CARDIOVASCULAR DISEASE AMONG LATINO MIGRANT FARMWORKERS:
DEVELOPING A CULTURALLY SENSITIVE HEALTH PROMOTION
EDUCATION PROGRAM FOR THE WORK SETTING

by

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STATEMENT BY AUTHOR

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS.................................................................................................................. 6

ABSTRACT........................................................................................................................................ 7

CHAPTER ONE .................................................................................................................................... 8

Introduction..................................................................................................................................... 8
Background ..................................................................................................................................... 8
Latino Migrant Farm worker Population ......................................................................................... 9
Problem Statement.......................................................................................................................... 15
Purpose Statement........................................................................................................................... 15
Significance to Nursing..................................................................................................................... 16
Definitions...................................................................................................................................... 17
Summary......................................................................................................................................... 18

CHAPTER TWO .................................................................................................................................. 20

Introduction................................................................................................................................... 20
Theoretical Framework.................................................................................................................... 20
Cardiovascular Disease - Pathophysiology, Prevalence, and Prevention ......................................... 23
Migrant Farmworkers and Cardiovascular Disease ......................................................................... 25
Culturally Relevant Cardiovascular Disease Health Promotion Programs ...................................... 29
Health Literacy................................................................................................................................. 36
Health Promotion in the Workplace ................................................................................................. 43
Summary......................................................................................................................................... 50

CHAPTER THREE ........................................................................................................................... 52

Introduction................................................................................................................................... 52
Program Description......................................................................................................................... 52
Recruitment and Setting................................................................................................................... 54
Cultural Considerations.................................................................................................................... 55
Promotora Training............................................................................................................................ 56
Addressing Low Health Literacy....................................................................................................... 57
Cardiovascular Disease Health Promotion Interventions ................................................................. 57
Individual Interview- Procedure for Baseline Data ......................................................................... 59
Module One: Introductions and Cardiovascular Disease................................................................. 60
Module Two: High Blood Pressure-Cholesterol-Obesity .................................................................. 62
Module Three: Benefits of Physical Activity – Health Risks of Smoking ...................................... 63
Module Four: Diabetes and Cardiovascular Disease ....................................................................... 66
Module Five: Diet and Food Preparation......................................................................................... 68
TABLE OF CONTENTS - Continued

Module Six: Review and Questionnaires................................................................. 69
Project Support....................................................................................................... 70
Summary ................................................................................................................ 72

CHAPTER FOUR ..................................................................................................... 74
Introduction …………………………………………………………………………...74
Evaluation Instruments ......................................................................................... 74
Knowledge Assessment - Health Disease Fact Questionnaire ......................... 74
Behavior Assessment-Self-Reported Health Activities ........................................ 75
Client Satisfaction Survey...................................................................................... 77
Focus Group.......................................................................................................... 78
Summary ................................................................................................................ 79

CHAPTER FIVE ....................................................................................................... 81
Introduction .......................................................................................................... 81
Program Strengths............................................................................................... 81
Program Limitations ............................................................................................ 82
Program Sustainability.......................................................................................... 82
Relevance to Nursing ............................................................................................ 83
Suggestions for Future Research .......................................................................... 84
Summary ................................................................................................................ 86

APPENDIX A: KNOWLEDGE EVALUATION INSTRUMENT .................... 88
Heart Disease Fact Questionnaire - Spanish......................................................... 89
Heart Disease Fact Questionnaire - English......................................................... 92

APPENDIX B: BEHAVIOR EVALUATION INSTRUMENT ...................... 95
Heart Health Behavior Questionnaire - English.................................................. 96
Heart Health Behavior Questionnaire - Spanish.................................................. 98

APPENDIX C: HEALTH LITERACY ASSESSMENT TOOL ..................... 101
Newest Vital Sign - English version................................................................. 102
Newest Vital Sign - Spanish version ................................................................. 103

APPENDIX D: CLIENT SATISFACTION SURVEY ..................................... 105

APPENDIX E: FOCUS GROUP SURVEY .................................................... 107
## APPENDIX F: MODULE HANDOUTS

<table>
<thead>
<tr>
<th>Module One – Handout</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Individual Interview - English Handout</td>
<td>110</td>
</tr>
<tr>
<td>Module One – Handout 1: Excerpt from Publication 99-3275 NHLBI</td>
<td>112</td>
</tr>
<tr>
<td>Module One – Handout 2: Excerpt from Publication No. 99-3275 NHLBI</td>
<td>113</td>
</tr>
<tr>
<td>Module One – Handout 3: A 23 page publication No. 99-3646 NHLBI</td>
<td>114</td>
</tr>
<tr>
<td>Module Two – Handout 1: Publication No. 04-5242 NHLBI</td>
<td>115</td>
</tr>
<tr>
<td>Module Two – Handout 2: 8 pages, Publication No. 96-4041 NHLBI</td>
<td>116</td>
</tr>
<tr>
<td>Module Two – Handout 3: 8 pages, Publication No. 96-4044 NHLBI</td>
<td>117</td>
</tr>
<tr>
<td>Module Two – Handout 4: 8 pages, Publication No. 96-4047 NHLBI</td>
<td>118</td>
</tr>
<tr>
<td>Module Three – Handout 1: 8 pages, Publication No. 96-4046 NHLBI</td>
<td>119</td>
</tr>
<tr>
<td>Module Three – Handout 2: 2 pages, Publication No. 04-5263 NIH</td>
<td>120</td>
</tr>
<tr>
<td>Module Three – Handout 3: 8 pages, Publication No. 96-4048</td>
<td>121</td>
</tr>
<tr>
<td>Module Four – Handout 1: 2 pages, MCN</td>
<td>122</td>
</tr>
<tr>
<td>Module Four – Handout 2: Page 1 of Spanish version, MCN</td>
<td>123</td>
</tr>
<tr>
<td>Module Four – Handout 2: Page 2 of Spanish version, MCN</td>
<td>124</td>
</tr>
<tr>
<td>Module Five – Handout 1: 57 pages, Publication No. 96-4049 NHLBI</td>
<td>125</td>
</tr>
<tr>
<td>Module Five – Handout 2: 1 page, MCN</td>
<td>126</td>
</tr>
</tbody>
</table>

## APPENDIX G: PERMISSIONS

| Module Four – Handout 2: Page 1 of Spanish version, MCN            | 123         |
| Module Four – Handout 2: Page 2 of Spanish version, MCN            | 124         |
| Module Five – Handout 1: 57 pages, Publication No. 96-4049 NHLBI   | 125         |
| Module Five – Handout 2: 1 page, MCN                               | 126         |

## REFERENCES

| Module Five – Handout 2: 1 page, MCN                               | 131         |
LIST OF ILLUSTRATIONS

FIGURE 1. Correlation between low income and perceived health status ...........................11

FIGURE 2. Health literacy scores of adults by race/ethnicity...............................................37

FIGURE 3. Difficulty of selected health related tasks ............................................................38
ABSTRACT

Cardiovascular disease is the number one cause of death globally. Migrant farmworkers (MFWs) in the U.S. have a high rate of CVD and poverty. A correlation is found between poor health status and poverty. The purpose of this project is to develop a culturally sensitive health promotion program to educate a group of Latino MFWs on the pathophysiology, prevention, and risk factors for CVD. The project will emphasize lifestyle behavior changes for reducing the incidence of CVD. The program will be presented to employees at an expansive greenhouse which is approximately 50 miles from the Arizona-Mexico border. The majority of the employees are first generation Latino migrants. The need for this project was identified through the author’s work with MFWs in the Arizona-Sonora border region. Most of the MFWs in this region have limited or no access to health care because of a lack of personal transportation, poverty, low literacy skills and work schedule.

Nola Pender’s Health Promotion Model (HPM) is the theoretical framework of the proposed health promotion program. The HPM supports the consideration of sociocultural aspects of a target population and stresses the inclusion of the values of each ethnic group.
CHAPTER ONE

Introduction

The focus of this project is on cardiovascular disease (CVD) in Latino migrant farmworkers (MFWs) employed in the United States (U.S.)-Mexico border region. This project proposes a culturally tailored educational intervention for CVD risk reduction among MFWs in the Arizona-Mexico region of the U.S.-Mexico border. The background for this project will describe the: 1) incidence and prevalence of CVD in Latinos, 2) Latino MFW population, and 3) relationship between CVD, poverty and health literacy. The statement of the problem, the purpose and significance of the study, and definition of terms are described in this chapter.

Background

Cardiovascular diseases are a group of disorders of the heart and blood vessels and the majority of CVD deaths are from stroke and coronary heart disease (CHD) (World Health Organization [WHO], 2007). Heart disease is the leading cause of death on both sides of the U.S.-Mexico international border (hereafter referred to as the border region). In 2003, there were 124,932 deaths from heart disease in the U.S. border states, with Arizona showing the highest rate at 195.1 deaths per 100,000 (Pan American Health Organization [PAHO], 2007). The 2000-mile border region is composed of 10 states, four on the U.S. side (California, Arizona, New Mexico, and Texas) and six on the Mexico side (Baja California, Sonora, Chihuahua, Coahuila de Zaragoza, Nuevo Leon, and Tamaulipas). Arizona shares a border with the Mexican state of Sonora.
The Latino population has become the largest minority group in the U.S., growing from 22.3 million in 1990 to 39.9 million (13.6% of the total population) in 2003. This ethnic group includes any person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. Over 40 percent of the Latino population in the U.S. are immigrants (Urrutia-Rojas, Marshall, Trevino, Lurie, & Minguia-Bayona, 2006). It is estimated that there are over 3 million Latino migrant and seasonal farmworkers in the U.S. who serve as the backbone for the multi-billion dollar agricultural industry (NCFH, n.d.).

Latino Migrant Farmworker Population

Findings from a 2005 study of U.S. farmworkers reported that 78 percent of those surveyed were born outside the U.S., with 75 percent in Mexico, two percent in Central American countries, and one percent from elsewhere. Migrant farmworkers born in Mexico were from almost every state of their native country (U.S. Department of Labor, 2005). To be inclusive of the diversity of national origins, the term Latino will be used in reference to MFWs, unless directly quoting a citation.

Migrant farmworkers are commonly employed in agriculture for six months, in non-agriculture such as canning or repairing equipment for two months, travel from crop to crop for several weeks, and spend the remainder of the year unemployed (FHSI, 2005). During their travels, families end up sleeping in cars or camping out until housing becomes available in labor camps or shanty communities (anonymous, personal communication October 25, 2005). This lifestyle lends to a higher incidence of depression, alcoholism and domestic violence. Migrant farmworkers live apart from
established neighborhoods, so consequently suffer from isolation and community neglect (Connor, Rainer, Simcox, & Thomisee, 2007).

The common factors that contribute to CVD health disparities in the MFW population and that will be addressed in this report are: 1) transient lifestyle, 2) poverty, 3) culture, 4) literacy, and 5) barriers to accessing health care (NCFH, n.d.). These factors place this population at an increased risk of overlooking needed lifestyle changes, not recognizing signs of cardiovascular compromise, and lacking the means to follow through with recommended treatment.

The transient nature of MFWs lifestyles presents barriers to accessing healthcare and educational opportunities. The location of the crops and long workdays makes accessibility to formal health care services even more difficult than for Latinos working in urban areas. Although many of the MFWs in the Arizona border region live within 15 miles of their work sites, very few own a vehicle. Migrant farmworkers who live in Agua Prieta, Mexico, a two-hour drive each way, ride in the bus provided by the employer or carpool in personal vehicles. The MFWs work 8 - 12 hour shifts 6 - 7 days a week.

Poverty among MFWs in the border region is pervasive. In Mexico the daily minimum wage is about $4 a day (Nafta at 10, 2004). Most MFWs working in the U.S. earn less than $7500 annually, which is well below the poverty level. Poverty of this magnitude creates a problem more complex than simply not being able to pay the doctor bill. Migrant farmworkers are not pursuing health maintenance and will typically wait until they have serious symptoms or an accident before seeking health care (NCFH, n.d.).
Latinos constitute the largest ethnic minority in the U.S. and have the highest rate of poverty compared to other races and ethnicities with a median family income of $38,000 and a 21.7 percent poverty rate compared with the national average of $44,000 and 12.7 percent respectively (U.S. Census Bureau, 2005). A correlation between perceived poor health status and household income is reported by the U.S. Department of Health and Human Services [USDHHS], (2000). The average annual MFW income of $7500 places this target population at a critical disadvantage for poor health. The correlation between low income and perceived fair or poor health is demonstrated in Figure 1:

![Figure 1](USDHHS, 2000).

Poverty affects living conditions, which in turn can have detrimental consequences on health. For example, among the MFW population overcrowding commonly occurs with multiple people living in rundown trailers. The fear of being robbed by each other in these crowded conditions is greater than the fear of being caught by the Border Patrol (Degazon, 2004). With this comes poor ventilation, unsafe or even
no plumbing, and exposure and re-exposure to viral and bacterial disease (CL, personal observation by the author, n.d.). The disproportionate rates of poverty, exposure to the elements such as heat and cold stress, sun, and dust, and isolation from health care services are part of the environmental influence on the MFWs health (Connor, et al., 2007).

Migrant farmworkers who are ill and receive a prescription from their health care provider often cannot afford the medication. An illness such as cancer, tuberculosis, or rehabilitation services following a cerebrovascular accident, may require several weeks or months of costly treatment. Based on inconsistent employment, low wages, limited or absent access to workers compensation, occupational rehabilitation, or disability compensation benefits (NCFH, n.d.), it is impossible for MFWs to afford the care required for a lengthy illness.

The culture of the Latino MFW population is a contributor to CVD health disparities. Beliefs pertaining to health and illness are factors, as less acculturated Latinos believe that health is a gift from God, a result of good luck or a reward for good behavior (Levy, Carter, Priloutskaya, & Gallegos, 2003). In times of illness, Latinos may first seek the help of a lay healer (curandero) or herbalist (yerbero), as this is what is culturally comfortable. Due to isolation, cultural beliefs, and fear of deportation, MFWs are often reluctant to access health care services for CVD prevention and health promotion. Migrant farmworkers’ understanding of disease, which includes the belief in a “quick cure,” has a significant effect on their preference. Treatments that take time are not part of their conceptual framework of disease and health. The idea of prevention, an alien
notion, is also not part of the general scheme. If patients feel well, they are well. However, such thinking often leads to late detection and treatment of disease (Mines, Mullenax, & Saca, 2001).

The average adult MFW has a formal schooling experience of only 5.5 years, and many have no schooling experience at all. Basic literacy in both their native language and English must be structured with an acute sensitivity to the circumstances of this population (Milton & Watson, 1997). Due to these statistics, the proposed CVD health promotion program uses all bilingual staff and promotoras to assist with health education interventions; in addition, materials for the program are chosen for their appropriate literacy levels.

Health literacy has also been found to significantly impact timely use of preventive health services, understanding disease and treatment (Gazmararian, Williams, Peel, & Baker, 2003; Wolf, Davis, et al., 2005), adherence to medical instructions, self-management skills, and health outcomes (Wolf, et al., 2007). Health literacy is defined as the degree to which individuals have the capacity to obtain, process, and understand basic information and services needed to make appropriate decisions regarding their health (Institute of Medicine, 2004).

Barriers to accessing care are multiple and complex for MFWs. In 1962, the Migrant Health Act was established to provide grants to community non-profit organizations for a variety of health and support services to MFWs and their families. The original intent was admirable, but as years have passed, funding has been cut and poorly distributed. Nationwide, the Migrant Health Care program, funded with $58.6
million dollars, provides care to a half million patients a year. That amounts to $118 per client of which 20 percent is administration costs. The average per capita health care bill is $2800 a year. It is clear that migrant health funding is extremely low (Stilp, 1994, p. 13). The substandard allocation of funds for MFWs’ health services is in sharp contrast to the $10 billion that immigrants contribute annually to the U.S. economy. In their lifetime in the U.S. an immigrant family will pay $80,000 more in taxes than they consume in services (Degazon 2004, p. 150).

