BARRIERS

One key aspect in developing an intervention is to recognize that differences exist between males and females perceptions of what factors motivate them or deter them from eating healthfully. Differences between males and females in their eating patterns have been reported. For example, Liebman *et al.* conducted a cross-sectional survey with males and females to see if there were any differences between their food intake.⁴⁴ Females had higher intakes of fruit or vegetable juice, fruits, green salad, carrots, other vegetables, whole-grain breads, and high fiber cereals while the males were only higher in consumption of potatoes, milk, soda, and sweetened beverages other than soft drinks.⁴⁴ Another survey asked questions about their different health beliefs to see the difference among genders.⁴⁵ There were differences observed in the males and females when it came to health behaviors.⁴⁵ Females would be the ones to learn more about

disease prevention due to feeling like it was more their responsibility.⁴⁵ This could be due to how females are frequently seen as caretakers. In a survey study looking at weight loss, females were shown more frequently than men to self-monitor, set goals, and need social support for physical activity.⁴⁶ Males showed a higher caloric intake and the need for social support for diet.⁴⁶ Differences between genders can help aim an intervention in what males and females desire to help them achieve healthful eating and weight loss.

When looking back at the motivators and barriers to healthful eating and weight loss, there are some gender differences. For example, in the focus groups with Tehranian males on healthful eating, the barrier that the dietary pattern was the main responsibility of the females.²⁷ While in one females focus group a barrier to their success in eating healthful was family customs, food preferences and needs of their children.²⁸ It's also interesting to see in another females focus group study how they focused on children's needs first and their husband/partner or family members did not want the healthful foods.⁴⁷ Sabinsky *et al.* found in the males focus groups that younger males wanted to lose weight to be attractive and get a girlfriend.³¹ Also, baby boomer males had stated that the programs were too feminine.³⁶ Interestingly, results from several female focus groups indicated that they felt lack of support was a barrier when trying to lose weight and having support was a motivator to their success.³⁷⁻³⁹

The differences between males and females regarding their barriers and motivators are clear in some studies. Females were often identified as being the person in the family responsible for health and diet.^{27,45} Males needed more social support or did not think highly of programs they felt were feminine.^{36,46} However, females were also shown to need support.³⁷⁻³⁹ Males and females are distinctive about what motivates them or prevents them to have a healthful lifestyle. An intervention for different genders should be aware of the differences when creating a

program. Thoughtful planning could create a program that both males and females could enjoy and be satisfied with while losing weight and eating healthful.

Table 1. Summary of Motivators and Barriers to Healthful Eating Studies							
Author	Purpose	Design	Sample size	Age	Gender	Location	Population Rural, etc
McGee <i>et al.</i> (2008)	What motivates and prevents healthful eating.	Focus group	91	18 years or older	6 Males and 85 Females	Arkansas, Louisiana, and Mississippi	Lower Mississippi Delta residents
Folta <i>et al.</i> (2008)	To learn their barriers to heart-healthful eating in relation to CVD.	Focus groups	38	40 or older	Females	Kansas and Arkansas	Midlife sedentary females
Gough and Conner (2006)	To learn about how males view food.	Interviews	24	< 35 years old to 55 years and older	Males	UK	
Macdiarmid <i>et al.</i> (2013)	To learn what the barriers were for participants after eating a healthful diet for a few days.	Interviews	50	19 to 63 years old	20 Males and 30 Females	UK	General adult population
Farahmand <i>et al.</i> (2015)	To learn family barriers among Tehranian males on healthful eating.	Focus groups	98	25 to 65 years old	Males	Iran	Tehranian
Baruth <i>et al.</i> (2014)	To learn the barriers of exercise and healthful eating females living in disadvantage neighborhoods.	Focus groups	28	25 to 50 years old	Females	South Carolina	Overweight living in disadvantaged neighborhoods
Peterson, Schmer, and Ward-Smith (2013)	To learn the views about healthful eating in rural females who live in the Midwest.	Focus groups	65	20 to 65 years old	Females	Midwestern USA	Rural
Thomas <i>et al.</i> (2008)	To learn from individuals who have tried to lose weight what their thoughts were on dieting.	Interviews	76	16 to 72 years old	13 Males and 63 Females	Australia	Obese individuals
Eikenberry and Smith (2004)	To see what motivates or prevents healthful eating in low-income Minnesota communities.	Survey	796	Average age 44.9 ± 17.5 years old	302 Males and 494 Females	Minnesota	Low-income communities

Table 1. Summary of Motivators and Barriers to Healthful Eating Studies (continued)							
Author	Purpose	Design	Sample size	Age	Gender	Location	Population Rural, etc
Rolnick <i>et al.</i> (2009)	To be able to develop an intervention in regards to increase fruit and vegetable consumption.	Focus groups	137	21 to 65 years old	64 Males and 73 Females	USA	HMO Cancer Research Network
Yeh <i>et al.</i> (2008)	To learn about what prevents or encourages fruit and vegetable consumption to be able to develop an intervention.	Focus groups	147	18 to 50 years old	Males and Females	USA	Multi-ethnic population
John and Ziebland (2004)	To learn what prevented individuals to consume fruits and vegetables that participate in a randomized control trial	Interview	40	Males mean age 47.6 years old and Females mean age 44.2 years old	21 Males and 19 Females	UK	

Table 2. Summary of Motivators and Barriers to Weight Loss Studies							
Author	Purpose	Design	Sample size	Age	Gender	Location	Population Rural, etc
Metzgar <i>et al.</i> (2014)	To learn the facilitators and barriers after females participated in a weight loss trial.	Focus group	23	Mean age 38.8	Females	USA	Completed an 18 week weight loss trial
Herriot <i>et al.</i> (2008)	To look at baseline and after the weight loss programs to assess the participants' outlooks involving commercial diets.	Focus groups	59	Mean age 42.3 years old	7 Males and 25 Females	Australia	Participated in 'Diet Trials'
Ely <i>et al.</i> (2009)	To try to understand females perspectives on weight in rural Kansas.	Focus groups	31	18 years or older	Females	Kansas	Rural
Sabinsky <i>et al.</i> (2006)	To understand males views on what helps or hinders weight loss.	Focus groups	22	25 to 44 years old	Males	Denmark	Overweight males
Wirth <i>et al.</i> (2014)	To discuss with baby boomer males about their perceptions on maintaining weight.	Interviews	20	45 to 63 years old	Males	USA	Baby boomer males
Hankey <i>et al.</i> (2002)	To try to understand what makes overweight males want to lose weight.	Interviews	91	18 to 55 years old	Males	UK	Overweight and obese male workers
Hindle and Carpenter (2011)	To discuss with individuals who were able to maintain their weight loss.	Interviews	10	18 years and older	Females	UK	Individuals who've maintain weight loss
Barnes <i>et al.</i> (2007)	To learn about how African American females lost weight.	Focus groups	37	18 years or older	Females	USA	African American females
Morgan <i>et al.</i> (2011)	To understand how the males viewed the weight loss program, SHED-IT.	Interviews	18	18 to 60 years old	Males	Australia	Participants in SHED-IT pilot study
Hammarström <i>et al.</i> (2014)	To understand what motivated and prevented weight loss in an intervention that looked at the use of two different diets.	Interviews	70	49 to 71 years old	Females	Northern Sweden	Middle-aged to older females

Table 2. Summary of Motivators and Barriers to Weight Loss Studies (continued)							
Author	Purpose	Design	Sample size	Age	Gender	Location	Population Rural, etc
Wolfe and Smith (2002)	To see what motivates females to lose weight.	Survey	72	18 years or older	Males	USA	Overweight males
Webber and Quintiliani (2011)	To look at the differences between males and females in their views on weight using the Health Belief Model.	Interview survey	404	18 to 65 years old	117 Males and 287 Females	Kentucky	Appalachian residents
Sharifi <i>et al.</i> (2013)	To understand what prevented overweight or obese females who used weight loss programs.	Survey	204	18 years to 50 years old	Females	Iran	Overweight or obese females
Venditti <i>et al.</i> (2014)	To learn individuals barriers in the Diabetes Prevention Program.	Lifestyle Intervention	1076	Mean age 50.6	343 Males and 733 Females	USA	