A survey conducted by the California Institute for Rural Studies, provided the first statewide baseline health data for California MFWs. The results substantiated the need for preventive education for CVD and the need to improve access to health care. This study found higher incidence of high blood pressure among male and female MFWs, as compared to U.S. adults. Serum cholesterol above 240 mg/dL was found more often in all age groups of male MFWs when compared to the U.S. adult population (Villarejo, Lighthall, Williams, Souter, Mines, et al., 2000). This same report also revealed that 81 percent of male subjects and 76 percent of female subjects had unhealthy weight, determined by body mass index (BMI) calculations. These statistics represent two of the key risk factors for CVD. Evidence suggests that sedentary lifestyles and poor nutritional habits have contributed to high rates of chronic disease on both sides of the border (PAHO, 2007). As mentioned previously Arizona has the highest mortality rate related to CVD compared to the other U.S. - Mexico border states.
Problem Statement

Cardiovascular disease is the number one cause of death globally, more people die annually from CVD than any other cause. Over 80 percent of CVD deaths occur in low- and middle-income countries. Poverty, stress, globalization, and ageing are determinants of CVD (WHO, 2007). Migrant farmworkers in the U.S. have a high rate of CVD and poverty; nearly two-thirds live in poverty and earn less than $7500 per year. Migrant farmworkers in Arizona have the highest rate of mortality related to CVD in the U.S. - Mexico border region. The population of Latino immigrants has grown notably, spiking from an annual average of just under 30,000 people between 1961 and 1970 to close to 400,000 between 2001 and 2004 (PAHO, 2007). Health concerns increase with this growth, as the number of Latino migrants is disproportionate to the availability of health care services. The health services for MFWs established in the 1960s are no longer adequate to meet the needs of this population. Immigrant workers experience challenges in their quest for health care such as language barriers, economic and political limitations, lack of transportation, and lack of knowledge of health care services ((McCaulay, 2005).

Purpose Statement

The purpose of the proposed project is to create a culturally relevant health promotion education program on the pathophysiology, prevention, and risk factors of CVD for MFWs in the Arizona-Sonora, Mexico border region. The program’s aims are to:

1) Develop a culturally tailored program targeting CVD prevention and risk reduction.
2) Tailor the intervention based on assessment of health literacy, baseline CVD knowledge, and health behaviors.

3) Implement the CVD health promotion education program for MFWs in the Arizona-Sonora, Mexico border region.

4) Evaluate the effectiveness and satisfaction of the CVD health promotion education program. Program effectiveness will be evaluated by the differences between participant’s pre-, immediate post-, and 3-month post-intervention scores on the heart Disease Fact Questionnaire (HDFQ). Program satisfaction will be evaluated by a client satisfaction survey administered directly after the last educational module and a focus group survey administered one week later.

The need for this project was identified through the author’s work with MFWs in the Arizona-Sonora border region. In an attempt to increase availability and attendance the program is presented in the workplace; a produce greenhouse.

Significance to Nursing

The burden of CVD is immense; it is the leading cause of mortality in the United States between both men and women in every major ethnic group. It accounts for nearly one million deaths per year and was responsible for one in five deaths in the United States in 2001 (Rimmerman, 2005). Couple integration of the American diet, which is often high fat and high carbohydrate, with lack of health literacy and healthcare, and the incidence of heart disease can only increase among MFWs. Advanced practice nurses (APNs) are in a prime position to create culturally sensitive methods of educating and treating MFWs, due to their graduate studies that emphasize cultural competence,
collaboration, health promotion, and advanced pathophysiology. For individuals who live in sparsely populated or remote geographical areas, APNs are vital to improving their access to health care (Bushy 2000, p. 191).

Pender’s Health Promotion Model (HPM) will guide the proposed project. The multiple and complex factors that contribute to CVD risk in the MFW population can be explored with the HPM. Empowering MFWs with knowledge about CVD, the benefits of health promotion, and strategies to overcome perceived barriers to lifestyle change, are crucial in light of the prevalence of CVD and health disparities among minority populations. The HPM explores the likelihood of individuals engaging in health promoting behaviors as determined by cognitive-perceptual factors, modifying factors, and cues to action (Pender, Murdaugh, & Parsons, 2002).

Definitions

*Agricultural worker* - Can be used interchangeably with farmworker, (Farmworker Health Services, Inc., 2005).

*Cardiovascular Disease (CVD)* - A term inclusive of conditions such as: 1) coronary heart disease, 2) hypertension, 3) stroke, and 4) heart failure (American Heart Association, 2008). Cardiovascular disease is a disorder of the heart and blood vessels (WHO, 2007).

*Latino* - This ethnic group includes any person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. In 2004, among Latino subgroups, Mexicans rank as the largest at 66 percent. Following Mexicans are: Central and South Americans (13 percent), Puerto Ricans (9.4 percent), Cubans (3.9
percent) and the remaining 7.5 percent are people of other Latino origins (USDHHS, 2007).

Migrant Farmworker: Defined by Section 330(g) of the Public Health Service Act, a “migrant agricultural worker” is an individual whose principal employment is in agriculture on a seasonal basis (as opposed to year-round employment) and who establishes temporary residence for the purposes of such employment. Migrant agricultural workers are usually hired laborers who are paid piecework, hourly, or daily wages. The definition includes those individuals who have been so employed within the past 24 months and their dependent family members (Farmworker Health Services, Inc., 2005).

Promotores- Lay-health educators who are indigenous to the communities in which they work. They are bilingual, provide social support, and advocate for clients to gain access to health and social services. The use of promotores has shown to increase the rate of completion in Latino health education programs (Ingram, 2005).

- Abuela- Latino grandmother, this term is also used for lay-health educator.

Seasonal farmworker: Seasonal agricultural workers are defined similarly to migrant agricultural workers; however, they do not establish a temporary home for the purposes of employment but rather live permanently in one location and work seasonally.

Summary

Chapter one addressed the incidence and prevalence of CVD with an emphasis on the Latino MFW population. The high percentage of Latino MFWs with high blood pressure, high cholesterol, and unhealthy weight is significant. Migrant farmworkers face
barriers in accessing health care due to poverty, transient lifestyle, low literacy levels, and culture.

The U.S. has close to 11 million migrant Latino workers of which 3 million work in agriculture. Cardiovascular disease is the leading cause of death among Latinos. The living and working conditions of MFWs are stressful and can lead to increased health issues. Culturally tailored health promotion education can reduce the incidence of morbidity and mortality for CVD among this population. A culturally tailored, linguistically appropriate health promotion project for the prevention of CVD is proposed for MFWs who work in a rural community in the Arizona-Sonora border region. The goal of the project is to increase knowledge of CVD among MFWs and to reduce the modifiable risk factors such as diet, physical activity, and weight control.
CHAPTER TWO
Introduction

Nola Pender’s Health Promotion Model (HPM) is introduced and applied to the proposed CVD health education promotion project in this chapter. Following the discussion of Pender’s HPM, a literature review is presented on the prevalence and prevention interventions for CVD globally. How the Latino culture (specifically MFWs in the border region) and socioeconomic status relates to CVD is discussed. Next is a review of various health education projects designed for Latinos, with emphasis on CVD and MFWs. How health literacy affects the development, presentation, and assimilation of health education materials is explored. Lastly, a review of health promotion education in the workplace setting is discussed.

Theoretical Framework

The HPM first appeared in the 1980s as a framework to guide the exploration of the biopsychosocial processes that motivate individuals to demonstrate health-promoting behaviors. Pender’s model is based on competence- or approach-oriented model as opposed to fear or threat as a source of motivation (Pender, Murdaugh, & Parsons, 2006). The proposed health promotion project includes the following assumptions from the HPM. Persons: 1) have the capacity for reflective self-awareness, 2) assess their own competencies, 3) value growth in directions viewed as positive, and 4) attempt to achieve a personal acceptance between change and stability (Pender, et al., 2002).

The CVD educational materials selected for use in this proposed project, to assess lifestyle behaviors among MFWs, were guided by the following theoretical propositions:
• Prior behavior and inherited and acquired characteristics influence beliefs, affect and enactment of health promoting behavior.
• Perceived barriers can constrain commitment to action.
• Perceived competence or self-efficacy to execute a given behavior increases the likelihood of commitment to action and actual performance of the behavior.
• Persons are more likely to commit to and engage in health promoting behaviors when significant others model the behavior and expect the behavior to occur.
• Situational influences in the external environment can increase or decrease commitment to health promoting behavior (Pender et al., 2002).

Pender approaches health promotion by integrating constructs from expectancy-value theory and social cognitive theory in a holistic setting (Pender, et al., 2006). The construction of the proposed CVD health promotion project will be guided by Pender’s model of cognition, motivation, behavior and environment. The education interventions are directed towards individual characteristics and experiences and behavior specific cognitions, which are part of Pender’s HPM framework. The HPM is an attempt to depict the multidimensional nature of persons interacting with their interpersonal and physical environments as they pursue health (Pender, et al., 2006, p. 50). In addressing individual characteristics and experiences the CVD health education presentations will emphasize prior related behavior and prior knowledge of CVD (Pender, et al., 2006). The goal is to increase the participant’s knowledge of CVD, first by determining prior related behavior and baseline knowledge through administration of pretest questionnaires. Increase in knowledge of CVD will be determined by comparing pretest to posttest responses.
Assessing health literacy levels prior to implementing education interventions will guide the development of the presentations and selection of educational materials.

Behavior-specific cognitions are approached by assessing perceived benefits and barriers to action. Cultural aspects of interpersonal influences are important links to integrate when developing a health intervention program. The Latino culture values allocentrism (collectivism over individualism), simpatia (the reliance on behaviors that help create pleasant social relationships), and familialism (strong identification and attachment to the family) (Hulme, et al., 2003), which means this is a culture that benefits from the inclusion of family and friends in a learning environment. Although the proposed health promotion program is directed toward the individual, it will be held at the worksite in a group setting with coworkers, which is conducive to educating the selected population. Presenting the CVD health promotion program at the worksite also eliminates the barrier of lack of transportation and takes into account already long workdays.

Family members occasionally work at the same location and will be encouraged to attend presentations. Family and friends play an important part as role models, which can increase a person’s commitment to changing and engaging in healthy lifestyles. Participants will be asked to identify significant others that they feel are engaged in healthy lifestyle behaviors. It will be suggested that participants interview their role model about diet, activity, and other health-related issues, to begin a plan of how to incorporate these behaviors into their daily routine. Participants themselves may become
the role models for their families or friends thus strengthening their commitment to change.

Situational influences in the external environment are predictive of health promoting behaviors (Pender, et al., 2006, p. 55) and are therefore important to identify in the MFW population. The location of the worksite and the nature of agriculture settings often leave the workers feeling isolated and threatened (FHSI, 2005). Many MFWs have left their families behind to pursue work in the U.S. Fear of deportation, revocation of work visas, or physical harm due to poor and crowded living conditions add to the perception of decreased options and control over their own behavior (author’s personal observation). These situational influences in turn can have a detrimental effect on perceived self-efficacy.

Cardiovascular Disease

Pathophysiology, Prevalence, and Prevention

Coronary heart disease and CVAs are the most common cause of CVD. Coronary heart disease affects the coronary arteries and occlusion can cause myocardial injury, ischemia, or infarct. Cerebrovascular accident results from the occlusion of the blood vessels supplying the brain (WHO, 2007). In most patients, CHD is precipitated by abrupt plaque change followed by thrombosis. This results in diminished coronary perfusion relative to myocardial demand and following a cascade of events which includes fixed atherosclerotic narrowing of coronary arteries, intraluminal thrombosis overlying a disrupted plaque, platelet aggregation, and vasospasm (Schoen, 2004, p. 572).
Cerebrovascular accident consists of three categories: a) thrombosis, b) embolism and, c) hemorrhage. Stroke is the term used for all three conditions. The most common CVAs are thrombosis secondary to atherosclerosis, embolism, hypertensive intraparenchymal hemorrhage, and ruptured aneurysm. Hypertension and atherosclerosis are the leading causes of stroke (Frosch, Anthony, & Girolami, 2004, p. 1361). The causes of CVA are well known, the most prominent being unhealthy diet, tobacco use, and physical inactivity. These causes of CVA are considered modifiable risk factors.

Cardiovascular disease is the number one cause of death worldwide. An estimated 17.5 million people died from CVD in 2005, representing 30 percent of all global deaths. Of these deaths 7.5 million were due to CHD and 5.7 million were due to stroke (WHO, 2007). The financial ramifications are devastating to patients and their families when CVD strikes. Cardiovascular disease places a heavy burden on the economics of all countries. According to the Center for Disease Control (CDC), in 2006 the U.S. incurred costs close to $403 billion, including health expenditures and lost productivity (2007). Low socioeconomic status in high income countries has a greater prevalence of risk factors and disease (WHO, 2007). The MFW population falls into this category and face many health disparities.

Prevention of CVD consists of several factors such as screening, knowledge of risk factors, and knowledge of signs and symptoms for early detection and treatment. At least 80 percent of the premature deaths from heart disease can be avoided by behavioral changes such as improved diet, regular exercise, weight loss, tobacco avoidance, blood pressure control, and control of cholesterol levels (CDC, 2008). Evidence suggests a
relationship between the risk of cardiovascular disease and environmental and psychosocial factors (Ranjit, et al., 2007). These factors include job strain, social isolation and personality traits. Chronic stress that causes an increase in heart rate and blood pressure may damage the artery walls. Stress is considered a reaction to situational influences, and individuals may choose unhealthy behaviors to cope with this stress such as abusing tobacco, drug, or alcohol, overeating, or eating foods high in fat or sodium content (AHA, 2007).

Migrant Farmworkers and Cardiovascular Disease

Studies show that CVD morbidity and mortality are prevalent worldwide (WHO, 2007). Data from both the U.S. and Mexico claim CVD as the leading cause of death in both countries (Durazo-Arvizu, Barquera, Lazo-Elizondo, Franco, & Cooper, 2008). Since farmworkers hired in the U.S. are primarily Mexican Nationals (Urrutia-Rojas, et al., 2006), an integrated approach by both countries to further understand CVD risk and prevalence among MFWs should be explored. Surveillance is the monitoring and reporting of major health conditions and is a core function of public health care systems. Surveillance for CVD requires three main components: 1) tracking of national CVD mortality, 2) monitoring risk factors, and 3) assessing the impact of public health interventions and medical care. There are inconsistencies in death certificate decoding; in addition, the prevalence and incidence of CVD are difficult to estimate accurately among immigrants due to a high proportion of undiagnosed cases (Durazo-Arvizu, et al., 2008).

Latinos are the largest minority population in the U.S. (U.S. Census Bureau, 2000) and yet the burden of CVD has not been adequately described. Villarejo (2003)
emphasizes the health of MFWs by stating that no national data are available on the size of the population, mortality or morbidity, or on chronic health indicators. Some degree of accuracy is needed to determine the size of the MFW population for quantitative epidemiology. Approximately half of the MFWs are undocumented which means they are unaccounted for in recorded health data. This implies that the existing data available on the incidence of CVD and its risk factors for MFWs are underestimated. Another obstacle to developing reliable mortality and morbidity data is that an unknown number of Mexican-born farmworkers return to their homeland when they are permanently finished with this type of work; in addition, many return when they experience illness (Villarejo, 2003).

The MFW population is vulnerable due to physiologic risk factors such as high cholesterol, high blood pressure, stress, unhealthy weight, and diabetes. In addition, socioeconomic factors including poverty, diet, poor living conditions, language barriers, and lack of access to health care add to this vulnerability. These characteristics put this population at greater risk for undetected and uncontrolled symptoms of CVD. Acculturation has shown to negatively influence health status of MFWs through unhealthy eating habits, increased stress, and often increased drug and alcohol use (Hulme, et al., 2003; Kim-Godwin & Bechtel, 2004).

The 2001 Binational Health Survey (BHS) was an 18-month pilot study to provide information on how immigrant agricultural workers in the U.S. cope with health care challenges. Quantitative survey and field observations among farmworkers and health professionals in Mexico and the U.S. gave insight on the institutional and socials
factors that affect farmworker health (Mines, et al., 2001). Participants \( n=467 \) originated in southern Zacatecas, Mexico and had spent at least two seasons of farm work in the U.S. Most migrants from each of the ten selected villages in Zacatecas traveled to only a few destination locations in the U.S. The BHS revealed that health care services and practices on both sides of the border are fragmented among MFWs. Services are rendered intermittently reducing follow up treatment and opportunities for preventive care. In the U.S. structural factors, such as eligibility criteria, contribute to low insurance enrollment and cultural issues raise additional hurdles (Mines, et al., 2001). Unhealthy behaviors and occupational hazards contribute to the prevalence of illness, which increase the risk of complications or comorbidity of disease. The survey revealed chronic diseases as the most prevalent type of illness reported by MFWs. Individuals with serious health conditions often are undiagnosed until symptoms become unbearable; others medicate themselves and do not consult a health practitioner (Mines, et al., 2001). One fourth of respondents reported having asthma, diabetes, high blood pressure or vascular disease, heart disease or thyroid abnormalities. Of these respondents, 30 percent had not seen a doctor within two years and 11 percent self-treated. In the BHS sample of current and former farmworkers, the most prevalent illness reported was high blood pressure (Mines, et al., 2001).

The burden of moving between two countries and the separation of family members coupled with low wages and physically demanding work makes MFWs particularly vulnerable to stress-related health problems. Mental health resources are scarce in both countries and from a cultural standpoint are often inappropriate for Latinos
and lack culturally competent staff in the U.S. (Kim-Godwin & Bechtel, 2004). The majority of participants in the BHS think of prevention as an alien notion, believing that ‘if they feel well-they are well’ and often this leads to late detection of treatment of disease (Mines, et al., 2001). Strategies constructed from the BHS to improve MFW health focus on the use of *promotores* to teach about the importance of preventive care, proper diet and exercise, use of appropriate medications and to seek insurance. Improved collaboration between providers and educators in both countries would help in collectively identifying culturally suitable and economically feasible diagnostic testing (Mines, et al., 2001). These strategies can be incorporated into Pender’s HPM, as the use of *promotores* brings cultural sensitivity to address personal factors (Medina, Balcazar, Hollen, Nkhoma, & Mas, 2007). In addition, *promotores* can be educated on the use of encouragement and empowerment tactics to increase self-efficacy.

The first statewide survey, which was conducted by the California Institute for Rural Studies in 1999, found similar health problems among California farmworkers. The California Agricultural Worker Health Survey (CAWHS) consisted of randomly selected adult participants from seven communities representing each of the states agricultural regions. The goals of the survey were to develop a health needs assessment based on a representative cross-section of current agricultural workers in California. The CAWHS included a comprehensive physical examination and provides the first-ever baseline health status for this labor force (Villarejo, et al., 2000).

Interviewers for the CAWHS went to residences, as well as thoroughly searched labor camps and informal dwellings found in the farm fields surrounding the
communities. Participants \( n=652 \) were asked to engage in a 90 minute interview at their residence, complete a physical examination at a nearby medical facility with a full blood chemistry analysis, and interview at the clinic with staff that inquired about risk behaviors (Villarejo, et al., 2000). Measurements of blood pressure, serum cholesterol, BMI, anemia, dental status, and skin were assessed. Recent visits (if any) to a doctor, clinic, dentist, or eye doctor were recorded. Self-reported and provider-diagnosed cases of disease, mental health issues, and work related injuries were also part of the data, as well as health insurance status.

When compared to the U.S. adult population, participants in the CAWHS had greater percentages of high blood pressure, unhealthful weight, and obesity in both males and females. Male farmworkers had a higher number of individuals with elevated cholesterol compared to U.S. males. Adding to the impact of these statistics is the fact that 31.8 percent of males reported they had never seen a health care provider (Villarejo, et al., 2000).

These statistics provide discouraging information about the health of MFWs in the U.S. Culturally appropriate health education interventions need to be brought to this population. More research on the incidence and prevalence of CVD among MFWs and the related risk factors needs to be funded and put forth, as very little data exists on this subject or on the population demographics.

Culturally Relevant CVD Health Promotion Programs

Because the evidence shows (Brunner, et al., 2008) that improved health habits and lifestyle choices can prevent CVD; health promoting educational interventions
should be conducted more frequently among MFWs. There is an even greater need for these resources in rural areas and among vulnerable populations, as these groups are less likely to access health care resources.

In a study comparing disparities in access to health care between documented immigrants to undocumented immigrants the authors point out that despite the fact that immigrants make up 40 percent of the Latino population they have limited access to health care. The study is based on secondary data analysis of a cross-sectional study of 319 Latino adults, both male and female, who were born in a Spanish-speaking country and lived in North Texas at the time of the study. Of the 319 immigrants, 147 were undocumented and 172 were documented. It was hypothesized that undocumented participants would report lower income and education levels and would be less likely to have access to health care and to report good or excellent health status (Urrutia-Rojas, et al., 2006).

The findings found disparities among the respondents’ characteristics that are determinants of access; for example, level of education, ability to speak English, income level, and employment status. The undocumented group had even greater evidence of disparities based on these characteristics. An important finding in the undocumented group was that 71 percent did not speak English. Inability to communicate is a critical barrier to seeking health care (Urrutia-Rojas, et al., 2006).

The hesitation and barriers to access health care in a preventive, early onset, or acute health situation brings to the forefront the importance of offering health promotion education to the MFWs. Onsite health education will eliminate many of the perceived
barriers to MFWs. By strengthening group identity and social support it is hypothesized that a culturally tailored teaching project that addressed CVD prevention would result in an increase in participant knowledge; a more proximal outcome would be a change in the modifiable behaviors for preventing CVD.

Community level and individual level health interventions have demonstrated a positive impact on health behaviors and community awareness (Pender, et al., 2006). To more effectively address the Latino population many organizations, providers, and outreach programs, are using Lay Health Advisors (LHA) to present and promote healthy lifestyles and disease prevention. Other terms used for LHAs are *promotores* (promoters) or *abuela* (Hispanic grandmother) educators.

Authors of an article describing the effectiveness of a nutrition education program titled *La Cocina Saludable*, discussed at length the benefits of using *promotores*, in this case called *abuela* educators, to carry out the presentations. The program was designed according to the Stages of Change Model. The objectives were to improve nutrition related knowledge, skills, and behaviors that lead to healthier lifestyles in a low-income Hispanic population of mothers of preschool children, including MFW families, in three areas of Colorado. The purpose of the article was to review the effectiveness of the peer educator training program on the *abuela* educators and to discuss the impact of the nutrition program on the Hispanic mothers (Taylor, Serrano, Anderson, & Kendall, 2000).

A needs assessment utilizing focus groups was initially conducted among Hispanic mothers and separate groups of professionals and paraprofessionals who work
with the population in nutrition and health related areas. Based on this needs assessment, the nutrition education program was developed and implemented. The five units were designed to include an experiential and behavioral learning activity to reinforce the messages presented. Knowledge and skills evaluations consisted of pre-, post-, and six-month follow-up tests. A behavior questionnaire was also administered during the same period. The tests were administered to the *abuelas*, a subset of class participants, and a control group of non-participants. Three hundred thirty-seven participants were used in the evaluation subset; fifty-two were in the control group. The results of class participants suggest that the five class units led to gains in knowledge and skills and retention of this knowledge at six months. Self-reported behavior change also improved at six months as evidenced by the follow-up scores (Taylor, et al., 2000).

The use of *abuela* educators demonstrates cultural sensitivity and takes into account the sociocultural factors mentioned in Pender’s HPM. *Abuela* educators present materials to the participants in a way that is more applicable to the participant’s life situations. This can increase the relevance of shared barriers and benefits to action. Group settings and lay educators also draw on the importance of interpersonal influences. The Hispanic culture values *familismo* which may encourage individuals to engage in a particular behavior for the good of the family rather than for personal gain (Pender, et al., 2006).

The National Heart, Lung, and Blood Institute (NHLBI) designed and implemented a culturally tailored, community-based, theory intervention model in 1994. The goal was to improve the heart health of the Latino based community in the
metropolitan Washington, D.C. area. *Salud Para Su Corazon* (SPSC)- Health for Your Heart was a communication and health behavior project guided by social marketing, stages of change, theories of attitude and behavior change including social learning, self-efficacy, and planned behavior, and by an ecological perspective (Alcalay, Alvarado, Balcazar, Newman, & Huerta, 1999).

The first phase of the SPSC intervention was a community needs assessment consisting of five strategies to assess the CVD needs of Latinos in the region. These strategies included a background report that reviewed state-of-the-art knowledge about CVD among Latinos. Second, a community profile/target population assessment showed that the number of Latinos in Washington was approximately 528,000 (double the number of individuals counted, based on the assumption that the census was able to count only half of the population). Education, language preference, income, and type of work were important characteristics in identifying the population’s most vulnerable segments. Next, focus groups were conducted to identify the community’s knowledge of heart disease, risk factors, media usage, and material needs and preferences. This information was used to select and develop messages and types of materials appropriate for the project (Alcalay, et al., 1999). The fourth assessment strategy included interviews with community leaders, such as directors of community clinics, business owners, Latino radio and television managers, and public relation specialists. The interviews secured the community’s involvement and support. The last strategy was a survey of the local clinics to gather information concerning issues such as availability of CVD screenings,
counseling, and treatment. Cost of services and willingness to receive referrals from program participants were also measured ((Alcalay, et al.).

*Salud Para Su Corazon* conducted an impact evaluation to measure changes in awareness about CVD risks, knowledge of CVD preventive health behaviors, and behavior changes. There were a total of 344 interviews for the pretest and 328 for the posttest. Results showed a significant improvement in awareness of CVD risk factors and ways to prevent heart disease; 51 percent pretest compared to 70 percent posttest who could name at least three ways to prevent heart disease. There was little difference between pre- and posttest health behaviors, such as improved diet choices, reducing stress, increasing activity, attaining a healthier weight, and not smoking (Alcalay, et al., 1999). Perhaps if a six-month follow-up evaluation had been performed a change in health behaviors may have been detected.

The NHLBI’s goal for the SPSC model was that its structure could easily be disseminated and transferred, so that other community groups could use the same approach. One such example is a project that used the SPSC model in North Texas, exploring whether trained community health workers (CHWs) could the effectively deliver education on heart-healthy behaviors among Hispanics (Medina, et al., 2007). The NHLBI initiated this heart health community-based intervention program by funding *Salud Para Su Corazon of North Texas (SPSCNT)* as one of the initial six of the National Enhanced Dissemination and Utilization Centers.

The project evaluated two different education approaches, both of which used health *promotores*. The Classroom Group was more traditional, controlled and structured,
and used a previously tested education curriculum. In contrast, the Home Group was less controlled and materials were delivered to participant’s homes, giving them the opportunity to review the materials on their own. Two hundred thirteen male and female adult Hispanics were initially recruited. Nineteen promotores were all Hispanic and Spanish- speaking, and they lived in the same community as participants. The training for promotores de salud consisted of the evidence-based curriculum originally developed by NHLBI’s *Su Corazon Su Vida* (Your heart, Your Life).

The Classroom Group met with promotores weekly where six structured sessions using the SPSC curriculum and materials were used. The Home Group received the same educational material by mail or personal delivery to participant’s homes. Monthly phone calls to confirm receipt of the materials and give encouragement to read them were performed by promotores. A 35-item, 4-point Likert-type scale questionnaire to assess heart healthy behaviors was administered. Promotores visited participants in the Home Group before and six months after to collect this information. Of the 213 initially recruited, 113 completed the program for both groups. All participants reported improved overall health, healthier dietary practices, enhanced weight control practices, and increased physical activity levels. The results show that the SPSCNT intervention program increased health behavior among all participants (Medina, et al., 2007).

Both the 1994 SPSC model and its descendant the North Texas heart-health project, implemented cultural acumen to address the sociocultural factors and interpersonal influences, essential to health behavior changes, by using Spanish materials, multimedia promotion, and local promotores. The SPSCNT project also implemented a
Health literacy is described as the ability to read and comprehend prescription bottles, appointment slips, and the other essential health-related materials required to successfully function as a patient (Gazmararian, et al., 2003). Health literacy is also defined as the degree to which individuals have the capacity to obtain, process, and understand basic information and services needed to make appropriate decisions regarding their health (Institute of Medicine, 2004). Health literacy assessment tools and the importance of designing information to meet the literacy levels of the MFW population are addressed in this segment of the literature review. In review of the literature set selected for this project, it was observed that no health literacy assessments were performed.

The importance of health literacy is receiving increased attention as a key factor in managing personal health. Low functional literacy has serious consequences for individual health and places added demands on the health care system (Schloman, 2004). The American Medical Association (AMA) Ad Hoc Committee defines health literacy as a constellation of skills, including the ability to perform basic reading and numerical tasks required to function in the health care environment. Patients with adequate health literacy can read, understand and act on health care information (Schloman).
When the National Assessment of Adult Literacy (NAAL) was performed in 2003, health literacy was taken into account in the research for the first time. It was found that Hispanic adults had lower average health literacy than adults in any other racial/ethnic group, as shown in Figure 2. In addition, adults who spoke only Spanish before starting school had the lowest average health literacy, equivalent to *Below Basic* health literacy.

![Figure 2. Health literacy scores of adults by race/ethnicity (Kutner, Greenberg, Jin, & Paulsen, 2006, p. 11).](image)

The NAAL also found a correlation between poverty and low health literacy skills. Adults living below or at the poverty level for the most part fell into the *Basic* health literacy level; whereas adults who were above 175 percent of the poverty threshold on an average fell into the *Intermediate* level of health literacy (Kutner, et al., 2006). Figure 3 displays the various health literacy levels and tasks referred to by the NAAL.
Migrant farmworkers are predominantly Latino and Spanish is typically their native language. The income of most MFWs falls well below the national poverty levels. In looking at these statistics one can only deduce that the majority of health literacy levels for this population will fall into the Basic to Below Basic categories. This further
demonstrates that MFWs have a greater need for culturally guided health promotion education programs. It is important to assess participant’s health literacy levels and then choose the most appropriate materials and presentation styles for health promotion education.

Health literacy for chronic disease prevention and management involves a variety of domains centered on communication and empowerment (Black, 2008). Reading and visual communications are essential to understand forms, instructions, and charts. Public health educators are encouraged to activate a client’s role in the domain of oral communication by cultivating their listening and speaking skills (Black). Management of CVD requires numeracy skills, which are defined as the skills necessary for simple counting of medication dosage to computational competence for figuring food labels to the extremely challenging ability to make decisions on the basis of risk (Black, p. 55).

Knowledge of health is part of health literacy and in terms of CVD this may include understanding the heart and circulation, causes of disease, and the role of lifestyle and medications. Black advocates three strategies when educating low health literacy groups: 1) use plain language, 2) use visuals, and 3) use teach back. Avoiding medical jargon, using colorful illustrations and charts, and asking clients to restate key information (teach back) are examples of these strategies.

Studies consistently find there is a correlation between low health literacy and disease self-management. Gazmararian, Williams, Peel, and Baker (2003) report that patients with low health literacy and chronic diseases have less knowledge of their disease and treatment, as well as fewer correct self management skills than literate
patients. Because of dramatic advances in the treatment of chronic diseases which includes the use of increasingly complex medications, diet, and exercise regimens, patients have to face learning these complex treatments prescribed by health providers.

The authors examined a subset of subjects from a larger study which included 3,260 adults who had asthma, diabetes, congestive heart failure (CHF), and/or hypertension (Gazmararian, et al., 2003). Respondents were first interviewed by phone for knowledge of their chronic disease. Participants were also asked to complete the shortened version of the original Test of Functional Health Literacy in Adults (S-TOFHLA). The S-TOFHLA includes materials a patient might encounter in the health care setting and consists of reading comprehension and numeracy skills. The interview and the S-TOFHLA were conducted in Spanish if the individual preferred. Overall levels of chronic disease knowledge were disappointing even for patients with adequate literacy (Gazmararian, et al., 2003). The authors concluded that health literacy is an independent predictor of patient’s knowledge of their chronic disease even after controlling for age, disease duration, and prior attendance at a disease-specific education class. The study suggests that health educators must assess the health literacy skills of their target population and that intervention studies are needed that focus on what works to improve low literacy skills to improve knowledge of chronic disease (Gazmararian, et al.).

Health literacy is often not assessed prior to diagnosis and treatment of chronic disease or prior to health education intervention. It is felt that the traditional measurement tools such as the TOFHLA take too much time. The Rapid Estimate of Adult Literacy in Medicine (REALM) can be administered in less than 3 minutes, but is only available in
English. The Newest Vital Sign (NVS) was developed to give a quick and accurate assessment of health literacy. Its development involved serially testing candidate scenarios and candidate questions on more than 1,000 patients. A panel of health literacy experts developed the scenarios. The scenarios and questions were refined after feedback from patients, interviewers, and data analysts about clarity and ease of scoring items (Weiss, et al., 2005). The NVS uses one scenario (an ice cream nutrition label) and six questions that combine reading comprehension and numeracy skills.

The study of NVS enrolled 250 English-speaking and 250 Spanish-speaking participants to validate both language versions. The results were then compared with the same participant’s scores on the English and Spanish TOFHLA. The NVS was found to have good sensitivity and although it’s specificity is less than optimal it is still felt to be better than many of other widely used clinical screening methods (Weiss, et al., 2005). The psychometric properties of the Spanish version were not as good as those of the English version. It was speculated that this is due to the greater variance of language and culture among Spanish-speaking patients as they come from many different regions of South America and Mexico (Weiss, et al., 2005). Using the NVS can alert providers to patients who may need more attention in explaining diagnosis, treatment, or prevention measures.