Table 3. Summary of WV Focus Groups Studies							
Author	Purpose	Design	Sample size	Age	Gender	Location	Population Rural, etc
Tessaro <i>et al.</i> (2006)	To learn more about the population to develop an intervention program, Cookin' Up Health	Focus groups	48	Mean age of 54 years old	Females	West Virginia	Rural
Krummel et al. (2002)	To understand the views of CVD in how to prevent or change for better health.	Focus groups	34	20 to 55 years old	Females	West Virginia	Rural
Tessaro <i>et al.</i> (2005)	To learn more about the target population in the Appalachian and how they understand diabetes.	Focus groups	101	Mean age of 59.1	28 Males and 73 Females	West Virginia	Appalachian residents
Rye <i>et al.</i> (2009)	To learn the barriers to physical activity in low-income Appalachian females.	Interviews	733	Mean age of 52.2	Females	West Virginia	Low-income Appalachian residents
Goins, Spencer, and Willams (2011)	To understand how rural older adults view their health.	Focus groups	101	60 years or older	27 Males and 74 Females	West Virginia	Rural older adults
Coyne, Demian-Popescu, Friend (2006)	To look at how the culture of adults living in Appalachia related to their health.	Focus groups	61	35 years or older	30 Males and 31 Females	West Virginia	Appalachian residents

Table 4. Summary of Motivators to Healthful Eating Outcomes						
	Improve health	Role model for children/family	Children health	Healthcare provider	Live longer	Feel better/More energy
McGee <i>et al.</i> (2008) ^b	X	X		X		
Gough <i>et al.</i> (2006)				X		
Peterson, <i>et al.</i> (2013) ^c						X
Thomas <i>et al.</i> (2008) ^d			X	X	X	
*Eikenberry <i>et al.</i> (2004)-S	X				X	X
Rolnick <i>et al.</i> (2009) ^a -FV	X	X				X
Yeh <i>et al.</i> (2008)-FV	X		X			
*Top 5 survey results <u>Unique Motivators</u> ^a Availability/ convenience, responsibility to plan for children, lose weight ^b Encouragement, family, compliments ^c Self-esteem, fit into clothes ^d Social acceptance, romantic relationships, increase mobility ,lap band surgery						

Table 5. Summary of Barriers to Healthful Eating Outcomes

	Lazy/Tired	Time	Cost/Expensive	Family/Spouse	Lack knowledge	Social activity/ Pressures	Emotions/Stress/Comfort	Lack meal planning	Taste/Appeal/Dislike	Lack willpower/discipline/ self-control	Personal Preference/Picky	Lack cooking skills/Dislike cooking	Healthful food accessibility	Seasonality of healthful foods	Temptation of unhealthy foods	Not satisfying	Persuasive advertisements	Confusion/Conflicting health messages	Boring
McGee <i>et al.</i> (2008) ^d		X			X			X				X							
Folta <i>et al.</i> (2008) ^f		X						X	X					X	X	X		X	
Gough <i>et al.</i> (2006)		X	X								X					X			
Macdiarmid <i>et al.</i> (2013)		X	X	X	X	X						X							
Farahmand <i>et al.</i> (2015) ^e		X	X	X	X				X				X		X		X		
Baruth <i>et al.</i> (2014) ^h	X	X	X	X	X	X	X	X											
Peterson, <i>et al.</i> (2013)			X										X						
Thomas <i>et al.</i> (2008) ^c		X	X		X		X			X								X	X
*Eikenberry <i>et al.</i> (2004)-S	X	X	X						X	X	X								
Rolnick <i>et al.</i> (2009) ^a -FV	X	X	X						X			X	X	X		X		X	X
Yeh <i>et al.</i> (2008)-FV ^g		X	X														X		
John <i>et al.</i> (2004) ^b -FV	X	X	X	X					X			X	X	X					
<p>*Top 6 results of the survey</p> <p><u>Unique barriers</u></p> <p>a Concern about pesticides, males feel immortal and too mucho for fruits and vegetables, lack of concern of feeling ok, inconvenience</p> <p>b Traveling and holidays, difficulty with digestions, five a day too much, dental problems, resistant to being told what to do, don't feel like it, habit</p> <p>c Constantly restricting their lifestyle, blamed themselves or associated life event, dissatisfied with not seeing instant results, expected "quick fix", feeling physically unwell, moving to a new job, Christmas, inability to follow diet</p> <p>d Eating out, portion</p> <p>e Lack of self-efficacy</p> <p>f Difficulty in changing eating patterns they had developed in childhood</p>																			

g Low shelf life

h Family customs

Time: Distributions of routine; time to cook, didn't want to spend the time (tired of cooking), work patterns; cooking from scratch, shopping, preparing, eating healthful meals do to work patterns, family commitments that are higher priority; lack of time to eat healthful meals

Table 6. Summary of Motivators to Weight Loss Outcomes							
	Appearance	Clothes	Health problems	Support	Effective/Work Requirements	Improve/ Increase physical activity	Family/Spouse
Metzgar <i>et al.</i> (2014) ^a				X			
Herriot <i>et al.</i> (2008) ^b	X	X		X			
Sabinsky <i>et al.</i> (2006) ^c	X		X		X		
Wirth <i>et al.</i> (2014)			X		X		X
Hankey <i>et al.</i> (2002)	X		X			X	
Hindle <i>et al.</i> (2011)			X	X			
Barnes <i>et al.</i> (2007)	X	X	X	X			
Wolfe <i>et al.</i> (2002)-S	X	X				X	
Webber <i>et al.</i> (2011) ^d -S	X	X					X
<u>Unique Motivators</u> ^a Accountability, portion control, self-motivation ^b Negative comments from others regarding weight, social life ^c Wellbeing and longer life ^d Doctors							

Table 7. Summary of Barriers to Weight Loss Outcomes										
	Lack of knowledge	Expense	Time	Work	Lack support	Social life/pressure	Lack of exercise/physical activity	Habits	Emotions/Stress/Depression	Temptation
Metzgar <i>et al.</i> (2014) ^f					X		X			
Herriot <i>et al.</i> (2008) ^g				X	X	X		X	X	
Ely <i>et al.</i> (2009) ^h					X					
Sabinsky <i>et al.</i> (2006)		X					X			
Wirth <i>et al.</i> (2014) ^a		X	X							
Barnes <i>et al.</i> (2007) ^b		X	X		X				X	X
Morgan <i>et al.</i> (2011) ⁱ	X									
Hammarström <i>et al.</i> (2014) ^c		X	X	X		X	X	X	X	X
Wolfe and Smith (2002)										
Webber and Quintiliani (2011) ^d -S	X		X	X			X	X		
Sharifi <i>et al.</i> (2013) ^e -S		X				X			X	
Venditti <i>et al.</i> (2014) ^j -S						X	X			
<u>Unique Barriers</u> ^a Negative beliefs, lack of motivation, diets are unrealistic, programs too feminine ^b Culture, management of hairstyle during exercise, lack of willpower, requires complete lifestyle change ^c Health problems, partner, friends, availability ^d Physical condition ^e Adverse effects of weight loss, food craving, situational barriers ^f Lack of accountability, loss of resource ^g Family commitments ^h Distance to commercial weight control program ⁱ Discouragement when weight had plateaued early on in the program, experiencing guilt associated with eating ^j Lack of self-monitoring, vacations/holidays										

CHAPTER III: METHODS

STUDY DESIGN

The purpose of this qualitative study was to learn what helps and hinders healthful eating and weight loss among middle-aged adults in two counties in north central West Virginia. The focus group sessions were held on Saturdays between August 2015 and December 2015 at a local hotel conference room. The participants received a \$30 gift card for participation. The study was approved by West Virginia University Institutional Review Board and informed consent was obtained from participants.