Osborn and colleagues (2007) compared the performance of the NVS to the REALM with 129 participants, and the NVS to the S-TOFHLA with 119 participants to extend the psychometric evaluation of the English version of the NVS. The ability of NVS to predict health outcomes was also tested, as this had been found to be associated
with the REALM and S-TOFHLA scores. In comparing NVS to REALM it is pointed out that the REALM maps out basic decoding skills, whereas the NVS assesses more complex cognitive functions associated with reading comprehension and basic problem solving. The NVS demonstrated internal consistency of 0.81, and there was moderate correlation between the REALM and the NVS ($r=0.41$, $P<.001$) (Osborn, et al., p. S41).

The S-TOFHLA and NVS were found to have a stronger correlation ($r=0.61$), and the NVS was found to have internal consistency of 0.71 (Osborn, et al., 2007). However, the items on the NVS were found to be more difficult to answer correctly. This finding is thought to be indicative of what might be a high level cognitive complexity attached to what is a deceivingly simple, everyday health-related activity (Osborn, et al.). After adjusting for relevant covariates, authors found that literacy scores on the NVS were not predictive of health outcomes; whereas the inadequate literacy scores as measured by the S-TOFHLA were significantly related to poorer knowledge and health outcomes with confidence intervals (CI) of 95 percent in all categories (Osborn, et al.).

The NVS is well-suited for the purposes of assessing health literacy to guide the culturally tailored CVD health promotion education program for MFWs. The NVS is chosen for the ease and rapidity in which it can be administered, it’s high sensitivity for detecting limited health literacy, and it’s availability in Spanish as well as English.

In reviewing the literature on health literacy, the importance of assessing clients to better communicate information is shown to be crucial. This is an assessment that is under-utilized considering the implications of inadequate health literacy identified as the correlation between low health literacy and decreased ability to understand forms,
consents, and instructions for procedures. In addition, clients will have a poor understanding of preventive lifestyle modifications and disease management, which places added demands on the health care system.

Health Promotion in the Workplace

Worksite health education programs have a positive impact on employees (Sorensen, et al., 1998). Health promotion measures, identification of risk factors, and basic chronic disease education can be presented to increased numbers of people in the workplace, thus increasing the effectiveness of these messages. Perceptions of control of health, personal competence, definition of health, and health status have consistently been found to predict higher incidence of health-promoting lifestyle behaviors (Pender, Walker, Sechrist, & Frank-Stromborg, 1990).

Participants (n=589) of a workplace health-promotion program study met for two sessions to complete a battery of 11 test instruments initially, and then 3 months after initial data were collected the Health-Promoting Lifestyle Profile alone was administered a second time. Based on the results, the authors suggest incorporating the following elements to maximize employee participation in wellness programs: (a) skill building for competent performance, (b) use of co-worker support systems to optimize this influence on lifestyle behaviors, (c) provision of current information on the controllability of health, (d) employee involvement in planning lifestyle modifications, and (e) reconceptualization of the definition of health as a state of well being rather than just the absence of illness or injury (Pender, et al., 1990).
A literature review conducted by the authors of Heart Healthy and Stroke Free, (Koffman et al, 2005), through PubMed and MEDLINE identified articles published between 1990 and 2003 on interventions in worksite and healthcare settings with positive outcomes for CVD, high cholesterol, high blood pressure, and employer costs. Nineteen studies conducted in worksite settings and 33 in healthcare settings were reviewed for the report. An expert panel selected programs of three large, and three small and medium sized companies for case study telephone interviews (Koffman, et al.). Findings from the literature reviews and case study interviews indicated a positive impact for worksite health promotion programs. One report reviewed 42 studies examining health, cost, and productivity savings of worksite health promotion programs; results revealed 25 percent savings each on absenteeism, health plan costs, disability, and workers’ compensation costs. A review of 32 studies examined the economic impact of worksite health promotion on medical cost savings. All but four of the studies (of the four none were random controlled trials) found cost savings. Overall, comprehensive worksite health programs yield a $3 to $6 return on investment for each dollar spent (Koffman et al.).

Health benefits of the worksite education approach were favorable, noting that a comprehensive health promotion program that includes sustained individualized cardiovascular risk reduction counseling for high risk employees may be the most effective for preventing heart disease and stroke. Screenings, company wide environmental support, frequent prevention messages such as posters and newsletters, and health classes or workshops (tobacco cessation, CPR, high blood pressure/cholesterol
control) were all found to contribute to improved outcomes for employees (Koffman, et al., 2005).

Worksite health education programs can be especially useful with the MFW population because of their long work days, lack of transportation, and poor living situations (Mas, Papenfuss, & Guerrero, 1997). Offering culturally and linguistically tailored health promotion education programs to this population also addresses their difficulty in accessing health care, lack of health care insurance, and lack of knowledge about many health care issues.

There are many articles promoting worksite health promotion programs; however, very few exist specific to rural Latino populations-- even fewer exist addressing MFWs and CVD. Zarate-Abbott and colleagues (2008) describe an assessment-based culturally sensitive cardiac health education program designed for Hispanic immigrant women (n=21) at their work setting in the housekeeping department of a small south Texas university. Included were objective measurements of blood pressure, blood lipids, and glucose monitoring. A series of three cardiac health education classes were conducted at regularly held staff meetings with permission of the supervisor. Presentations and materials were in Spanish, traditional Mexican American foods were highlighted, and Hispanic relationship concepts of personalismo (progression of a relationship from formal to personal), respeto (respect for authority, with a mutual relationship expected), and dignidad (acceptance of and respect for alternative health beliefs and behaviors) were integrated into the program (Zarate-Abbott, et al., 2008). Educational classes were designed with the educational level of individuals in mind, as almost half were at less
than an eighth grade level. A blood pressure clinic was held before each class. The sessions included an introduction to diabetes, use of a glucometer, healthy food choices, reading food labels, and the role of exercise. Teaching skills for everyday life choices is part of empowering individuals to incorporate healthier lifestyles.

Program evaluation consisted of a dichotomous questionnaire distributed four months after the final class and analysis of blood pressures from the pre-class clinics. More than 80 percent of participants were reading food labels, using less salt, determining fat content in meats before purchase, and using healthier oils in their diets. Only forty-one percent were practicing the exercises that had been taught in class, but improvement in both systolic and diastolic blood pressures was found (Zarate-Abbott, et al., 2008). Teaching lifestyle choices and repeating information was an important part of the teaching strategy. In spite of the encouraging results, this study was limited due to the small sample size and the lack of a control group for comparison. The results emphasize the need for more worksite culturally tailored health education programs.

In 1997 the benefits of worksite health promotion for Hispanics were explored in response to a projected increase in the Hispanic labor force (Mas, et al.). Employee surveys indicate that employees believe health education programs are beneficial and should be offered at the worksite. The benefits are emphasized in the article as being cost-effective, attracting and retaining key personnel, decreasing absenteeism, improving morale and productivity, and promoting greater allegiance to the company. However, in spite of these favorable aspects, the authors go on to state that not enough is being done
to represent minority groups, failing to address the increasingly multicultural reality of the labor force (Mas, et al.).

It has been reported that Hispanics have low rates of participation in worksite health promotion programs (Mas, et al., 1997) but few researchers have investigated the response of these individuals to the promotion activities. Literature reviewed in the study by Mas, Papenfuss, & Guerrero reveals that programs have not evaluated the impact of intervention among Hispanic workers, nor have cultural and linguistic barriers been taken into account in the majority of health education programs.

An informal approach to worksite health promotion was designed to address the need for healthier diets among laborers. The intervention is a take off of the ‘5 a Day for Better Health’ program, which is designed to encourage Americans to eat five or more servings of fruits and vegetables each day. The revised program renamed ‘5 a Day: Healthier Eating for the Overlooked Worker’ was geared towards labor and trade employees and the population was 75 percent male and 40 percent Hispanic. The interventions took place in 10 public worksites in Arizona. The evaluation design was a pair-matched, randomized pre-test-post-test control group design (Larkey, et al., 1999). To track communication strategies, group interviews were held monthly during in-service meetings, which included the peer educators, project staff, and two trained research assistants.

Peer health educators were recruited using systematic network measurement techniques, identifying workers who were most centrally and socially connected with their cliques. The chosen peer educators were taught persuasive communication strategies
to enhance their ability to bring up the ‘5 a Day’ program without creating resistance, and to use a variety of individual and group contexts to initiate conversation about the program. Over the course of nine months, peer educators used their own informal methods to promote the ‘5 a Day’ message. Some presented their co-workers with monthly booklets of information about healthier diets. The booklets were designed to address regional and cultural variations in diet patterns, low literacy needs, and family orientation all of which are especially important to the Hispanic population. The ‘5 a Day’ program is unique in that all of the educating takes place in an informal, somewhat spontaneous manner throughout each workday.

Researchers examined whether differences in communication strategies differed among ethnicities. It was found that Hispanic peer educators communicated in individual contexts more than non-minority peers. It was speculated that Hispanic peer educators may have been less comfortable engaging groups with persuasive efforts, perhaps because groups were racioethnically mixed, and past experiences of not being heard or included in group decisions prevented them from taking this risk (Larkey et al., 1999).

The discussion revealed that peer educators were more likely to use ‘creating context’ and ‘role modeling’ among small groups. With individuals, peer educators more often used ‘encouragement’ and ‘responding to employee needs’ as communication strategies. It is suggested that both individual and group settings be used for sharing health information. This study demonstrates the effective processes for training outreach workers within various cultural, gender, and social contexts and is informative about how to maximize social network effects.
Healthy Directions-Small Business (HD-SB) was another study of interventions directed towards ethnic minorities with lower socioeconomic status. The aim was to reduce cancer risk by promoting fruit and vegetable consumption, physical activity, daily multivitamin intake, and reduction of red meat consumption. Strategies for participation were built on a social-contextual framework specific to people with varying backgrounds and literacy levels (Hunt, et al., 2007). The research questions examined were: “(a) Is it feasible to implement the participatory, social contextual HD-SB intervention in small, multiethnic manufacturing businesses? And (b) What factors promote or inhibit worker participation in this environment?” (Hunt, et al.). The intervention sites used the HD-SB social-contextual approach, whereas the control sites had minimal intervention. Employee surveys and qualitative observations were used to help answer these questions. The study was a randomized, controlled trial in which 26 worksites were recruited and pair matched based on union or nonunion status; within each pair sites were randomly assigned to an intervention or minimal-intervention control group.

Over 50 percent of participants were male, approximately half had no more than a high school education, and the median age was 35 to 50 years. One third were Hispanic, Black, Asian, American Indian, or mixed ethnicity; more than half of this group or their parents were born outside of the U.S. (Hunt, et al., 2007). Intervention materials and presentations were inclusive and non-stereotyping and used as little written word as possible. Demonstrations and displays were used frequently and healthful convenient foods were suggested along with easy exercises that include low cost options.
Employee surveys were done by interviews two months after the interventions were completed. Staff documented interventions targeting individual behavior change on an intervention tracking form (Hunt, et al., 2007). Total numbers of participants at each event were computed. Results from the worker survey revealed that 58 percent of respondents in the intervention group and 3.9 percent from control groups reported awareness of the Healthy Directions program. Nearly 73 percent of workers in the intervention group participated in the program, compared to 39 percent in the control sites. Multivitamin use and consumption of fruits and vegetables had statistically significant increase in the intervention groups (Hunt, et al.). Additionally it was felt that worker participation and management support are crucial for the success of worksite health promotion. A clear link was established between increased management interaction and increased worker participation.

Summary

The literature review emphasized the impact of CVD from a global, national, and local perspective. Vulnerable populations experience a greater prevalence of risk factors for CVD. Studies such as the BHS and CAHWS reported the high incidence of high blood pressure, high cholesterol, and unhealthy weight among California’s MFWs. These modifiable risk factors can be reduced through health promotion education and lifestyle changes. Health promotion education programs are demonstrated to be successful in increasing awareness of CVD risk factors and in motivating individuals to change unhealthy lifestyles (Pender et al., 2006).
A gap in conducting health literacy assessments for this population was identified. However, the commentary of several authors on the consequences of low literacy levels and health outcomes reveals the importance of such assessments. The NAAL found a correlation of poverty and low health literacy, which is important to consider when designing health education programs for MFWs since the average annual income is close to $7500. Health literacy assessments need to take place before implementing health education projects to ensure appropriate delivery and material and to inform educators for the development, implementation, and evaluation of the intervention.

Worksite health promotion education programs can be of particular value to MFWs in isolated regions such as Southeast Arizona due to their lack of transportation, long workdays, and barriers to accessing health care. Literature on programs targeting populations of this nature is minimal even though the articles confirmed the growing interest in worksite health education and its effectiveness.

Nola Pender’s HPM was discussed as the theoretical framework for the proposed CVD health promotion education project. In addressing individual characteristics and experiences of the MFWs, emphasis is on prior related behavior and prior knowledge of CVD, which may be minimal due to social isolation and low health literacy. The importance of addressing the burden of CVD by health promotion education strategies was explored. Use of promotores to teach Latinos about various health topics was found to be successful and ties in with the sociocultural factors as part of the HPM. The need for culturally tailored health education intervention projects targeting MFWs was illuminated in the literature review.
CHAPTER THREE

Introduction

Chapter three describes a culturally tailored CVD health promotion education program designed for MFWs employed in Southeastern Arizona. Topics covering issues of communication, cultural considerations, health literacy assessments, and a description of the sample population and setting are presented. Proposal of the project to local and state interest groups and management of the greenhouse is presented followed by a detailed presentation of the educational modules.

Program Description

This culturally tailored CVD health promotion education program is designed for Latino MFWs who are employed at a greenhouse in the border region. It is a pilot project addressing the prevention of CVD through health promotion educational modules that are designed to be easily transferred to farm fields and agricultural sites in the surrounding areas. This 6-week educational program is designed to improve knowledge of lifestyle behaviors specific to CVD health promotion and prevention. Six one-hour modules, beginning one week after an initial assessment and interview, are conducted one week apart. The specific aims of the project are to:

1) Develop a culturally tailored program targeting CVD prevention and risk reduction.

2) Tailor the intervention based on assessment of health literacy, baseline CVD knowledge, and health behaviors.
3) Implement the CVD health promotion education program for MFWs in the Arizona-Sonora, Mexico border region.

4) Evaluate the effectiveness and satisfaction of the CVD health promotion education program. Program effectiveness will be evaluated by the differences between participant’s pre-, immediate post-, and 3-month post-intervention scores on the heart Disease Fact Questionnaire (HDFQ). Program satisfaction will be evaluated by a client satisfaction survey administered directly after the last educational module and a focus group survey administered one week later.

Knowledge of the heart health behaviors and risk factors of CVD will be assessed among participants by orally administered questionnaires. Prior heart health behaviors will be assessed only during the initial interview, strictly as a method to identify participant’s needs and to further tailor the program’s cultural and educational content. Health literacy will be determined by administration of the Newest Vital Sign (NVS) questionnaire. Development and implementation will be guided by Pender’s HPM. The project will also be tailored based on the participant’s health literacy level. Evaluation of project effectiveness will be determined by the participant’s increased number of correct answers related to knowledge of heart health behaviors and risk factors of CVD assessed through a pretest/post-comparative evaluation. Client satisfaction will be assessed by the oral administration of a client satisfaction survey and focus group feedback at the conclusion of the program.
Recruitment and Setting

The greenhouse is located in Southeastern Arizona approximately 15 miles from the nearest town. This isolated hydroponics greenhouse employs close to 1200 workers. Latino workers comprise the majority of the blue-collar positions. Many greenhouse employees work 10 months on work visa programs, during their 2-month break they often work in surrounding areas harvesting crops or thinning orchards. Their employment at the greenhouse ensures less transience and so increases the potential for feedback, as the MFWs will be easier to locate. Inclusion criteria for the project participants are as follows:

- over the age of 20 years (criteria for ATP-III risk assessment tool)
- of Latino descent
- willing to participate in all intervention components
- have worked in agriculture for at least 2 years
- able to speak Spanish

During their weekly visits to the worksite to perform health screenings, the staff members from the outreach program will recruit 10 MFWs from three worksites, by determining the workers eligibility for inclusion into the program. Once a potential participant has agreed to participate, the staff members will schedule the initial one-on-one interview and screening. Cash incentives and an insulated lunch cooler will be offered to those who complete the program and the client satisfaction survey. In addition, at least one Latino employee/manager from each site will also be asked to participate as management participation has been shown to improve participation in worksite health
programs (Koffman, et al., 2005; Mas, et al., 1997). This will bring the total number of participants to thirty-three.

Cultural Considerations

Cultural considerations of the target population are addressed through Spanish-language presentations of modules by registered nurses and promotoras. Health education materials are derived from Farmworker Health Services, Inc., and the successful health promotion program, *Salud Para Su Corazon (SPSC)*, which was developed through the National Heart, Lung, and Blood Institute specifically for Latinos. Each module will contain skills building interactive activities, in conjunction with the culturally appropriate materials. At the end of each module time will be taken for participants to repeat the learned skills; this incorporates the teach back method, a low health literacy teaching strategy that also encourages increased self-efficacy and empowerment. Additionally, participants will be asked to identify perceived benefits and barriers to the specific health promotion skills being addressed every week and then the group will be asked to collectively seek solutions to barriers.

Using group participation and problem solving reflects the Latino values and beliefs of *personalismo* and *colectivismo*. Encouraging participants to share their ideas and strategies for changing health behaviors is a strategy that will be used in this project. Addressing *fatalismo*, which is a common Latino belief that there is little an individual can do to alter his or her destiny, is important, as it is a potential barrier to action.

The Latino culture places great value on the family. Directing messages that include benefits for the family is an important strategy; however, the MFW population is
unique in that many of the workers are in the U.S. without their families. Directing activities to include family can be difficult in this situation, as the MFW may not return to their family for several months. Using tactics of staying healthy for the eventual reunion or visit to the family is a possible strategy, although vulnerable populations have a more present-time orientation as the focus is on surviving today and short term consequences, so the future may have less meaning (Pender, et al., 2006). However, in this project we will encourage and support health behavior changes, and encourage sustainability of these behaviors when they have reunited with their families.

Promotora Training

Promotoras will be recruited from the existing outreach program and trained for informal health education and triaging by the advanced practice nurse. The promotoras will also be asked to assist with the presentations under the guidance of the nursing staff; for example, answering questions on an individual basis when needed, translating difficult terms, explaining nutrition labels, gathering names of medications purchased in Mexico, and assisting with explaining the nutrition contents of the meal to be served in module six.

The promotoras will be asked to commit to two 4-hour training sessions using the NHLBIs Su Corazon, Su Vida- Your Heart, Your Life (1999). This is a user friendly, bilingual evidence-based curriculum and has been used successfully in the past for training promotores (Medina, et al., 2007). The materials used to train the promotoras include information about CVD risk factors such as high blood pressure, cholesterol, tobacco use, lack of physical activities, unhealthy weight, and diabetes. Topics also
include ways to address the target audience, focus on positive behaviors, and basic heart and circulation anatomy. During the training sessions the promotoras will be able to familiarize themselves with the questionnaires that will be used in the project.

Addressing Low Health Literacy

The bilingual materials for the CVD health promotion education project were chosen specifically because of the easy-to-read qualities, bright illustrations, and use of Latino characters and food preferences. In addition, two 25-minute educational videos will be viewed in two of the modules. The majority of participants in the original SPSC program ranked the “videos” as the number one informative component (Alcalay, et al., 1999). To further foster client skills, flip charts and colorful illustrations, and plain language without medical jargon will be used for presentations to facilitate participant interaction as recommended for low health literacy populations (Black, 2008).

Cardiovascular Disease Health Promotion Interventions

The objectives of the program’s interventions are to: 1) increase participant knowledge of heart health behaviors that will prevent CVD, and 2) increase knowledge of risk factors for CVD; this will be measured as the difference between baseline knowledge and post-intervention knowledge. This will be demonstrated by participant’s ability to recognize 3 additional healthy behaviors and 3 additional risk factors for CVD, when comparing pretest to posttest responses.

The modules consist of presentations that discuss basic information on CVD, identification risk factors, and examples of healthy lifestyles, each lasting approximately one hour. Modules are interactive and participants will be encouraged to ask questions at
any time. During each module there will be a skills building activity in which participants will be asked to identify healthy foods, types of physical activities, normal blood pressure levels, etc. Positive feedback will be used throughout these activities and presenters will model positive feedback and support of participants, encouraging them to do so with each other. Skills building can shed a positive light on perceived self-efficacy and competence, which motivates individuals to engage in those behaviors in which they excel. Self-efficacy influences perceived barriers to action, with higher efficacy resulting in lowered perception of barriers (Pender, et al., 2006). Participants will be asked to voice their perceived barriers and benefits to the intended health promotion activities during each module; the group will be asked for suggestions on overcoming identified barriers.

During the author’s three-year work experience in the border region some unique barriers and issues about incorporating healthy lifestyles into daily routines were observed, issues not always addressed in health promotion literature directed at MFWs. For instance, many of the employees live in nearby neighborhoods where the roads are unpaved and not maintained, there are no streetlights and there are many loose dogs, making a walking routine difficult. In addition, the local store has a very limited supply of fresh fruits and vegetables and the mark up on food prices is formidable. In this same store food items are often repackaged into smaller containers and so the nutrition fact labels have been removed. The nearest large grocery store is 15 miles away so transportation can be a barrier, and for some the fear of deportation when entering the public eye is a threat. Frequently the employees buy frozen meals from the onsite vending machines that are high in fat and salt. Additionally, there are two outdoor food
trucks that sell Latino foods that contain lard and unhealthy amounts of salt. These are issues to be addressed during the modules when asking about perceived barriers to a healthy diet, a healthy weight, and an increase in physical activity.

A detailed description of the initial individual interview and the six modules follows after the Project Outline:

- Week 1- Individual interview and assessment
- Week 2- Module One: Introductions and CVD
- Week 3- Module Two: High Blood Pressure- Cholesterol- Obesity
- Week 4- Module Three: Benefits of Physical Activity- Health Risks of Smoking
- Week 5- Module Four: Diabetes and CVD
- Week 6- Module Five: Diet and Food Preparation
- Week 7- Module Six: Review and Questionnaires.
- Week 8- Focus Group Meeting

Individual Interview- Procedure for Baseline Data

One bilingual nurse and promotora will meet with each participant for approximately 30-45 minutes. The first intervention will be in a private setting to screen participant’s BP, blood glucose, total cholesterol, and high-density lipids (HDL). This information will be used to predict each individual’s 10-year cardiac risk using the STAT Cholesterol v2.7 risk assessment tool, based on the Adult Treatment Panel III (ATP-III) (Chen, 2004). Height, weight, and waist circumference will be assessed to calculate the participant’s body mass index (BMI) using the Epocrates-ACC Essentials for Cardiology:
BMI+ v1.2 program (Chen, n.d.). Nursing staff will also obtain a brief health history. Based on the patient’s age, gender, and risk factors, recommended heart screening will be reviewed based on the American Heart Association’s guidelines (AHA, 2007).

The nurses and promotoras to collect baseline data related to health literacy, CVD knowledge, and lifestyle behaviors will administer two instruments. Assessment of healthy literacy will performed using the NVS screening tool (see Appendix C). The Heart Disease Fact Questionaire (HDFQ- see Appendix A) will be used to assess CVD knowledge and Mis Habitos- a behavior assessment instrument (see Appendix B) will be administered to assess current behaviors.

*Equipment and Materials:* Scale, tape measure (for waist circumference and height), clipboards, pens/pencils, and the 3 surveys. A Stethoscope and a manual blood pressure cuff is needed to check BPs. The BMI will be calculated using a Palm-Tungsten-2, Epocrates-ACC Essentials for Cardiology. Blood glucose, total cholesterol, and HDL will be obtained by using a CardioChek PA professional monitor, which gives the results in minutes and is clinical laboratory improvement amendments (CLIA) waived. A risk assessment tool is derived from the NHLBI website based on the ATP III guidelines to predict participants 10 year CVD risk (National Cholesterol Education, 2004).

**Module One**

**Introductions and Cardiovascular Disease**

The focus of module one is to set the stage for an informal and safe setting where participants feel open to express themselves. Introductions will be made to familiarize participants with each other and the presenters. Participants will be encouraged to give a
brief description of their family, home location, or other personal information if they desire. Participants will be asked if they have any questions about the previous week’s interviews and screening results. A brief discussion on very basic heart anatomy and function will follow. Participants will receive colorful illustrations of the heart produced in the *Su Corazon, Su Vida* – Your Heart, Your Life Program by the NHLBI (1999).

Next a 25-minute educational video will be shown. This video was produced by the NHLBI for Latinos as an introduction to CVD and demonstrates how to make heart healthy lifestyle changes, with an emphasis on nutrition and physical activity using dramatization, testimonials, and advice from a physician, (*Por Amor al Corazon - For the Love of your Heart,* 1997). Following the video, participants will be asked questions such as: What is CVD? Did they know CVD is the number one cause of death among Latinos? What are some of the recommended ways to reduce the risk of CVD mentioned in the video?

The skills portion of this module is to identify three risk factors of CVD and identify three changes that can reduce CVD. The use of a dry erase board will be implemented to record participant’s responses. A short colorful guide called *Mas Vale Prevenir Que Lamentar* “An Ounce of Prevention” (NHLBI, 1999) will be given out at this point as a companion booklet to the presentations.

*Equipment and Materials:* Television with VCR, dry erase board, heart illustration, and the companion booklet (see Appendix F). Healthy snacks of raw carrots and cucumbers flavored with fresh lime juice and chili powder.
Module Two

High Blood Pressure-Cholesterol-Obesity

The focus of module two is to increase participant’s knowledge of high blood pressure, high blood cholesterol, and obesity. Presenters will define blood pressure as the force applied by the blood against the walls of the arteries. Blood pressure is needed to circulate the blood in the body. Discussion of high blood pressure and its impact on the heart, signs of high blood pressure and the term silent killer will take place. Steps to lower high blood pressure will be listed as:

- Lose weight if you are overweight
- Be physically active
- Choose foods low in salt
- Limit alcohol consumption
- Take blood pressure medication according to the directions, if prescribed by your health provider

High blood pressure ranges will be described as above or equal to 140/90 (130/80 if diabetic). Borderline high cholesterol is described as 200-239; 240 or above is high. Terms such as lipoproteins – low-density and high density will be defined with physical activity and diet being ways to reach ideal levels. Foods high in fat and cholesterol will be reviewed here as well as healthier choices of foods low in fat and cholesterol.

Obesity as a risk factor will be discussed as well as the higher incidence of obesity among Latinos. According to Farmworker Health Services, Inc. (FHSI),

“Farmworkers are susceptible to obesity due to cultural and economic factors, such as diet and low wages. Farmworkers may not have much “free time” needed
to plan and prepare healthy meals, let alone carve out the thirty minutes needed each day for cardiovascular exercise in a stress-free, non-work setting. Additionally, many farmworkers experience food insecurity and must opt for less expensive foods that tend to be higher in trans-fats, such as “fast food” and unhealthy processed foods. However, it is important to emphasize to farmworkers that they have options and can make healthy choices about their level of activity and what foods they put into their bodies, which can ultimately affect their long-term health and wellbeing” (n.d.).

Reducing calories and portions and increasing physical activity will be suggested as a way to lose weight. Discussion of family meals and activities will be part of this module. Easy to read Spanish handouts addressing BP, cholesterol, and obesity will be distributed. These handouts were produced for SPSC by NHLBI (1996).

Skills activities will include asking participants to identify three foods from their own daily diet, which are high in salt or fat, and three foods low in these items. Perceived barriers to a healthy diet and maintaining a normal cholesterol level will be discussed as well as a review of the steps involved in lowering high blood pressure. Discussion of food availability in the participant’s particular neighborhood and the work setting will be addressed. Since management will be participating, they can be instrumental in promoting organizational changes to offer healthier food options in the vending machines.

*Equipment and Materials:* Dry erase board and markers, 4 handouts (see Appendix F), and a healthy snack of fresh papayas, mangos, and bananas.

**Module Three**

Benefits of Physical Activity – Health Risks of Smoking

The focus of module three is to increase participant’s awareness of the benefits to physical activity and the health risks of smoking. Because many of the participants live in
decrepit settings and may have a long commute each day, finding ways to incorporate regular exercise is a challenge. After different types of activities are described such as walking for 30 minutes, dancing, playing soccer or basketball, house or yard chores, participants will learn about target heart rates and how to check their own pulse. The group will then take a 20-minute walk around the outside of the greenhouses, during which time the benefits of physical activity will be discussed and heart rates will be checked. The goal of taking a walk is not only for the activity but also because this informal setting may encourage participants to interact more. This activity also demonstrates where the participants can walk during their lunch breaks if they choose.

Back inside the workplace participants will be asked to assess their community and neighborhood settings for ease and safety of walking. These questions will be addressed: Are there walking paths in your community? Are they well lit? Do you feel safe walking in your neighborhood? This will also help to identify barriers to setting up a walking routine. It will be suggested that walking in groups in unimproved areas is safer. Ask participants if forming a walking club is reasonable. How do participants feel about walking before or after work, or during lunch at the greenhouse where the roads are paved and lit?

Assessing for participant’s current level of physical activity or interest in getting more active will include requests such as: Name three benefits of physical activity that are important to you. Name two activities you enjoy doing by yourself or with family or friends. What are three ways that you can add 10 to 15 minutes of physical activity into your busy day?
Suggesting a brisk walk for 15 minutes two days of the first week, then gradually adding on minutes and days a week is a way to gradually shape desired behaviors. Once a person starts engaging in a desired behavior, the consequences such as losing weight, feeling more relaxed, or feeling more energetic, have reinforcing properties (Pender, et al., 2006). In addition to the walk and questions about physical activity, two handouts will be distributed. One is called ¡Manténgase activo y síéntase bien! “Stay Active Feel Better” (NHLBI, 1996) and the other is, Si Se Puede: Prevenir y controlar la presión arterial alta con actividad física “Yes You Can: Prevent and Control High Blood Pressure with Physical Activity” (NHLBI, 2004).

The effects of smoking on the heart and circulatory system are addressed next. Different ways to quit smoking will be discussed with emphasis on ways to gain support and encouragement and the use of distraction to work through the urge to smoke when trying to quit. Nicotine substitutes, and the possibility of local tobacco cessation classes will be mentioned; however, nicotine patches and gums are costly and the work and commute schedule for MFWs make external classes unrealistic. A helpful bilingual brochure on quitting smoking will be given out. It is called ¡Rompa con el hábito de fumar! “Kick the Smoking Habit” (NHLBI, 1996).

Skills activities include participants’ identifying two of their favorite physical activities; checking their heart rate for 15 seconds, and recalling helpful ways to quit smoking. Brainstorming for solutions to increase physical activity will be done with ideas written on a dry erase board. Participants will be asked to write down the names of medications they currently take or have taken or purchased in Mexico for heart disease or
diabetes, so that a brief description of their side effects and actions can be discussed next week.

*Equipment and Materials:* Dry erase board and markers, 3 handouts (see Appendix F), and a healthy snack of celery and apples with peanut butter.

**Module Four**

**Diabetes and Cardiovascular Disease**

Prevalence of Diabetes among Latinos is discussed in module four and its impact on the heart and circulatory system. Results of a random household survey conducted on the Arizona-Sonora border, which demonstrated a 20 percent greater prevalence of diabetes in Latinos than in non-Hispanic Whites will be discussed (McEwen, Baird, Pasvogel, & Gallegos, 2007). Participants will be asked if they know of family or friends with diabetes and how this affects them. This is important as many Latino immigrants put family first as a way of engaging in diabetes self-management and often seeing a loved-one suffer the complications of diabetes increase awareness (McEwen, et al., 2007).

Medications that are commonly purchased in Mexico for BP, cholesterol, and diabetes are reviewed, describing basic pharmacology. In addition, home remedies (*remedios*) will be brought up and written on the board and then participant’s opinions and use of these will be discussed.

A brief overview of the physiological process of Diabetes will be presented in an easy to understand manner. The FHSI uses this definition in their education literature:

Diabetes occurs when insulin does not work properly and glucose (sugar) builds-up in the blood. When healthy, the body breaks down sugar during the digestion process and produces a “fuel” for the cells in the body called glucose. The pancreas, a vital organ, makes a hormone called insulin, which functions like a
key to “unlock cell doors” and allow glucose to enter the cells throughout the body. When someone has diabetes, insulin does not function properly and blood sugar levels can become dangerously high because glucose is not properly entering the cells of the body. Over time, these high glucose levels can lead to heart disease, kidney damage, amputations, tooth decay, nerve damage, and blindness (n.d.).