RECRUITMENT AND PARTICIPANTS

Participants were recruited from two adjacent counties in North Central WV both of which are classified as micropolitan (an area of about 10,000 population but less than 50,000) based on the US Census Bureau population.^{48,49} These counties were chosen because they are not statistically different than the state average in regard to their rates of general health, fruit and vegetable intake, obesity and diabetes.⁵⁰ Additionally, it is the area in which the intervention this research aims to inform will be conducted. Participants were recruited using multiple methods, including placing an ad in the local newspaper; advertising in-person at community events, word-of-mouth, snowballing (participants invited others they know to participate) and distributing flyers to churches, schools, community organizations, and businesses.

The inclusion criteria was: 45 to 64 year olds, body mass index (BMI) ≥ 25 kg/m², resident of Harrison or Marion county, married or living with a companion, and one of the following cardiovascular risk factors: high blood pressure, diabetes, pre-diabetes, high cholesterol, or high triglycerides. Potential participants were pre-screened using an online survey using Qualtrics survey software (Qualtrics.com, LLC, Provo, UT) or by research personnel over

the telephone. Reminders were sent through email or phone calls prior to the participants' focus group date.

FOCUS GROUPS

Focus group questions were developed to answer the following research questions:

1. What are the perceived motivators to eating a healthful diet to lose weight?
2. What are the perceived barriers to eating a healthful diet to lose weight?
3. Are there differences between males and females in regard to their perceived motivators and barriers?

A semi-structured question guide was developed. The discussion began with an icebreaker followed by the main research questions.⁵¹ The questions (**Table 8**) were pilot tested with a group of male faculty and female faculty and staff. The questions were then modified based on the pilot groups' ability to answer the questions and their feedback. However, only the three questions directly related to motivators and barriers for healthful eating and weight loss were analyzed for this study.

Table 8. Focus Group Questions

1. What comes to mind when you hear the words "healthy diet"?
 2. Think back to the last time you tried to change your diet to eat better and to lose weight...
 - a. What was the reason why you decided to start making those changes?
 - b. What was the hardest thing about eating healthy to lose weight?
-

All focus groups were co-moderated by two research team members (ST and MVM) and a note taker. Focus group sessions were recorded using two digital voice recorders (Sony model ICD-UX533, Sony Corp., Konan Minato-Ku Tokyo, Japan, 2013 and Olympus Digital Voice Recorder model WS-320M, Olympus Imaging Corp., Shinjuku-ku, Tokyo, Japan, 2007). The note taker took field notes on the verbal and nonverbal communications while working one audio

recorder. The demographic data of participants were collected from a survey completed online or on paper before the focus group sessions.

DATA ANALYSIS

The recordings were transcribed verbatim. Field notes were added to the transcripts.⁵¹ The transcriptions were reviewed by a second person to verify accuracy.⁵² The researchers used an approach adapted from classical analysis described in Krueger and Casey.⁵¹ Two researchers independently read through the transcripts to verify the quotes addressed the specific question asked. If the quote did not answer the question asked, it was moved to the question it addressed or if it was not relevant to any question, it was discarded from the analysis.⁵¹ The researchers compared their results for each question and discussed any inconsistencies. Then, an open codebook was developed using the transcripts from the first and second session. The co-moderators individually coded the transcripts and then compared their results. Any inconsistencies were resolved through discussion. The remainder of the transcripts were then coded with the open codebook and added in new codes to the codebook where needed throughout the process. The codes were placed into themes.⁵¹ The frequency of each code was determined for comparison of themes between male and female focus groups. Chi-square analysis was performed for the variables race/ethnicity, education, annual household income, and health conditions and t-test was used for age and BMI comparing the two genders using JMP version 11 (SAS Institute Inc., Cary NC).

CHAPTER IV: RESULTS

The study flow is detailed in **Figure 1**. Thirty-seven respondents eligible for participation scheduled to attend the focus groups. Of those who scheduled, five cancelled and two did not show up for the session. In total, 30 participants attended one of seven focus group sessions. The focus groups ranged in size from three to five participants. Smaller focus groups have been suggested to be easy to manage and for the participants to feel comfortable.⁵¹ Focus groups were gender and age group specific (45-54 and 55-64 years old) with the exception of one group of females for which both age groups were included due to low number of participants for that day. The sessions lasted between 74 and 121 minutes (**Table 9**).

The demographics of the participants are available in **Table 10**. Twenty-six participants were from Harrison County and four were from Marion County. Participants were an average of 55.2 ± 5.2 years old with the males having an average of 55.2 ± 5.1 years old and females were 55.2 ± 5.6 years old. The overall average BMI was 32.5 ± 4.5 kg/m². Males BMI were 30.6 ± 3.5 kg/m² while females were 35.1 ± 4.4 kg/m². The BMI between males and females were statistically significant ($P=0.008$). Diabetes and high triglycerides were two health conditions that were both statistically significant ($P=0.04$ and $P=0.05$, respectively). Sixty percent of the participants were male. A large majority (97%) were non-Hispanic white. The majority were college graduates (53%) and most (67%) had household incomes over \$50,000 per year. Males had significant higher income than females ($P=0.03$).

Perceptions of a Healthy Diet

Participants were asked: *What comes to mind when you hear the words “healthy diet”?* to determine what eating healthfully meant to them. The responses fell into one of two themes: the naming of a specific food that associated with a healthy diet or a feeling that healthy eating evoked.

The most commonly named foods were: vegetables and fruits. A few people named meat and having less carbohydrates. Vegetables were the most common food mentioned related to healthy diet.

- *“I just think vegetables when somebody says healthy.”* (Male)
- *“...a healthy diet would have more vegetables in it and less, you know, less serving size of meat.”* (Female)

Other participants named descriptions of the food in regard to taste or inconvenience of healthy foods rather than specific foods or food groups. Some said when they hear “healthy diet” they think bad taste, bland, regular scheduled meals, portion control, not convenient, discipline, restriction, and expensive. Bad taste and bland was just discussed among two male focus groups. Another interesting description seen among the males was how a healthful diet was not convenient.

- *“When you’re on the go or something and the healthy food is not as convenient. Unless, you say, you could plan ahead. You got the veggies cut up in the refrigerator and can grab the carrots sticks and raw broccoli or whatever.”* (Male)

Portion control and regular scheduled meals were seen among a female focus group on their thoughts of what a healthful diet is.

- *“... But I think of eating healthy as being a portion sizes meals three, four times a day like you said not large meals but eat more often.”* (Female)

Some interesting descriptive words that were brought up among the focus groups were “rabbit food”, “starvation”, “shopping”, and “struggle”.

Motivators to Eating a Healthful Diet and to Lose Weight

To determine what factors motivated participants to eat healthier to lose weight, participants were asked: *Think back to the last time you tried to change your diet to eat better and to lose weight. What was the reason why you decided to start making those changes?* Five themes emerged from focus group discussions (**Table 11**). Participants discussed how the improvement of health motivated them followed by their looks and physical fitness and being a

role model for other family members. To improve health was the main theme for both males and females. Males also were motivated by wanting to look better and to be more physically fit. They also said that one had to have an internal motivation in order to start eating healthier. In the female focus groups perceived special events and appearance and fitness tied with family as their primary motivators.

Primary motivators

Health

Health was the mostly commonly discussed motivator among both males and females. Many of the participants discussed how being diagnosed with a health problem would or has motivated them to take action to change their diet. One individual discussed how it took him going to the hospital to make him realize he needed to change.

- *“I went into acute renal failure and severe dehydration and everything. That’s when it finally kicked in that hey I better take care of myself.” (Male)*

Another individual mentioned how seeing others he went to school with developing serious health conditions motivated him to make changes.

- *“What’s motivated me is I see people my age I went to school with and older that has a lot of serious health issues and I think, “Wow, I don’t want to be that person,” you know so try to, decided I needed to eat healthier so.” (Male)*

A doctor’s recommendation to change their eating patterns or to lose weight was also discussed by the participants. One participant talked about how if the doctor gave him an ultimatum “to get healthier or die” that would promote him to get started on changing his diet. Some said that seeing their weight and body mass index also helped motivate them to eat healthier to lose weight.

- *“You get on the scale and see what it was, you gotta do something.” (Female)*

Individuals talked about changing their diet to feel better and to have more energy to boost themselves. Two females discussed how the start of insulin would promote a change as well.

Appearance and physical fitness

The second most common motivator overall was appearance and physical fitness.

Individuals talked about how they would want to make changes to improve their appearance and their physical fitness. Males more often than females discussed their appearance and physical fitness to motivate them. One participant discussed how wanting to improve his appearance and self-esteem motivated him more than even health.

- *“Mine was be more uh self-esteem then the other accent. Which is probably not the right way to do but like he said I just felt uncomfortable in my clothes, saw myself and looked horrible so that was, that motivated me more than the health which is certainly not the right way but the reason...” (Male)*

Also, to improve the fit of their clothes motivated them to make changes. For example, one female said, *“When your clothes start getting tight and you’re not comfortable sitting...”* or how one male talked about how he had to buy bigger pants and knew it was time for a change.

Family

Another common theme of motivation among five groups was family. Participants said they wanted to make changes because of their family members including spouses, children, and grandchildren. Spouses motivated the participants to make changes to their diet and lose weight when they themselves had made changes and were cooking healthier meals.

- *“...my wife goes on all these crazy diets all the time and that's what she fixes. She fixes, sometimes she does this sea salt here and this and you can't have this and you can't have this and that's what she buys so I just eat whatever she fixes.” (Male)*

A few participants said their children motivated them to want to do better. One male talked about how he would like to see his children get married. Another participant talked about how she wanted to be a role model for her daughter.

- *“I’d like to motivate my daughter too cause she’s really much more overweight than I am. I’m just like to be a good role model for her...”* (Female)

Secondary motivators

Additional motivators that were mentioned less frequently were: internal motivation and special events. Internal motivation was a motivator that was only found among males while in a female focus group only perceived special events as a secondary motivator.

Internal motivation

Internal motivation was found among the male focus groups. This theme involved the individuals talking about how motivation has to come from inside yourself and that they were not sure how people could motivate others if the person was not internally motivating themselves.

- *“I think you have to want to help yourself too.”* (Male)
- *“I was just going to say that. I mean you can have all the, I mean I understand, you know everything you said is true, but if a person doesn’t want to help themselves how do you motivate someone to get out there and take advantage of a free health fair? I don’t know how you do that.”* (Male)

Special events

This theme was found among a female focus group. This theme involved the individuals talking about how a life event, such as a wedding or a community challenge would promote them.

- “...you know child is going to get married or something. You think ok I’m gotta make sure I’m going to be there I lose weight I’m not going to wear that dress for that wedding, you know so I think it’s some type of a major activity to make the necessary changes to their diet and lose weight.” (Female)
- “Some people maybe with a challenge like let’s all weigh in and let’s see where were at in 6 weeks or something you know. Something, something like to work for maybe or you know have a little competition.” (Female)

Perceived Barriers to Eating a Healthful Diet to Lose Weight

Participants were asked: *What was the hardest thing about eating healthy to lose weight?*

Among the seven focus group sessions, eleven themes emerged from the discussions (**Table 12**).

The three most commonly mentioned barriers overall were time, convenience of unhealthy foods, and temptation of unhealthy foods. Time was the dominant theme for both males and females. Other primary barriers for males were convenience of unhealthy foods and lack of self-control. Females more commonly mentioned temptation and lack of self-control.

Primary barriers

Time

Time was the most commonly discussed barrier. Time can be a hurdle for participants when it comes to eating healthfully to lose weight. Participants acknowledged that meal planning was important to eating healthfully, but many commented on not having enough time to devote to the tasks. When looking at the various aspects of time that participants perceived as impeding them from eating healthful, the major concept seemed to be that they had other life obligations that took priority over the planning and cooking tasks that eating healthful required. In both male and female focus groups, time was a top barrier in preventing them from consuming a healthful meal. Many participants discussed different ways in which they lacked time.

Participants discussed the difficulty of being prepared all the time or did not feel like prepping when it came to a healthful meal.

- *“...what makes it even more difficult is those times where you are really, really busy and you know you’re traveling here, whatever it is, it’s hard to be prepared all the time.” (Male)*
- *“I just don’t have time. I know when I get home I don’t really feel like prepping you know. I’m tired, worn out from the day, I’m stressed, have other things to do, you know with the little guys and I just really don’t feel like prepping for the next day. I just want to relax and do what I need to do in house.” (Male)*

Another aspect of time mentioned by the participants was that their children’s activities prevented them from being able to cook meals and thus, it was easier for them to go through a drive thru restaurant. If they had time to prepare a meal, some felt it was quicker to fry food than healthier cooking methods.

- *“If you got children and they’re active and everything. You don’t have time to go home and fix a good meal. You just go get it and go thru.” (Male)*
- *“It’s also the time factor involved too. I mean it’s so easy to go through the drive thru or throw something ... in hot, oil grease and fry it instead of barbequing or grilling it... It’s just the time factor...” (Male)*

Being busy with other priorities and not taking time for themselves were also barriers to preparing healthful meals.

- *“You have that busy atmosphere or people don’t have time to cook and you’re doing a lot of pre-processed foods and fast foods.” (Female)*
- *“It takes time. I mean your focus has to be on yourself and, you know, we’ll take time for everyone else. I mean that’s why I’m running late cause this one, this one and I just drop everything but for ourselves we just don’t do it.” (Female)*

Participants discussed how long work days and busy schedules made it difficult for them to eat a healthful meal.

- *“I would agree ...my work schedule is what keeps me from eating healthy you know. I guess if I would have...go take an hour for lunch I probably sit down somewhere to eat, rather than you know. Lots of time when I take lunch I try not to eat fast food but ...if I do it’s ... eating and rolling. See if you get something quick that’s not home-cooked it’s obviously not as healthy as the, if you sit down and have a home-cooked lunch.” (Male)*

Individuals also talked about how they would skip meals or wait till they were hungry to eat. For example, a male talked about how he would skip lunch. But when he got home and dinner was

not ready yet, he would eat everything he saw. Not taking the time to plan their meals also hindered their abilities to consume a healthful meal.

- *“Mine again is not planning ahead of time what I’m going to eat. Not waiting till I’m starving and realizing, “Oh I haven’t ate in 8 or 10 hours.” I think that planning is the number one thing, for me.” (Female)*

Lazy was mentioned among two male participants. One male stated he just didn’t want to take the time to cook dinner.

- *“...we eat out a good bit just simply because at 4:30, 5 o’clock, 5:30, we don’t want to come home and cook dinner and have to worry about cleaning it up and you know what and sometimes that’s somewhat of an excuse. It’s somewhat laziness...” (Male)*

Convenience of unhealthy foods

Another dominant theme was that many felt with their busy lives, it was more convenient to get foods that were unhealthy. They felt that when they were in a hurry, most of the food available to them were not healthy. Among the differences in genders, convenience of unhealthy foods was a primary barrier for males while convenience of unhealthy foods for females was their sixth barrier. Convenience of fast food was seen among males and females and how much easier it is to go through a drive thru or stop in a convenient store for lunch or dinner instead of cooking.

- *“Like in my job and probably everybody else’s job, it’s easier to get fast food. It’s easier to get, you know go into a convenient store and get you a pepperoni roll. You know it’s very easy, it’s very convenient and that seems to be, that’s my weakness. It’s like, you know if you’re hungry, you’re hungry right now and it’s easier to get something that’s processed than something that is better for you.” (Male)*

Healthful eating was discussed as not being convenient when it comes to preparing the food. It was stated that it was easier to buy a box crackers than to buy vegetables which have to be cut-up and are perishable.

- *“It’s almost like the lack of convenience of the healthy foods, you know. Like she said the vegetables and stuff. You buy a box of crackers and you eat the box of crackers, but if you buy a, you don’t buy a box of already cut up carrots or already cut up any vegetable. You need to package ‘em differently.”* (Female)

Participants’ spoke of how eating meals out and how there are not many places to eat at that were considered healthful made it difficult for them to consume nutritious meals. A female participant talked about being invited to dinners and how if someone picks a pizza restaurant you are going to eat the pizza.