Prevention tips such as diet changes, smaller portions, and increased physical activity will be encouraged. Normal serum glucose values will be taught. Signs and symptoms of diabetes will be described (increased thirst and hunger, frequent urination, fatigue, flu-like symptoms, weight loss, blurred vision, and sores that will not heal). It will be stressed that many people do not develop symptoms early on in the disease process and the differences between Type 1 & Type 2 diabetes will be described. In addition, the effects of diabetes on the cardiovascular system will be explained, stating that because the nerves that go to the heart may be affected, diabetics who have a heart attack may not experience the typical chest pain. Participants will be advised to be suspicious of chest heaviness, arm numbness, or indigestion. The role of elevated blood sugar levels in damaging large and small blood vessels will be presented (National Institute of Health [NIH], 2005).

Skills activities include participants repeating back information such as: What does fasting mean? What are normal fasting blood glucose levels? Does a person take insulin for type-1 or type-2 diabetes? Can diabetes affect the heart and circulation? Name some foods to avoid. Handouts from the Migrant Clinicians Network (MCN) will be dispersed; the materials are designed specifically for low-literate populations. The handouts are titled: Diabetes & High Blood Pressure and What is Diabetes?
Equipment and Materials: Dry erase board with markers, MCN handouts (see Appendix F), blood glucose level recording cards for diabetic patients, and a healthy snack of fresh sugar snap peas, jicama, and low fat cheese slices.

Module Five

Diet and Food Preparation

Module five encourages participants to recognize and prepare healthy foods. Discussion will include reducing salt and fat from the diet common to Latinos. A 25 minute educational video will be shown in Spanish titled Cocinar con su Corazon en mente, “Cooking with your Heart in Mind” by the NHLBI (1997). This video provides tips on how to select and prepare healthy Latino meals. After the viewing, participants will be allowed to ask questions and encouraged to share some of their own healthy eating tips or recipes. Various nutrition labels from popular Latino foods will be handed out and interpreted as a group. A handout about learning to read nutrition labels titled Como Leer una Etiqueta de Nutrición or How to read a Nutrition Label (MCN), will be distributed. Comparisons of whole, low fat, and fat free product labels will be viewed as a group. The suggestion of increasing vegetables and fruits, using lean meats, substituting olive oil for lard, and consuming whole grain products will be addressed.

Towards the end of this module a 57-page recipe book will be given out called Platillos Latinos ¡Sabrosos y Saludables! “Delicious Heart Healthy Latino Recipes” (NHLBI, 1996). Time will be given to look through the book and ask questions. Participants will be encouraged to mention if they have ever served any meals similar to those in the recipe book to their families.
Skills activities include identifying three ways to cut down on salt and fat in cooking and as a group figuring the fat or sodium content of a nutrition label enlarged and on display. Identifying ways to avoid use of the vending machines or food trucks and the possibility of one or two people making weekly trips to the local food bank or larger grocery store to buy enough fresh vegetables and fruits for a group will be suggested. 

*Equipment and Materials:* Television and VCR, video about healthy foods, 12 nutrition labels from commonly purchased Latino foods, recipe book, one handout (see Appendix F), and dry erase board. Healthy snack of baked chips, sliced fresh vegetables, salsa, and low salt spinach dip made with fat free sour cream.

**Module Six**

**Review and Questionnaires**

Module six will be a review of the content covered in the first five modules. Questions will be encouraged and participants will be asked if they found themselves doing anything different because of the modules. The skills activities done in the previous modules will be repeated. A meal from the recipe book will have been prepared in advance by the nurse and *promotoras* and set out buffet style for the participants. During the meal participants will be asked to take the HDFQ and client satisfaction survey by interview with a nurse or *promotora*, this process will take less than 10 minutes per participant. Interested participants from each group will be recruited to attend a focus group the following week. A project team member will explain the purpose and format of the focus group and stress the importance and value of the participant’s feedback on the program.
Focus groups are useful in identifying the project’s strengths, weaknesses, and opportunities (Vincent, Clark, Zimmer, & Sanchez, 2006). This process is effective in obtaining specific feedback regarding quality of communication during presentations, ease of comprehension of materials, appropriateness of the length of presentations, and favorite methods or materials used. A follow-up test will be administered to all participants 3 months after the last module to assess retention of knowledge.

*Equipment and Materials:* Post-test (see Appendix A & B), client satisfaction survey (see Appendix C), lunch coolers, and a healthy meal prepared by the project staff. Sugar-free soda or mineral water and paper plates and plastic forks, knives, and spoons. An insulated lunch cooler and $20.00 will be given to all of the participants at the completion of module six.

**Project Support**

One major health trend currently seen is the increase in Latino farmworkers disproportionate to the screening and treatment available to this same population. This creates an opportunity for culturally sensitive and affordable health programs. However, at the same time heated immigration issues and prejudice pose barriers.

The plan is to conduct the program at the work facility during regular work hours. Based on the cost savings associated with participation in health promotion programs as noted in chapter two where one study found that comprehensive worksite health programs yield a $3 to $6 return on investment for each dollar spent (Koffman et al., 2005), management is encouraged to compensate the participants for their attendance in this CVD health promotion program. In addition, compensation is an important issue
because participants who mostly earn minimum wage and have families to support, may not be willing to participate without pay. The cooperation and permission of management will greatly influence implementation of this aspect; however, management may have misgivings about this investment, of approximately $1400 in earnings, towards the employee’s attendance to the programs. Again, the issue of immigration status may emerge among the decision makers at the greenhouse. It might be felt by management that participants who are working at the greenhouse on a work visa, but living in Mexico should not be able to participate in the program. However, as revealed in previous statistics, CVD is prevalent on both sides of the border and needs to be addressed accordingly.

Initiating a cohesive working relationship through shared responsibility is essential. The strategy of promoting collaboration at an organizational leadership level can be used to incorporate the cooperation of the management. In proposing this program to the company’s decision makers, it is important to first establish that they can choose the days and times of the presentations as well as retain outlines and copies of all materials to be used. It will be emphasized that by approving this program the management is acting for and with groups at risk.

The support of the management is crucial to the implementation and continuation of this program for a variety of reasons. They are being asked to consider the value of the program’s benefits to the workers; as demonstrated by increased morale, decreased absenteeism due to uncontrolled blood pressure, and increased feelings of worth as employees.
In addition to asking the management to pay the participant’s hourly wage while attending the program, they will also be asked to contribute funds to provide incentives to the participants. We are requesting that $20 and an insulated lunch cooler be given to each participant after their completion of the client satisfaction survey. Should the management decline contributing to the proposed incentives then the Mexican Consulate will be asked, as they have contributed cash in the past to help the outreach program purchase vaccines for MFWs. The local Catholic Church and Rotary Club are also potential contributors.

Summary

Chapter three presents a description of the proposed culturally tailored health promotion education program. The sample and setting were described as a predominantly Latino population of first generation immigrants working in an isolated location. The use of bilingual presenters, including registered nurses and promotoras, and materials specific to Latino MFWs are examples of ways to meet the cultural needs of this population. A health literacy assessment questionnaire, pretests to assess baseline knowledge and current behaviors, and a health screening are administered in the initial interview. The format of the modules was discussed at length including the use of videos, colorful illustrations, interaction, and skills building activities to identify CVD risk factors and the perceived barriers and benefits to healthy lifestyles. It is in the identification of perceived barriers and benefits that individuals will begin to feel empowered and can begin to consider incorporating healthy behaviors into their daily
routines. Proposing this project to the decision makers was discussed with emphasis on the benefits to both the workers and management.

Posttest of CVD knowledge and client surveys are held during the last module and participants will be recruited for a focus group in order to more clearly define strengths and weaknesses of the project and assess satisfaction. This information is useful to adjust future health education projects for Latino MFWs. Evaluation methods and instruments are discussed in chapter four.
CHAPTER FOUR

Introduction

Chapter four presents the process of evaluating the proposed health education project by the use of questionnaires, surveys, and focus groups. A promotora or nurse will orally administer the questionnaires to compare pre- and post- intervention knowledge of the risk factors and healthy behaviors associated with CVD. A bilingual volunteer not involved in the program will administer the client satisfaction survey.

Evaluation Instruments

The main objective of evaluation is to measure the impact of the program on the participant’s knowledge of CVD risk factors and healthy behaviors. At the onset of the individual interview, a Spanish version of the NVS will be administered to assess health literacy; in addition, a behavior assessment called Mis Habitos will be performed, the results of both instruments will be used to develop and tailor the educational modules. An outcome measure of knowledge will be an increase by at least three correct responses on the post-program HDFQ. Client satisfaction will be measured by the responses to a simple 9-question survey (see Appendix C) and focus group feedback indicating satisfaction with the program.

Knowledge Assessment- Health Disease Fact Questionnaire

This project uses various mediums to present facts about CVD. Basic pathophysiology about CVD will be covered, as well as education to recognize the modifiable risk factors of CVD. To further promote sustainability of the program participant’s knowledge will be measured pre- and post- intervention with the HDFQ.
The HDFQ was developed to measure knowledge of heart disease risk in people with diabetes (Wagner, Lacey, Chyun, & Abbott, 2005). Because of its appropriateness to this project and the fact that it has been used with the low-income, low-literacy Latino population, the HDFQ was selected as a knowledge assessment instrument. The questionnaire was used in a study conducted with 524 adult volunteers from three American Diabetes Association Expositions in the northeast. The HDFQ is a 25-item questionnaire readable to an average 13-year old, imposing little burden. It shows good content and face validity and demonstrates adequate internal consistency with Kuder-Richardson-20 formula equaling 0.77. Kuder-Richardson can be thought of as a Cronbach’s $\alpha$ for dichotomously scored items (correct/incorrect). Item analysis showed a desirable range of $P$-values (Wagner, Lacey, et al.).

The HDFQ was later carefully translated and back-translated into Spanish using the Bradley guidelines (Wagner, Abbott, et al., 2005). The back translation was compared to the original by the study’s principal investigator (JW). The Spanish version performed well with a Kuder-Richardson-20 internal consistency coefficient of 0.86 (Wagner, Abbott, et al., 2005). Items such as these are in the questionnaire: A person always knows when they have heart disease. Smoking is a risk factor for heart disease. And, people with diabetes rarely have high cholesterol. Choices of “true”, “false”, or “I don’t know” are to be circled.

**Behavior Assessment-Self-Reported Health Activities**

One of the aims of the project is to tailor the CVD health promotion education program to meet the needs of the MFW population. Part of this tailoring will be guided
by the baseline lifestyle behaviors as revealed by the administration of *Mis Habitos* during the initial interview. It is felt that this information will guide the choice of educational materials and content of the presentations.

Health education promotion interventions aim to increase knowledge which may in turn impact an individual’s lifestyle behaviors. However, for this program, which includes just six modules to be delivered in a 6-week format, a change in behavior is unrealistic. Consequently, the intended outcomes of this program are that participants will demonstrate an overall increase in knowledge of CVD and the related benefits of heart healthy lifestyles.

*Salud Para Su Corazon* of North Texas utilized a simple low-literacy evaluation tool called *Mis Habitos* or Heart Health Behavior Questionnaire to assess the participants’ heart healthy behaviors. They administered the survey before the program began and six months after baseline assessment. The survey was administered in either Spanish or English depending on the respondent’s preference. It was first tested with a group of *promotores* and internal consistency was computed for each subscale using pre- and post-test data. Results showed that the subscales had acceptable reliability (Cronbach alpha coefficients greater than 0.70) (Medina, et al., 2007).

The survey is a 35-item questionnaire that asks about activities such as buying products low in fat and salt, food preparation, physical activity, smoking, and maintaining a healthy weight. The choices of answers are based on a Likert-type scale as follows: 1=never, 2=sometimes, 3=usually, 4=always. This survey uses the healthy lifestyles that were promoted in the program as a basis of evaluating the behavior changes among
participants. The HPM uses prior related behavior as an indicator of subsequent behavior. Prior behavior is proposed as having both direct and indirect effects on the likelihood of engaging in health-promoting behaviors. It is thought to indirectly influence health-promoting behavior through perceptions of self-efficacy, benefits, barriers, and activity related affect (Pender, et al., 2006).

Client Satisfaction Survey

Assessment of the participant’s satisfaction is crucial to any program, particularly early in its development. Adjustments to the program can be made according to feedback from participants. A simple questionnaire addressing presentation styles, materials, dose of the program, or ability to understand the topics can be given in interview form to participants during the last module by bilingual interviewers who did not participate in the program, so the participants feel less inhibited with their feedback. The client satisfaction survey is a 9-item Likert-scale with five choices to circle ranging from strongly disagree to strongly agree. An additional question asks participants to rate the handouts, question and answer segment, videos, or presentations in the order they felt were most helpful from 1-4, 1 being the most helpful. Participants will also be asked to express any additional comments they have about the program they attended. Arrangements will be made at this time to establish a contact point for the 3-month follow-up questionnaires; this will be conducted in person at the greenhouse or by telephone.
Focus Group

Further evaluation of the health education project will be done with a focus group. This setting is useful for looking at the process as well as the satisfaction of the participants, project team, and management. Interested participants from the project are asked by the presenters to attend the focus group; the group will be comprised of the nurses and promotoras, willing MFWs from each presentation site, and one manager from each presentation site.

Focus groups can be used to enhance understanding of the target population and in identifying barriers to the effectiveness of the interventions (Vincent, et al., 2006). Process evaluations provide information to help refine the intervention or delivery of the program. In addition, process evaluation answers these questions: Was the intervention implemented as planned? Did the intervention reach its target population effectively? And, were the participants satisfied with the interventions? (Pender, et al., 2006). These issues are evaluated by use of the focus group survey (see Appendix D).

The client satisfaction surveys will be reviewed during the focus group to analyze emerging patterns of dissatisfaction or consistent positive feedback on the survey responses. A volunteer from the focus group will be sought to write down key points of the meeting. In addition, the focus group will be tape recorded and transcribed by a bilingual transcriptionist to further analyze client satisfaction and suggestions for alterations of future programs. This will be a key ingredient for the success of transferability and sustainability of the proposed program.
Open-ended survey questions will be used to facilitate the focus group (see Appendix D), for example: What are your thoughts about the handouts used in the program? What did you think about the videos? The MFWs will be asked their thoughts and suggestions on the transferability of the program to farm fields or labor camps. Their opinion on the best time of day to hold the presentations, and whether they would attend the presentations if they were working out in the fields is an invaluable ingredient for successful transferability.

Both MFWs and the management will be asked if they felt the time of day, location, and length of presentations was conducive to worker’s schedules. It is beneficial for the future success of the program that all focus group participants express any comments or suggestions about what they would like to see done differently or what aspects they would like to see repeated. The importance and appreciation of the participant’s attendance and participation will be emphasized. Before the focus group begins participants will be informed that the discussions are confidential and while they may share ideas with others after the focus group, they must not identify who made the comment(s). Participants will be informed that a report is to be generated based on information derived from the focus group and that they will receive copies and any identifying information will be deleted before distribution of the reports.

Summary

The importance of evaluation to any health education project is crucial to its successful sustainability. Evaluating outcomes of increased knowledge and satisfaction of key players are integral elements of this health promotion education program. The focus
group and the results of the focus group survey were also described as an important tool to evaluate the effectiveness of the process and satisfaction of the participants, presenters, and managers.
CHAPTER FIVE

Introduction

Chapter five is a discussion about the strengths, limitations, and sustainability of the proposed culturally tailored health promotion education program. Recognizing these qualities early on will assist in the continued development of the program by encouraging research in the those areas where lack of data became apparent or where changes in any part of the delivery of the program are recommended. For the program to continue in its original location and expand to surrounding agricultural sites, the prospect of sustainability is addressed. The relevance of the target population and health education needs to nursing is also covered, concluding with suggestions to future research.

This culturally tailored health promotion education program for the Latino MFWs of Southeastern Arizona aims to address CVD burden by introducing cultural interventions to increase knowledge. Pender’s HPM is the framework to guide the education interventions with emphasis on assessing prior related knowledge and behaviors through an initial set of questionnaires. Throughout the modules, interactive activities and group problem solving will address participant’s views of their unique barriers to healthy behaviors. Strategies for participants with low health literacy are incorporated into each module and self-efficacy and empowerment will be encouraged through positive feedback during skills activities.

Program Strengths

There are several strengths to the proposed program. The first is that it involves MFWs in a setting that is stable and more reliable then the farm fields. For the purpose of
transferability, participants in the focus group will be asked specifically about their comments on how to best transfer the program to the farm fields. This will give the program team members and the workers the opportunity and time to collectively work out a plan for this future aspect of the program. Other strengths of the program include: 1) theoretically driven; 2) tailored to the results of the health literacy assessment performed at baseline; 3) culturally tailored and delivered by promotoras, which is a known benefit from previously studied health promotion programs among Latinos; and 4) the plan to assess sustainability of knowledge at 3 months post-intervention.