- *“Especially if you go out to eat. When you go out to eat, it’s in front of you, you’re going to eat it. I don’t know they usually give you pretty good helping.”* (Male)

Temptation

Temptation was the third and last primary barrier found among the focus groups.

Temptation was seen to be what made it hard for participants to resist the unhealthy foods such as seeing TV advertisements or being at social events. There was not much of a difference between the genders.

- *“I think the temptation you know you get tired of eating healthy stuff and then you, you see the advertisements on TV, you go to store, what’s at the prime spots when you walk through the store are these unhealthy snacks and foods um I think that’s a, that’s a big obstacle. ...and I, I think sometimes that’s why, you know, when you think eating healthy, you gotta add those sometimes add those things in every once in a while because when you don’t when you restrict yourself, it makes you want more.”* (Female)

Secondary barriers

These barriers were not the top three choices among the participants but themes still appeared were lack of self-control, preferences, not being mindful, cost, lack of knowledge and skills, not seeing results, factors of life, and family members and friends. Among the male and female participants, slight differences can be seen among the genders. The secondary barriers for males’ were temptation, preference, lack of knowledge and skills, not being mindful, not seeing results, cost, family members and friends, and factors of life. The females’ secondary barriers

were cost, factors of life, lack of knowledge and skills, convenience of unhealthy foods, not being mindful, preferences, family members and friends, and not seeing results.

Lack of self-control

Lack of self-control was the third most common barrier to males and females but overall was the fourth barrier. Lack of self-control as a barrier meant that the participants had trouble with maintaining their ability to eat a healthful meal. This can be seen with how habit was a barrier for the participants who were having trouble to overcome. Habit was mostly discussed among the males though. Lack of motivation and discipline made it harder for them to stay on top of eating healthful to lose weight.

- *“So um definitely, definitely a habit and a routine that you get into and what once you become inactive, it’s hard to get back that that motivation that you once had. With me.” (Female)*

Keeping up with eating a nutritious meal and losing their healthful habits were seen to affect the males mostly when it came to a lack of self-control.

- *“I think it’s to keep doing it. I don’t think it’s hard to do it. I think it’s hard to keep doing it. And what makes it even more difficult is those times where you are really, really busy and you know you’re traveling here, whatever it is, it’s hard to be prepared all the time.” (Male)*

Not having any accountability from others or themselves and excuses were seen to affect the females when it came to trying to eat healthful.

- *“My, me quit making excuses for myself and be accountable for what I’m doing and quit. Exercise more and quit eating late.” (Female)*

Preferences

Preference among the participants dealt with how it was their choice about wanting something tasteful or the size of the portion when it comes to their meals. Preference was seen to be the fifth overall barrier to the participants. It’s also interesting to note how more males made comments about preference when it comes to food. Taste of unhealthy foods were found to be a

barrier. Interesting, one participant talked about immediate gratification of food meaning they would rather have the unhealthy foods right now.

- *“Yeah, people don’t want to make that choice. They want the sinful food. Cause it taste better Sorry.” (Female)*
- *“Yeah and that’s immediate gratification. You know, it’s going to be worse after us with the computers, and you know the younger people. Who wants to wait 6 months? I mean you want to sink your teeth into a hoagie right now, so it’s yeah. I think everybody’s aware and I think that it’s a desire, but I think that the immediate gratification outweighs that, at least for me.” (Male)*

Portion and consuming too much food was also seen to be troublesome for males and females. One male stated, *“The volume, the volume is a problem.”*

Not being mindful

Not being mindful and cost were the next two barriers that had tied. For the participants, not being mindful was seen as indulging into food when they were bored or stress eating. Stress was seen to affect the individuals such as making them crave foods. When the individuals talked about mindless eating, they talked about how sitting around and doing nothing which would trigger them to want to snack. This can also be seen when they are watching TV.

- *“When you’re sitting around doing nothing your food, your mind turns to well I’m going to go to the refrigerator and see what’s there to snack on. And you will do the snacking. You need something else to take your mind off of that...” (Male)*

Cost and financial

The individuals saw cost and financial expenses affected them from buying healthier foods. Females discussed more about cost affecting them than males when it came to healthful eating.

- *“I have a hard time you know it’s expensive to eat healthy. And when, when we’re on a, like this month, we’re on a particularly stringent financial, um you know, spending and you cut back where you can afford to cut back. You cut back on your groceries, you know, that’s the only place left.” (Female)*

Lack knowledge and skills

Lack of knowledge and skills theme appeared in five of the seven focus group sessions. Lack of knowledge and skills were seen as how the participants did not know how to cook a healthful meal and how they were confused from different nutrition messages they might see on the internet. One male discussed how his biggest problem was preparation and it was easier “to eat garbage.” One female mentioned how she was never taught how to cook a healthful meal.

- *“I’ve never learned how to cook healthy. Grew up on fried potatoes.” (Female)*

Two females discussed how the internet has mixed messages in eating healthful to lose weight.

- *“See like this morning on the internet said 10 foods to avoid and one of them was corn on the cob. And see I read that stuff every day and then when I go to the store, I say well I can’t have this they said it was bad. Can’t have this so I go home with nothing and I that’s when I get confused at with stuff like that.” (Female)*

Not seeing results

Not seeing results and factors of life were the two next barriers that had tied. Participants felt that it made it hard for them to eat healthful to lose weight by not seeing results. This could be when the participants would see the weight loss slowed down and begin to plateau to a steady weight.

- *“Well then you hit this plateau where like you stabilize or something. You don’t lose any weight for a little while. And then I start thinking well I’m doing what they’re telling me do, but I’m not losing any more weight. So you then you start getting a little bit discouraged.” (Female)*

Factors of life

Interestingly, a barrier that came about in three focus groups were factors of life. This theme came about due to participants talking about aspects in their life that they do not have much control of that could affect their weight loss. Participants talked about they believe their aged played a factor or how since they are older their metabolism has slowed down. Females had discussed this theme more than males as a barrier in eating healthful to lose weight.

- “But it gets harder as you get older. It’s harder to lose weight as you get older. And then if you’re on medication it’s going to int-, it won’t allow you to lose weight.” (Female)
- “...I blame mine on, um metabolism or something cause I’m still very active.” (Female)

Family members and friends

Family members and friends appeared to be the last barrier in making it hard for individuals to consume a healthful meal. Family and friends were seen to affect their eating choices by wanting more than the individual would like. One female discussed how the children made it difficult by them not cleaning their plate and the parents felt they needed to finish it to not waste the food.

- “Well, I have I cook for my husband and the grandchildren when they’re over, so you know a lot of times they want more than just a boiled egg.” (Female)
- “Well and talking about when you grew up that it was meat and potatoes, when I grew up, it was you cleaned your plate, no matter what was on that plate, you ate whatever your parents gave, you cleaned it. And then when I had kids, it became, they never cleaned their plate but then mom and dad cleaned it because you couldn’t throw that away.” (Female)

Gender Differences for Motivators and Barriers

Males and females identified similar motivators to eating healthfully and perceived the desire to improve their health as the main theme. *Internal motivation* was discussed among the male participants, while females said they were motivated by *special events* like weddings and community challenges. *Appearance and physical fitness* were discussed more often in the male focus groups than the female focus groups.

As for barriers, time was the dominant theme for both males and females, some gender differences were found. Males cited *convenience of unhealthy foods* more often than females. More females than males perceived their main barrier as *temptation* by unhealthy foods. Even though *cost* was not a primary barrier for either males or females, it was mentioned more often in female than male groups. Males said their *preference* for the taste of unhealthy foods over healthy ones was a barrier more often than female groups. *Factors of life* was also perceived

more among the females in hindering their efforts. Among both male and female focus groups, *lack of self-control* was found to be the third barrier.