Program Limitations

There are several limitations related to this program: 1) the setting is a controlled-indoor work environment and although previously mentioned as a potential strength, can also be considered a limitation. The fact that the modules are conducted in a controlled-indoor work environment, may make it easier to produce positive results when compared to the MFWs out in the fields who have variable work hours, and weather and travel conditions; 2) a single pre-posttest design; 3) the involvement of management in the program has the potential to inhibit participant response; and 4) mono-method bias in measuring lifestyle behaviors by using questionnaires alone, without the use of observation data or multiple biological methods may affect the findings.

Program Sustainability

The greenhouse management will be a key player in the program’s sustainability within their worksite. Management is in the process of recruiting a Nurse Practitioner (NP) to be onsite full-time during regular work hours. A component of the advanced
practice-nursing role is to develop health education programs. The NP and present outreach program team can collaborate in identifying strategies for program institutionalization. One way to help with this is to recruit MFW employees into promotora positions. This task will involve cooperation on the part of management to approve of and compensate their employees who participate in the CVD health promotion education program.

Ongoing funding for materials and incentives has to be addressed with the possibility of utilizing community resources beyond those of the greenhouse site, such as the Catholic Church, the Mexican Consulate, or the Rotary Club. Local clinics or hospital boards that are impacted by health issues involving the MFW population may be willing to contribute funds or materials for the continuation of this program. An infrastructure that integrates resources needs to be established to support the program. These resources might include state health departments, universities, professional societies, and federal organizations. Attention to sustainability is important for the program to continue to promote health behaviors (Pender, et al., 2006). As the program expands and begins to transfer to surrounding agricultural sites, applying for grants from these external sources is an additional way to financially sustain this program.

Relevance to Nursing

There is a paucity of health promotion programs for underserved populations, which presents many opportunities for nurses to explore. New strategies to introduce and promote long-term healthy behaviors can be developed by staying current on successful health promotion programs. Southeast Arizona has a lack of MFW health promotion
programs that are accessible at the worksite. This is an area of practice that would benefit from the attention of local community clinics, community colleges, and universities. Advanced Practice Nurses are masters or doctorate prepared providers; because of their expanded scope of practice, they have increased resources to develop culturally sensitive education programs to meet the needs of the local MFWs. Lifestyle change in vulnerable populations is complex due to factors such as language difficulties, educational levels, health literacy levels, poverty, unsafe housing or neighborhoods, and diverse cultural beliefs (Pender, et al., 2006). Nurses can further assess the perceived barriers and benefits to lifestyle changes and assist individuals and groups in devising ways to integrate health promotion interventions. The need for CVD health promotion in southern Arizona is born from the observations made of MFWs by nurses and *promotoras*; whereas the empirical background, problem, and purpose were researched by an APN and consequently this CVD health education promotion program was developed.

**Suggestions for Future Research**

The prevalence of CVD among Latino MFWs is potentially underestimated due to the limited research in this area. Immigration issues have had an impact on research conducted with this population. This is partly due to MFWs returning to their families in Mexico, Central, or South America when they are ill or when they retire from work in the U.S. These factors prevent the health status of MFWs from being included in U.S. health statistics. In addition, MFWs are less likely to access health care due to finances or logistics; undocumented farmworkers are even less likely to receive medical care. Consequently, the full impact of health disparities among MFWs is yet to be determined.
Ineffective recruitment and retention strategies as well as literacy levels and lack of trust play a role in the paucity of research that has been conducted with this high-risk population.

Future research into assessing the feasibility of transferring the CVD program out to agricultural sites is imperative to fully address the diverse agricultural work settings in the border region. This includes locations at produce farms, vineyards, orchards, chili processing plants, and a large dairy. The MFWs who are harvesting crops get paid for each bucket of produce they pick. They are physically exhausted after a day of this physical labor; in addition, the contractistas (labor contractors) are adamant that the MFWs do not stop for conversation during the workday. Hence, transferring the CVD health promotion education program to the farm fields will require the support and buy-in of the farm-owners and contractistas.

Currently the outreach team visits these locations to check BPs and blood glucose levels and to dispense over-the-counter medications. The outreach team has an established rapport with the MFWs and labor contractors so collaboration with this team is crucial to the programs transferability to its intended population.

Items to consider when conducting presentations outdoors are convenience to the farmworker concerning the time of day, time of year, ease of carrying materials handed out, and length of presentations. For instance, it may be more realistic to reduce the length of the presentations to 30 minutes rather then one hour. Transporting education materials such as tables, chairs, dry erase board, and possibly a television or computer for videos, needs to be considered. Provision of food and eating utensils, followed by trash
collection must be planned. The use of video presentations is realistic only in certain circumstances, as only select farms have large open barns and shops with access to electricity. Potentially an end of the workday video presentation can be held.

Informing MFWs in the fields about the health education program will be done with the collaboration of the outreach team, labor contractors, and the farm owners. The outreach team will be asked to distribute fliers and promote the program informally during their weekly visits to the fields. Permission will be sought from the farm owners to hold the presentations out in the fields and for use of the barns and shops to show videos, interview workers, or serve healthy meals. Labor contractors will be asked for a date and time agreement for presentations.

There is an abundance of diabetes research and educational material, when compared to material addressing CVD among Latino MFWS. Finding health education program evaluation instruments specific to MFWs and CVD is a time consuming task. Considering that CVD is the leading cause of death among Latinos, this was an unexpected obstacle. There is a need for more research about successful health promotion programs addressing CVD among Latino MFWs, particularly studies with better measures of the internal validity and reliability of outcome evaluation tools.

Summary

Chapter five discussed the prevalence of CVD and Latino agricultural workers and the lack of research and culturally tailored health promotion education interventions. The proposed program’s strengths are in its environment and consideration of the cultural needs of the participants. Limitations are the controlled environment and single pre-
posttest design. Sustainability and transferability tactics include collaboration with the focus group participants, as well as field workers, management, labor contractors, and the farm owners. Suggestions to acquire funding to sustain the program include involving local health care providers and organizations. The relevance to nursing practice in addressing the needs of vulnerable populations was emphasized with cultural competency being a crucial factor. The need for future research in the area of health education about CVD specific for MFWs, was identified as an important step in establishing the need for better access to health care and more health education interventions for Latino MFWs.

The HPM is the theoretical framework of the proposed culturally tailored health promotion education program and was effective in developing ways to assess prior knowledge and behaviors. In addition, the HPM supports the consideration of sociocultural aspects of a target population and stresses the inclusion of the values of each ethnic group. Interventions are interactive modules with Spanish materials, given by bilingual presenters. Process and outcome evaluation questionnaires have been reviewed as well as surveys to evaluate participants for satisfaction with the program. The results are an important part in the future of this health education program.
APPENDIX A: KNOWLEDGE EVALUATION INSTRUMENT
Heart Disease Fact Questionnaire-Spanish

Las preguntas que siguen a continuación son sobre enfermedades del corazón. Por favor haga un círculo alrededor de verdadero o falso; si no está seguro de la respuesta correcta, haga un círculo en “no sé”.

1. Una persona siempre sabe cuando tiene una enfermedad del corazón:
   a. Verdadero b. Falso c. No sé

2. Si ha habido personas con enfermedades del corazón en su familia, usted corre el riesgo de desarrollar enfermedades del corazón:
   a. Verdadero b. Falso c. No sé

3. Entre mayor sea la persona, mayor es el riesgo de tener una enfermedad del corazón:
   a. Verdadero b. Falso c. No sé

4. El fumar es una factor de riesgo para enfermedades del corazón:
   a. Verdadero b. Falso c. No sé

5. Una persona que deja de fumar disminuirá el riesgo de desarrollar enfermedades del corazón:
   a. Verdadero b. Falso c. No sé

6. La presión alta de la sangre es un factor de riesgo para las enfermedades del corazón:
   a. Verdadero b. Falso c. No sé

7. El mantener la presión sanguínea bajo control reducirá el riesgo que corre una persona de desarrollar enfermedades del corazón:
   a. Verdadero b. Falso c. No sé

8. El colesterol alto es un factor de riesgo para desarrollar enfermedades del corazón:
   a. Verdadero b. Falso c. No sé
9. El comer alimentos altos en grasa no afecta los niveles de colesterol en la sangre:
   a. Verdadero b. Falso c. No sé

10. Si su colesterol “bueno” (LAD) está alto usted corre el riesgo de tener una enfermedad del corazón:
    a. Verdadero b. Falso c. No sé

11. Si su colesterol “malo” (LBD) está alto usted corre el riesgo de tener una enfermedad del corazón:
    a. Verdadero b. Falso c. No sé

12. El tener sobrepeso incrementa el riesgo que tiene una persona de tener una enfermedad del corazón:
    a. Verdadero b. Falso c. No sé

13. El ejercicio físico frecuente disminuye las posibilidades de que una persona desarrolle enfermedades del corazón:
    a. Verdadero b. Falso c. No sé

14. Solamente el ejercicio en un gimnasio o en una clase de ejercicio le puede ayudar a una persona a disminuir las posibilidades de desarrollar enfermedades del corazón:
    a. Verdadero b. Falso c. No sé

15. Caminar y trabajar en el jardín son considerados como ejercicios que le ayudarán a una persona a disminuir las probabilidades de desarrollar enfermedades del corazón:
    a. Verdadero b. Falso c. No sé

16. La diabetes es un factor de riesgo para desarrollar enfermedades del corazón:
    a. Verdadero b. Falso c. No sé

17. El alto nivel de azúcar en la sangre le agrega tensión al corazón:
    a. Verdadero b. Falso c. No sé
18. Si su nivel de azúcar en la sangre es elevado durante varios meses, ésto puede causar que su nivel de colesterol suba e incremente su riesgo de tener una enfermedad del corazón:

a. Verdadero b. Falso c. No sé

19. Una persona con diabetes puede reducir su riesgo de desarrollar enfermedades del corazón si mantiene bajo control sus niveles de azúcar en la sangre:

a. Verdadero b. Falso c. No sé

20. Las personas con diabetes raramente tienen colesterol alto:

a. Verdadero b. Falso c. No sé

21. Si una persona tiene diabetes, el mantener su colesterol bajo control le ayudará a disminuir sus probabilidades de desarrollar enfermedades del corazón:

a. Verdadero b. Falso c. No sé

22. Las personas con diabetes tienen tendencia a tener LAD (buen) colesterol bajo:

a. Verdadero b. Falso c. No sé

23. Una persona con diabetes puede reducir el riesgo de desarrollar enfermedades del corazón si mantienen su presión sanguínea bajo control:

a. Verdadero b. Falso c. No sé

24. Una persona con diabetes puede reducir el riesgo de desarrollar enfermedades del corazón si mantiene su peso bajo control:

a. Verdadero b. Falso c. No sé

25. Los hombres con diabetes tienen mayor riesgo de tener enfermedades del corazón que las mujeres con diabetes:

a. Verdadero b. Falso c. No sé
Heart Disease Fact Questionnaire- English

These next questions ask about heart disease. Please circle true or false; if you are unsure about the correct answer, you may circle “I don’t know”.

1. A person always knows when they have heart disease:
   a. True b. False c. I don’t know

2. If you have a family history of heart disease you are at risk for developing heart disease:
   a. True b. False c. I don’t know

3. The older a person is, the greater their risk of having heart disease:
   a. True b. False c. I don’t know

4. Smoking is a risk factor for heart disease:
   a. True b. False c. I don’t know

5. A person who stops smoking will lower their risk of developing heart disease:
   a. True b. False c. I don’t know

6. High blood pressure is a risk factor for heart disease:
   a. True b. False c. I don’t know

7. Keeping blood pressure under control will reduce a person's risk for developing heart disease:
   a. True b. False c. I don’t know

8. High cholesterol is a risk factor for developing heart disease:
   a. True b. False c. I don’t know

9. Eating fatty foods does not affect blood cholesterol levels:
   a. True b. False c. I don’t know
10. If your "good" cholesterol (HDL) is high you are at risk for heart disease:
   a. True b. False c. I don’t know

11. If your "bad" cholesterol (LDL) is high you are at risk factor for heart disease:
   a. True b. False c. I don’t know

12. Being overweight increases a person's risk for heart disease:
   a. True b. False c. I don’t know

13. Regular physical activity will lower a person's chance of getting heart disease:
   a. True b. False c. I don’t know

14. Only exercising at a gym or in an exercise class will help lower a person's chance of developing heart disease:
   a. True b. False c. I don’t know

15. Walking and gardening are considered exercise that will help lower a person's chance of developing heart disease:
   a. True b. False c. I don’t know

16. Diabetes is a risk factor for developing heart disease:
   a. True b. False c. I don’t know

17. High blood sugar puts a strain on the heart:
   a. True b. False c. I don’t know

18. If your blood sugar is high over several months it can cause your cholesterol level to go up and increase your risk of heart disease:
   a. True b. False c. I don’t know

19. A person who has diabetes can reduce their risk of developing heart disease if they keep their blood sugar levels under control:
   a. True b. False c. I don’t know
20. People with diabetes rarely have high cholesterol:
   a. True  b. False  c. I don’t know

21. If a person has diabetes, keeping their cholesterol under control will help to lower their chance of developing heart disease:
   a. True  b. False  c. I don’t know

22. People with diabetes tend to have low HDL (good) cholesterol:
   a. True  b. False  c. I don’t know

23. A person who has diabetes can reduce their risk of developing heart disease if they keep their blood pressure under control:
   a. True  b. False  c. I don’t know

24. A person who has diabetes can reduce their risk of developing heart disease if they keep their weight under control:
   a. True  b. False  c. I don’t know

25. Men with diabetes have a higher risk of heart disease than women with diabetes:
   a. True  b. False  c. I don’t know
APPENDIX B: BEHAVIOR EVALUATION INSTRUMENT
Heart Health Behavior Questionnaire - English

*In the last month, how often have you done the following?*

**Salt & Sodium**

<table>
<thead>
<tr>
<th>1. Buy fresh or frozen vegetables instead of canned vegetables.</th>
<th>Never</th>
<th>Sometimes</th>
<th>Usually</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Buy fresh garlic or garlic powder instead of garlic salt.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>3. Choose foods labeled <em>low sodium, sodium free, or no salt added.</em></td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>4. Eat fruit with salt.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>5. Add little or no salt to the water when cooking beans, rice, pasta and vegetables.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>6. Buy smoked, cured, and processed beef, pork, and poultry like bologna, ham and sausage.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>7. Use a salt shaker at the table.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>8. Fill the salt shaker with a mixture of herbs and spices.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>9. Choose fruits and vegetables instead of salty snacks like chips, fries and pork rinds.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
</tbody>
</table>

**Cholesterol & Fat**

<table>
<thead>
<tr>
<th>10. Drink skim milk or 1 percent milk.</th>
<th>Never</th>
<th>Sometimes</th>
<th>Usually</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Eat fat free or low fat cheese.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>12. Use nonstick cooking oil spray to grease baking pans and skillets instead of using fat.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>13. Read the food label to help you choose foods lower in fat, saturated fat and cholesterol.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>14. Remove the skin and trim the fat from meat before cooking.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>15. Cook ground meat and throw away the fat.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
<tr>
<td>16. Choose fat free or low fat salad dressing, mayonnaise, and sour cream.</td>
<td>Never</td>
<td>Sometimes</td>
<td>Usually</td>
<td>Always</td>
</tr>
</tbody>
</table>
### Weight

| 17 | Read labels to choose foods lower in calories, fat, saturated fat, cholesterol or sugar. | Never | Sometimes | Usually | Always |
| 18 | Bake chicken or other foods instead of frying. | Never | Sometimes | Usually | Always |
| 19 | Add servings of vegetables to a meal instead of more meat. | Never | Sometimes | Usually | Always |
| 20 | Eat smaller portions of food and do not go back for seconds. | Never | Sometimes | Usually | Always |
| 21 | Drink water instead of sodas or sugared drinks like (Kool Aid). | Never | Sometimes | Usually | Always |
| 22 | Eat more when feeling stressed. | Never | Sometimes | Usually | Always |
| 23 | Eat fruits instead of desserts or snacks that have sugar in them. | Never | Sometimes | Usually | Always |

### Physical Activity

| 24 | In the last month, have you done any physical activity? | ☐ Yes | ☐ No |
| IF YES → | 1a. What do you do for physical activity? | ____________________________ |
| | 1b. How often? | ☐ Daily ☐ Weekly ☐ Every 2 weeks ☐ Monthly |
| | Su M T W Th F Sa |
| | 1c. How much? | Per Day: ☐ <30 min ☐ 30-60 min ☐ >60 min |

### Smoking

| 25 | Do you smoke? | ☐ Yes | ☐ No |
| 26 | Does anyone else smoke in your family? | ☐ Yes | ☐ No |
| 27 | Do you allow people to smoke in your home? | ☐ Yes | ☐ No |

(Balcazar et al. 2007. Revised edition, 35-item changed to 27-item edition per personal communication with Dr. Balcazar, September 2, 2007)
Heart Health Behavior Questionnaire- Spanish

Mis hábitos:

¿En el último mes, qué tan seguido hace lo siguiente?