Figure 1. Focus Group Attendance

Table 9. Focus Group Numbers and Length of Discussions

Focus group Number	Gender (n)	Age	Time (from ice breaker to conclusion)
1	Females (5)	45-54	1:14:32 (74 minutes)
2	Females (3)	55-64	1:30:20 (90 minutes)
3	Males (5)	45-54	1:35:16 (95 minutes)
4	Males (5)	55-64	1:22:44 (82minutes)
5	Females (4)	45-64	2:01:19 (121 minutes)
6	Males (5)	55-64	1:37:11 (97 minutes)
7	Males (3)	45-54	1:51:05 (111 minutes)

Table 10. CHARACTERISTICS FOR 45 TO 64 YEAR OLDS FOCUS GROUPS

	Total (n=30)	Males (n=18)	Females (n=12)
Age Group			
45-54 years	15 (50)	8 (44)	7 (58)
55-64 years	15 (50)	10 (56)	5 (42)
BMI Classification*			
Overweight (25-29.9kg/m ²)	10 (33)	9 (50)	1 (8)
Obese (30 kg/m ² or greater)	19 (63)	8 (44)	11 (92)
NR	1 (3)	1 (6)	0 (0)
Race/Ethnicity			
Non-Hispanic White Only	29 (97)	17 (94)	11 (92)
Non-Hispanic White and Other	1 (3)	1 (6)	0 (0)
Other	1 (3)	0 (0)	1 (8)
Education			
Grade 12 or GED	8 (27)	3 (17)	5 (42)
College 1 year to 3 years (Some college or technical school)	6 (20)	4 (22)	2 (17)
College 4 years or more (College graduate)	16 (53)	11 (61)	5 (42)
Annual Household Income**			
Less than \$34,999	5 (17)	1 (6)	4 (33)
Between \$35,000 and \$49,999	5 (17)	1 (6)	4 (33)
Between \$50,000 and \$74,999	6 (20)	4 (22)	2 (17)
\$75,000 or more	11 (37)	10 (56)	1 (8)
I would rather not say	3 (10)	2 (11)	1 (8)
Health Condition			
High blood pressure ^a	17 (61)	8 (50)	9 (75)
Diabetes ^{b***}	6 (24)	2 (13)	4 (40)
Pre-diabetes ^c	4 (18)	3 (21)	1 (13)
High cholesterol ^d	20 (80)	12 (48)	8 (73)
High triglycerides ^{e****}	11 (52)	6 (46)	5 (63)
2 or more health conditions ^f	22 (76)	12 (71)	10 (83)

NR=Not reported

*P=0.008, ** P=0.03, *** P=0.04, **** P=0.05

^aHigh blood pressure sample size Total (n=28) Males (n=16) Females (n=12)^bDiabetes sample Total (n=25) Males (n=15) Females (n=10)^cPre-diabetes sample size Total (n=22) Males (n=14) Females (n=8)^dHigh cholesterol sample size Total (n=25) Males (n=14) Females (n=11)^eHigh triglycerides sample size Total (n=21) Males (n=13) Females (n=8)^f2 or more health conditions Total (n=29) Males (n=17) Females (n=12)

Table 11. Motivators to Healthful Eating and Weight Loss		
Overall	Males	Females
Health	Health	Health
Appearance and physical fitness	Appearance and physical fitness	Special events
Family	Internal motivation	Appearance and physical fitness/Family
Internal motivation	Family	
Special events		

Table 12. Barriers to Healthful Eating and Weight Loss		
Overall	Males	Females
Time	Time	Time
Convenience of unhealthy foods	Convenience of unhealthy foods	Temptation
Temptation	Lack-self control	Lack-self control
Lack of self-control	Temptation	Cost
Preferences	Preference	Factors of life
Not being mindful/Cost	Lack of knowledge & skills/Not being mindful/Not seeing results	Lack of knowledge & skills/Convenience of unhealthy foods/Not being mindful
Lack knowledge & skills	Cost	Preferences
Not seeing results/Factors of life	Family members and friends	Family and friends/Not seeing results
Family members and friends	Factors of life	

CHAPTER V: DISCUSSION

The focus group study examined what helps or hinders healthful eating and weight loss in middle-aged adults. The prevailing three factors that motivated participants in this study to eat better to lose weight were health, appearance and physical fitness, and family. The desire to improve health was the dominant motivator in this focus group study. This is consistent with other studies.^{18-21,31-33,36,37} Also noteworthy to point out is how the top three motivators to healthful eating found in the articles reviewed were health problems and benefits, healthcare provider, and to feel better and more energy were all placed in the health theme of this focus group study.¹⁸⁻²⁴ Appearance and physical fitness was the second overall motivator found and the second motivator discussed among the male focus groups. Appearance was found to be the dominating motivator in the review for weight loss.³⁰⁻³⁵ Increased and improved physical activity was seen in the studies but not as a common motivator.^{32,34} Family was the third primary motivator discussed in the middle-aged adults focus groups. When looking at the studies reviewed, family aspects were not seen as common in the healthful eating or weight loss studies.^{18,20,23,35,36} It was found how an individual wanted to be a role model for her daughter which was also found among a focus group that was mainly females.¹⁸ One of the top three motivators found among the weight loss studies reviewed were support but was not found in the current focus group study motivators.^{30,33,37,38}

Motivation to lose weight for a special event was discussed among females, but not male participants. They wanted to make changes in their diet and weight loss for events such as weddings or to participate in a community challenge. This was not a theme found in any articles reviewed. While most participants identified motivators, these motivators did not appear to outweigh the barriers preventing them from eating healthfully since all participants had at least one health condition and most were not at the time eating to lose weight.

Among the eleven themes identified for the barriers to healthful eating and weight, time was the dominant barrier. This is consistent with numerous studies.^{18–23,25–29,33,35,36,39} It would seem that barriers such as lacking time to prepare healthful meals and to plan ahead outweighs the motivation that people have to eating healthfully when they are diagnosed with a health condition. With lacking time, a participant talked about how they did not have time to fix a good meal due to their children being active. This was also perceived in another study that included all females on how they did not have time to cook with their children still at home.²⁵ Macdiarmid *et al.* saw how work patterns affected the participants with their time and commitments in trying to eat healthful which is similar to what was found in this current study with individuals talking about how long work days affected their ability to eat healthful.²⁶ Participants mentioned how they didn't feel like prepping the food when they were really busy or just tired from the day and wanted to relax. A previous study showed the same barrier for lacking time in a diverse group of males and females in how preparation time affected their ability to consume more fruits and vegetables.²¹

Convenience of unhealthy foods was the second overall barrier found in the present focus group. Participants discussed how unhealthier foods were easier for them to get instead of cooking a healthful meal. However, this barrier was not a common one found in the review of studies. It could be similarly related to the barrier, inconvenience of fruits and vegetables that Rolnick *et al.* found in their focus groups regarding consumption.²⁰ Also, the third barrier found to affect the individuals in this study was temptation but was hardly seen in the review.^{25,27,33,39} Two studies, one with female participants and the other male participants, found temptation as a barrier.^{25,27} Interestingly though in this study, the female focus groups saw temptation as their second barrier to affect them more than the males.

Interestingly, cost or the expense of eating healthful is cited as a dominant barrier in most studies.^{19–24,26–29,31,33,36,39,40,43} However, we did not find it to be a predominant barrier in our study although it was mentioned by a few participants. This was particularly the case with men. This may be because our sample was at a higher income level than participants in other studies. Noteworthy, the National Center for Health Statistics reported that males who have a higher income levels have a slightly higher obesity prevalence than males with lower incomes.⁴ The opposite is true for women.⁴ If cost is not a barrier and participants could afford to purchase healthy foods, what appears to be their main deterrents are time and convenience. Interventions aimed at reducing obesity in men should focus on overcoming these barriers.

One theme that appeared from the focus groups that was not found in the review of studies was factors of life which involved mainly females discussing how their metabolism or how their age affects them from being able to lose weight. The participants talked about how the older they got, the harder it was for them to be able to lose weight.

Limitations

In this study, 97% of the participants were non-Hispanic white. Our sample of participants were similar to residents of both counties in regard to race but were more educated.⁵³ In our study, 53% of participants were college graduates but only about 20% of residents of Harrison county received their bachelor's degree or higher.⁵³ In this current focus group study, 37% had an income of \$75,000 or more while the median household income for Harrison and Marion County are \$40,556 and \$39,870 respectively, which is slightly higher than the West Virginia Median Household.^{54,55} Also, with female moderators, male participants could possibly withdrawn their opinions to the questions. Even though small focus groups have been suggested,

a three person focus group could have been too small and the participants might have felt a little uncomfortable.

Chapter VI: Summary and Conclusions

Motivators and barriers to healthful eating and weight loss is an important concept to understand what helps or prevents individuals in their daily lives to help implement an intervention in the target population. Individuals in this study were motivated by their desire to improve their health but however time seems to outweigh their motivation to eat healthful and lose weight. An intervention should aim to help individuals overcome their predominant barrier of time. Also, the intervention should aim to help the individuals overcome their top barriers to help them succeed in healthful eating to lose weight and focus on what would also help the males and the females separately.

Practice application

Interventions should be developed based on what the target population has mentioned on what hinders them from eating healthfully to lose weight (**Table 13**). In order to help individuals overcome time, an intervention that teaches them how to plan and prepare their healthful meals in an efficient time when they feel they are too busy or too tired to do anything. Healthful recipes or healthful restaurant choices for individuals in an intervention would also help them prepare nutritious meals. Also, weekly phone calls with a Registered Dietitian to help keep them accountable could help an individual stay on top of their weekly, nutrition goals. An intervention geared towards males to help make healthier choices when they feel unhealthy food is more convenient, which could be assisting the individual to find healthier choices at restaurants. For females, teaching females how to reduce their temptation in unhealthy foods by helping them substitute better choices.

Table 13. Practice Applications to Overcome Barriers to Healthful Eating to Lose Weight

Overall Barriers	Application 1	Application 2
Time	Teach how to plan healthful meals	Teach how to prepare healthful foods
Convenience of Unhealthy Foods	Healthful recipes to prepare meals	Healthful restaurant choices
Temptation	Teach how to substitute to healthful choices	Explain how you can have “a favorite” every once in a while

Reference

1. State Fact Sheets. American Heart Association. http://www.heart.org/HEARTORG/Advocate/StateIssues/FindStateSpecificInformation/State-Fact-Sheets_UCM_426369_Article.jsp. Published 2010. Accessed September 23, 2014.
2. Blackwell DL, Lucas JW, Clarke T. Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2012. February 2014.
3. WV Behavioral Risk Factor Survey. <http://www.wvdhhr.org/bph/hsc/statserv/brfss.asp>. Accessed January 26, 2016.
4. Adult Obesity Facts | Overweight & Obesity | CDC. <https://www.cdc.gov/obesity/data/adult.html>. Accessed May 25, 2016.
5. West Virginia State Obesity Data, Rates and Trends: The State of Obesity. <http://stateofobesity.org/states/wv/>. Accessed January 26, 2016.
6. King DE, Matheson E, Chirina S, Shankar A, Broman-Fulks J. The Status of Baby Boomers' Health in the United States: The Healthiest Generation? *JAMA Intern Med*. 2013;173(5):385-386. doi:10.1001/jamainternmed.2013.2006.
7. Millen BE, Wolongevicz DM, Nonas CA, Lichtenstein AH. 2013 American Heart Association/American College of Cardiology/The Obesity Society Guideline for the Management of Overweight and Obesity in Adults: Implications and New Opportunities for Registered Dietitian Nutritionists. *J Acad Nutr Diet*. 2014;114(11):1730-1735. doi:10.1016/j.jand.2014.07.033.
8. 2012 West Virginia State Health Profile. West Virginia Department of Health & Human Resources. <http://www.dhhr.wv.gov/publichealthquality/statepublichealthassessment/Documents/2012%20State%20Health%20Profile%20Final%20May%202013.pdf>. Published 2012. Accessed September 25, 2014.
9. Kolasa KM, Rickett K. Barriers to Providing Nutrition Counseling Cited by Physicians: A Survey of Primary Care Practitioners. *Nutr Clin Pract Off Publ Am Soc Parenter Enter Nutr*. 2010;25(5):502-509. doi:10.1177/0884533610380057.
10. Telehealth: Using Electronic Information and Telecommunication Technologies to Support Health Care from the Academy of Nutrition and Dietetics. Academy of Nutrition and Dietetics. <http://www.eatright.org/Members/content.aspx?id=7341>. Published May 2013. Accessed September 24, 2014.
11. Tessaro I, Rye S, Parker L, et al. Cookin' Up Health: Developing a Nutrition Intervention for a Rural Appalachian Population. *Health Promot Pract*. 2006;7(2):252-257. doi:10.1177/1524839905278887.

12. Krummel DA, Humphries D, Tessaro I. Focus Groups on Cardiovascular Health in Rural Women: Implications for Practice. *J Nutr Educ Behav*. 2002;34(1):38-46 9p.
13. Tessaro I, Smith SL, Rye S. Knowledge and Perceptions of Diabetes in an Appalachian Population. *Prev Chronic Dis*. 2005;2(2):A13.
14. Goins RT, Spencer SM, Williams K. Lay Meanings of Health Among Rural Older Adults in Appalachia. *J Rural Health*. 2011;27(1):13-20. doi:10.1111/j.1748-0361.2010.00315.x.
15. Coyne CA, Demian-Popescu C, Friend D. Social and Cultural Factors Influencing Health in Southern West Virginia: A Qualitative Study. *Prev Chronic Dis*. 2006;3(4):A124.
16. Rye JA, Rye SL, Tessaro I, Coffindaffer J. Perceived Barriers to Physical Activity According to Stage of Change and Body Mass Index in the West Virginia Wisewoman Population. *Womens Health Issues*. 2009;19(2):126-134. doi:10.1016/j.whi.2009.01.003.
17. Motivator Definition in the Cambridge English Dictionary.
<http://dictionary.cambridge.org/us/dictionary/english/motivator>. Accessed May 21, 2016.
18. McGee BB, Richardson V, Johnson GS, et al. Perceptions of Factors Influencing Healthful Food Consumption Behavior in the Lower Mississippi Delta: Focus Group Findings. *J Nutr Educ Behav*. 2008;40(2):102-109. doi:10.1016/j.jneb.2006.12.013.
19. Eikenberry N, Smith C. Healthful Eating: Perceptions, Motivations, Barriers, and Promoters in Low-Income Minnesota Communities. *J Am Diet Assoc*. 2004;104(7):1158-1161. doi:10.1016/j.jada.2004.04.023.
20. Rolnick SJ, Calvi J, Heimendinger J, et al. Focus Groups Inform a Web-Based Program to Increase Fruit and Vegetable Intake. *Patient Educ Couns*. 2009;77(2):314-318. doi:10.1016/j.pec.2009.03.032.
21. Yeh M-C, Ickes SB, Lowenstein LM, et al. Understanding Barriers and Facilitators of Fruit and Vegetable Consumption among a Diverse Multi-Ethnic Population in the USA. *Health Promot Int*. 2008;23(1):42-51. doi:10.1093/heapro/dam044.
22. Gough B, Conner MT. Barriers to Healthy Eating amongst Men: A Qualitative Analysis. *Soc Sci Med*. 2006;62(2):387-395. doi:10.1016/j.socscimed.2005.05.032.
23. Thomas SL, Hyde J, Karunaratne A, Kausman R, Komesaroff PA. "They All Work...When You Stick to Them": A Qualitative Investigation of Dieting, Weight Loss, and Physical Exercise, in Obese Individuals. *Nutr J*. 2008;7:34. doi:10.1186/1475-2891-7-34.
24. Peterson J, Schmer C, Ward-Smith P. Perceptions of Midwest Rural Women Related to Their Physical Activity and Eating Behaviors. *J Community Health Nurs*. 2013;30(2):72-82 11p. doi:10.1080/07370016.2013.778722.
25. Foltz SC, Jp G, Ah L, R S, Pn R, Me N. Factors Related to Cardiovascular Disease Risk Reduction in Midlife and Older Women: A Qualitative Study., Peer Reviewed: Factors

Related to Cardiovascular Disease Risk Reduction in Midlife and Older Women: A Qualitative Study. *Prev Chronic Dis* 2008;5, 5(1, 1):A06-A06.

26. Macdiarmid JI, Loe J, Kyle J, McNeill G. "It was an Education in Portion Size". Experience of Eating a Healthy Diet and Barriers to Long Term Dietary Change. *Appetite*. 2013;71:411-419. doi:10.1016/j.appet.2013.09.012.
27. Farahmand M, Amiri P, Ramezani Tehrani F, Momenan AA, Mirmiran P, Azizi F. What are the Main Barriers to Healthy Eating among Families? A Qualitative Exploration of Perceptions and Experiences of Tehranian Men. *Appetite*. 2015;89:291-297. doi:10.1016/j.appet.2015.02.025.
28. Baruth M, Sharpe PA, Parra-Medina D, Wilcox S. Perceived Barriers to Exercise and Healthy Eating Among Women from Disadvantaged Neighborhoods: Results from a Focus Groups Assessment. *Women Health*. 2014;54(4):336-353. doi:10.1080/03630242.2014.896443.
29. John JH, Ziebland S. Reported Barriers to Eating More Fruit and Vegetables Before and After Participation in a Randomized Controlled Trial: A Qualitative Study. *Health Educ Res*. 2004;19(2):165-174. doi:10.1093/her/cyg016.
30. Herriot AM, Thomas DE, Hart KH, Warren J, Truby H. A Qualitative Investigation of Individuals' Experiences and Expectations Before and After Completing a Trial of Commercial Weight Loss Programmes. *J Hum Nutr Diet*. 2008;21(1):72-80. doi:10.1111/j.1365-277X.2007.00837.x.
31. Sabinsky MS, Toft U, Raben A, Holm L. Overweight Men's Motivations and Perceived Barriers towards Weight Loss. *Eur J Clin Nutr*. 2006;61(4):526-531. doi:10.1038/sj.ejcn.1602537.
32. Hankey C r., Leslie W s., Lean M e. j. Why Lose Weight? Reasons for Seeking Weight Loss by Overweight by Otherwise Healthy Men. *Int J Obes Relat Metab Disord*. 2002;26(6):880.
33. Barnes AS, Goodrick GK, Pavlik V, Markesino J, Laws DY, Taylor WC. Weight Loss Maintenance in African-American Women: Focus Group Results and Questionnaire Development. *J Gen Intern Med*. 2007;22(7):915-922. doi:10.1007/s11606-007-0195-3.
34. Wolfe BL, Smith JE. Different Strokes for Different Folks: Why Overweight Men Do Not Seek Weight Loss Treatment. *Eat Disord*. 2002;10(2):115-124.
35. Webber KH, Quintiliani L. Development of a Weight Loss Program for Appalachian Kentucky Adults: A Formative Research Survey. *Fam Consum Sci Res J*. 2011;40(1):74-84. doi:10.1111/j.1552-3934.2011.02089.x.
36. Wirth CK, James DCS, Fafard M, Ochipa K. Developing Weight Management Messages and Interventions for Baby Boomer Men. *Am J Mens Health*. 2014;8(3):258-266. doi:10.1177/1557988313510731.

37. Hindle L, Carpenter C. An Exploration of the Experiences and Perceptions of People Who Have Maintained Weight Loss. *J Hum Nutr Diet.* 2011;24(4):342-350. doi:10.1111/j.1365-277X.2011.01156.x.
38. Metzgar CJ, Preston AG, Miller DL, Nickols-Richardson SM. Facilitators and Barriers to Weight Loss and Weight Loss Maintenance: A Qualitative Exploration. *J Hum Nutr Diet.* 2015;28(6):593-603. doi:10.1111/jhn.12273.
39. Hammarström A, Wiklund AF, Lindahl B, Larsson C, Ahlgren C. Experiences of Barriers and Facilitators to Weight-Loss in a Diet Intervention - A Qualitative Study of Women in Northern Sweden. *BMC Womens Health.* 2014;14:59. doi:10.1186/1472-6874-14-59.
40. Sharifi N, Mahdavi R, Ebrahimi-Mameghani M. Perceived Barriers to Weight loss Programs for Overweight or Obese Women. *Health Promot Perspect.* 2013;3(1):11-22. doi:10.5681/hpp.2013.002.
41. Venditti EM, Wylie-Rosett J, Delahanty LM, Mele L, Hoskin MA, Edelstein SL. Short and Long-Term Lifestyle Coaching Approaches Used to Address Diverse Participant Barriers to Weight Loss and Physical Activity Adherence. *Int J Behav Nutr Phys Act.* 2014;11:16. doi:10.1186/1479-5868-11-16.
42. Ely AC, Befort C, Banitt A, Gibson C, Sullivan D. A Qualitative Assessment of Weight Control among Rural Kansas Women. *J Nutr Educ Behav.* 2009;41(3):207-211. doi:10.1016/j.jneb.2008.04.355.
43. Morgan PJ, Warren JM, Lubans DR, Collins CE, Callister R. Engaging Men in Weight Loss: Experiences of Men Who Participated in the Male Only SHED-IT Pilot Study. *Obes Res Clin Pract.* 2011;5(3):e239-e248. doi:10.1016/j.orcp.2011.03.002.
44. Liebman M, Propst K, Moore SA, et al. Gender Differences in Selected Dietary Intakes and Eating Behaviors in Rural Communities in Wyoming, Montana, and Idaho. *Nutr Res.* 2003;23(8):991-1002. doi:10.1016/S0271-5317(03)00080-0.
45. Deeks A, Lombard C, Micheltore J, Teede H. The Effects of Gender and Age on Health Related Behaviors. *BMC Public Health.* 2009;9:213. doi:10.1186/1471-2458-9-213.
46. Nothwehr F, Snetselaar L, Wu H. Weight Management Strategies Reported by Rural Men and Women in Iowa. *J Nutr Educ Behav.* 2006;38(4):249-253. doi:10.1016/j.jneb.2005.11.039.
47. Chang M-W, Nitzke S, Guilford E, Adair CH, Hazard DL. Motivators and Barriers to Healthful Eating and Physical Activity among Low-Income Overweight and Obese Mothers. *J Am Diet Assoc.* 2008;108(6):1023-1028. doi:10.1016/j.jada.2008.03.004.
48. West Virginia QuickFacts from the US Census Bureau. <http://quickfacts.census.gov/qfd/states/54000.html>. Accessed January 11, 2016.

49. Definition: Metropolitan and Micropolitan Areas.
http://cber.cba.ua.edu/asdc/metro_micro.html. Accessed May 16, 2016.
50. WV Behavioral Risk Factor Survey. <http://www.wvdhhr.org/bph/hsc/statserv/brfss.asp>. Accessed May 21, 2016.
51. Krueger RA, Casey MA. *Focus Groups A Practical Guide for Applied Research*. 4th ed. SAGE Publications, INC
52. Braun V, Clarke V. Using Thematic Analysis in Psychology. *Qual Res Psychol*. 2006;3(2):77-101. doi:10.1191/1478088706qp063oa.
53. Population estimates, July 1, 2015, (V2015). <http://www.census.gov/quickfacts/>. Accessed January 11, 2016.
54. WV Department of Health and Human Resources B for BH and HF. Behavioral Health Epidemiological County Profile. February 2014.
<http://www.dhhr.wv.gov/bhhf/Sections/programs/ProgramsPartnerships/AlcoholismandDrugAbuse/Research/Documents/County%20Profiles/Harrison%20County%202014.pdf>.
55. WV Department of Health and Human Resources B for BH and HF. Behavioral Health Epidemiological County Profile. February 2014.
<http://www.dhhr.wv.gov/bhhf/Sections/programs/ProgramsPartnerships/AlcoholismandDrugAbuse/Research/Documents/County%20Profiles/Marion%20County%202014.pdf>.