Sal y Sodio

1. Compra verduras frescas y congeladas en lugar de verduras enlatadas.
   0) Nunca 1) Pocas veces 2) Casi siempre 3) Todo el tiempo

2. Compra ajos frescos o en polvo en lugar de sal de ajo.
   0) Nunca 1) Pocas veces 2) Casi siempre 3) Todo el tiempo

3. Compra los alimentos con etiquetas en las que se lee: “bajo contenido de sodio”, sin sodio” o sin agregado de sal.
   0) Nunca 1) Pocas veces 2) Casi siempre 3) Todo el tiempo

4. Come las frutas sin sal.
   0) Nunca 1) Pocas veces 2) Casi siempre 3) Todo el tiempo

5. Cuando se cocinan frijoles, arroz, fideos y verdura, le pone poca sal o nada de sal al agua.
   0) Nunca 1) Pocas veces 2) Casi siempre 3) Todo el tiempo

6. Usa carnes ahumadas, curadas o elaboradas como: Jamón, mortadela o chorizo.
   0) Nunca 1) Pocas veces 2) Casi siempre 3) Todo el tiempo

7. Pone el salero en la mesa.
   0) Nunca 1) Pocas veces 2) Casi siempre 3) Todo el tiempo

8. Llena el salero con una mezcla de hierbas y especias en vez de sal.
   0) Nunca 1) Pocas veces 2) Casi siempre 3) Todo el tiempo

9. Come frutas y verduras en lugar de bocadillos salados como papitas (chips).
   0) Nunca 1) Pocas veces 2) Casi siempre 3) Todo el tiempo
Colesterol y Grasa

10. Toma la leche sin grasa o con 1 percent de grasa.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

11. Come el queso sin grasa o con poca grasa.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

12. Usa un rociador (spray) de aceite para cocinar. Rocía la sartén en lugar de usar gran cantidad de manteca para engrasarla.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

13. Lee las etiquetas de los alimentos para elegir los que tienen bajo contenido de grasa, grasa saturada y colesterol.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

14. Corta la grasa de la carne. Quita el pellejo y la grasa al pollo o al pavo antes de cocinarlo.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

15. Cocina la carne molida y escurre la grasa.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

16. Usa mayonesa, aderezos y crema agria sin grasa o bajos en grasa.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

Peso

17. Lee las etiquetas para elegir los alimentos con menos calorias.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

18. Cocina el pescado al horno en lugar de freírlo.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

19. Come verduras y arroz con su comida en lugar de comer más carne.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

20. Sirven porciones pequeñas de comida.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo
21. Bebe agua en lugar de sodas o bebidas con azúcar como Kool-Aid.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

22. Come más cuando esta estresada.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

23. Come frutas en lugar de postres o tentempiés que tienen azúcar.
   0) Nunca  1) Pocas veces  2) Casi siempre  3) Todo el tiempo

**Ejercicio**

24. En el ultimo mes, a hecho ejercicio?  □ Si  □ No
   Si contesto “Si” →
   1a. Que es lo que hace de ejercicio? _____________________
   1b. Que tan seguido lo hace? □ Diario □ Por semana □ Cada dos semanas □ Por mes
      Dom Lun Mar Mier Jue Vier Sab
   1c. Cuantos? Por dia: □<30 min. □30-60 min. □>60 min.

**Fumar**

25. Usted fuma cigarros?  □ Si  □ No

26. Alguien mas fuma en su familia?  □ Si  □ No

27. Usted permite que fumen en su casa?  □ Si  □ No

**Alcohol**

28. Usted toma licor?  □ Si  □ No
   Si contesto “Si” →
   1a. Que tan seguido toma licor?
      □ Casi no- en ocasiones especiales □ Ocasionalmente- una vez al mes
      □ Una vez por semana □ Regularmente- varias veces por semana
      □ Diario
   1b. Cuanto toma a la vez? □Un trago □dos tragos □mas de dos tragos

(Balcazar et al. 2007. Revised Spanish edition, 35- item changed to 28-item edition per personal communication with Dr. Balcazar, September 2, 2007).
APPENDIX C: HEALTH LITERACY ASSESSMENT TOOL
Figure 1A. The newest vital sign — English.

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Servings per container</td>
<td>4</td>
</tr>
<tr>
<td>Amount per serving</td>
<td></td>
</tr>
<tr>
<td>Calories</td>
<td>250</td>
</tr>
<tr>
<td>Fat Cal</td>
<td>120</td>
</tr>
<tr>
<td>%DV</td>
<td></td>
</tr>
<tr>
<td>Total Fat</td>
<td>13g</td>
</tr>
<tr>
<td>Sat Fat</td>
<td>9g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>28mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>55mg</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>30g</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>2g</td>
</tr>
<tr>
<td>Sugars</td>
<td>23g</td>
</tr>
<tr>
<td>Protein</td>
<td>4g</td>
</tr>
</tbody>
</table>

* Percent Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.


Note: This single scenario is the final English version of the newest vital sign. The type size should be 14-point as shown above in larger, patients are presented with the above scenario and asked the questions shown in Figure 1B.

Figure 1B. Questions and answers score sheet for the newest vital sign — English.

<table>
<thead>
<tr>
<th>READ TO SUBJECT: This information is on the back of a container of a pint of ice cream.</th>
</tr>
</thead>
<tbody>
<tr>
<td>QUESTIONS</td>
</tr>
<tr>
<td>1. If you eat the entire container, how many calories will you eat? Answer: 3 1,000 is the only correct answer</td>
</tr>
<tr>
<td>2. If you are allowed to eat 100g of ice cream as a snack, how much ice cream could you have? Answer: Any of the following is correct. 1/100g per any amount up to 100g 1/100g per half pint container. Note: if patient answers &quot;100g,&quot; ask &quot;how much ice cream would that be if you were to measure it into a bowl?&quot;</td>
</tr>
<tr>
<td>3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42g of saturated fat each day, which is more than the recommended amount of 20g. How many grams of saturated fat would you be consuming each day? Answer: 33 is the only correct answer</td>
</tr>
<tr>
<td>4. If you usually eat 2,500 calories a day, what percentage of your daily value of calories will you be eating if you eat one serving? Answer: 10% is the only correct answer</td>
</tr>
<tr>
<td>Pretend that you are allergic to the following substances. Penicillin, peanuts, shellfish, and bee stings. 5. Is it safe for you to eat this ice cream? Answer: 3 No</td>
</tr>
<tr>
<td>6. (Ask only if the patient responds &quot;no&quot; to question 5) Why not? Answer: because it has peanut oil.</td>
</tr>
</tbody>
</table>

Total Correct
Supplemental Appendix 1. The Newest Vital Sign – Spanish

<table>
<thead>
<tr>
<th>Información Nutricional</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamaño de la Porción</td>
<td>½ taza</td>
</tr>
<tr>
<td>Porciones por envase</td>
<td>4</td>
</tr>
<tr>
<td>Calorías por porción</td>
<td>250 Cal</td>
</tr>
<tr>
<td>Grasa</td>
<td>12%</td>
</tr>
<tr>
<td>Grasa Total</td>
<td>13g</td>
</tr>
<tr>
<td>Grasa SAT</td>
<td>9g</td>
</tr>
<tr>
<td>Colesterol</td>
<td>28mg</td>
</tr>
<tr>
<td>Sodio</td>
<td>55mg</td>
</tr>
<tr>
<td>Total Carbohidratos</td>
<td>30g</td>
</tr>
<tr>
<td>Fibras Diététicas</td>
<td>2g</td>
</tr>
<tr>
<td>Azúcares</td>
<td>3g</td>
</tr>
<tr>
<td>Proteina</td>
<td>4g</td>
</tr>
</tbody>
</table>

*Porcentaje de Valores Diarios (DV) se basan en una dieta de 2,000 calorías. Sus valores diarios pueden ser mayores o menores dependiendo de las calorías que usted necesita.

Ingredientes: Crema, Leche Descremada, Azúcar Líquida, Agua, Yemas de Huevo, Azúcar Moreno, Aceite de Cacahuates (Mand), Azúcar, Manteca, Sal, Carnes Arínicas, Extracto de vainilla.

Nota: Este escenario es la versión final en español del Nuevo Vínculo Vital. El tipo de letra debe ser 14 puntos o mayor. Los pasos se presentan con el escenario anterior y se utilizan las preguntas mostradas en la hoja de respuestas en la página 2.
Supplemental Appendix 1 (Continued). Questions and Answers Score Sheet for the Newest Vital Sign – Spanish

<table>
<thead>
<tr>
<th></th>
<th>ANSWER CORRECT?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
</tr>
<tr>
<td><strong>READ TO SUBJECT: Esta información aparece en el envase de un envase de helado.</strong></td>
<td></td>
</tr>
<tr>
<td>1 Si usted se comió todo el helado en el envase, ¿cuántas calorías habrá consumido?</td>
<td></td>
</tr>
<tr>
<td>Respuesta</td>
<td>1,000</td>
</tr>
<tr>
<td>2 Si a usted le recomendaron consumir 60 g de carbohidratos en la merienda, ¿cuánto helado puede comer?</td>
<td></td>
</tr>
<tr>
<td>Respuesta</td>
<td>Cualquiera de: Hasta un máximo de una taza</td>
</tr>
<tr>
<td>La mitad del envase</td>
<td>Una taza</td>
</tr>
<tr>
<td>Nota: Si el/la paciente responde &quot;dos porciones&quot;, pregúntele: &quot;¿Cuánto helado sería si usted lo iniciara en un plato?&quot; La respuesta correcta es cualquiera de las tres escritas arriba.</td>
<td></td>
</tr>
<tr>
<td>3 Su médico le aconseja reducir la cantidad de grasas saturadas en su dieta. Usted normalmente consume 42 g de grasa saturada al día, que incluye una porción de helado. Si deja de comer helado, ¿cuántos gramos de grasa saturada consumirá cada día?</td>
<td></td>
</tr>
<tr>
<td>Respuesta</td>
<td>33 g</td>
</tr>
<tr>
<td>4 Si usted normalmente come 2,500 calorías en un día, ¿qué porcentaje de su valor diario de calorías habrá consumido si se come una porción?</td>
<td></td>
</tr>
<tr>
<td>Respuesta</td>
<td>10%</td>
</tr>
<tr>
<td>Usted es alérgico a las siguientes sustancias: penicilina, cacahuates (maní), gluten de trigo y píldoras de abeja.</td>
<td></td>
</tr>
<tr>
<td>5 ¿Puede comer este helado con seguridad?</td>
<td></td>
</tr>
<tr>
<td>Respuesta</td>
<td>No</td>
</tr>
<tr>
<td>(Solamente si responde &quot;no&quot; a pregunta 5): &quot;por qué no?&quot;</td>
<td></td>
</tr>
<tr>
<td>Respuesta</td>
<td>Porque tiene aceite de cacahuates (maní)</td>
</tr>
</tbody>
</table>

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APPENDIX D: CLIENT SATISFACTION SURVEY
Please circle the best answer

1. The program team worked together to help me reach my learning goals.
   A. Strongly disagree B. Disagree C. Neither agree nor disagree D. Agree E. Strongly agree

2. I feel more confident in my personal healthy behavior skills.
   A. Strongly disagree B. Disagree C. Neither agree nor disagree D. Agree E. Strongly agree

3. I was satisfied with the scheduling of the sessions each week.
   A. Strongly disagree B. Disagree C. Neither agree nor disagree D. Agree E. Strongly agree

4. I found the materials helpful in my understanding of heart disease.
   A. Strongly disagree B. Disagree C. Neither agree nor disagree D. Agree E. Strongly agree

5. I felt comfortable with asking questions during the presentations.
   A. Strongly disagree B. Disagree C. Neither agree nor disagree D. Agree E. Strongly agree

6. I am satisfied with the amount of time spent in the presentations.
   A. Strongly disagree B. Disagree C. Neither agree nor disagree D. Agree E. Strongly agree

7. I would recommend this program to friends of family.
   A. Strongly disagree B. Disagree C. Neither agree nor disagree D. Agree E. Strongly agree

8. I feel this program met my needs.
   A. Strongly disagree B. Disagree C. Neither agree nor disagree D. Agree E. Strongly agree

9. What part of the program did you find most useful?

Please rate from 1-4, 1 being the most useful:

   a. Question and answer segment ___
   b. Videos ___
   c. Presentations ___
   d. Handouts ___
APPENDIX E: FOCUS GROUP SURVEY
Focus Group Survey

1. What are your thoughts on the materials used in the program?
2. What did you like about the videos?
3. Do the MFWs feel that this program would be effective out in the fields?
4. What time of the day would best suit farmworkers in the fields?
5. Did the time of day, length of time, and location of the presentations seem to work for the employees?
6. Do you see any trends emerging from the client satisfaction surveys?
7. Would you attend this program again?
8. Do you have any suggestions or comments that you feel would improve the program?
9. Was there a part of the program that you felt was especially beneficial?
APPENDIX F: MODULE HANDOUTS
Recommended Schedule for Screening Tests

To stay heart healthy, it’s important to keep track of your numbers by getting screened regularly.

If you're an adult age 20 or older, use this table (approved by the American Heart Association) to keep track of which tests you should have done and how often:

**Blood Pressure:** Each regular healthcare visit or at least once every 2 years if blood pressure is less than 120/80 mm Hg

**Cholesterol:** Every 5 years for normal-risk people; more often if any of the following apply to you:

- total cholesterol above 200 mg/dL
- you are a man over age 45 or a woman over age 50
- your HDL (good) cholesterol is less than 40 mg/dL (if you're a man) or less than 50 mg/dL (if you're a woman)

**Weight (BMI):** Each healthcare visit

**Waist Circumference:** As needed to assess heart disease risk

**Blood Glucose Test:** Every 3 years beginning at age 45 if no family history.

(AHA, 2007)
Initial Individual Interview - Spanish Handout

Chequeos recomendados

Para tener un Corazon saludable, es importante checarse regularmente y llevar un registro de sus numeros.

Si usted es un adulto mayor de 20 años, use la siguiente tabla ( Aprobada por la Asociasion Americana del Corazon) para llevar un registro de los examenes que deberia hacerse:

**Presion de la sangre:** Cada visita al medico o minimo una vez cada dos años si su presion es menos de 120/80 mm Hg.

**Colesterol:** Cada 5 años para personas con bajo riesgo y mas seguido para cualquiera que:

- Tenga un colesterol total mas alto de 200 mg/dL.
- Sea un hombre mayor de 45 años o una mujer mayor de 50 años.
- Sea un hombre con un colesterol HDL (bueno) menos que 40 mg/dL o menos de 50 mg/dL si es mujer.

**Peso (BMI):** Cada visita al medico.

**Examen the azucar en la sangre:** Cada 3 años a partir the la edad de 45 años , cuando no haiga historia de diabetes en su familia.

(AHA, 2007)
Module One – Handout 1: Excerpt from Publication 99-3275 NHLBI
**Dibujo educativo 1-2**

**Diga:**

El corazón está ubicado en el centro del pecho.

El corazón forma parte del sistema circulatorio.

El sistema circulatorio está compuesto de todos los vasos sanguíneos que llevan la sangre a todas partes del cuerpo.

Los vasos sanguíneos son largos tubos huecos de tejido, muy parecidos a las pajillas o popotes para beber.

Los vasos sanguíneos llevan la sangre al corazón y del corazón a todo el cuerpo.

**Picture Card 1-2**

**Say:**

The heart is located in the middle of the chest.

The heart is part of the circulatory system.

The circulatory system is made of all the vessels that carry the blood throughout the body.

Vessels are long, hollow tubes of tissue, much like drinking straws.

Vessels carry blood to and from the heart.

---

Module One – Handout 2: Excerpt from Publication No. 99-3275 NHLBI
Module One – Handout 3: A 23 page publication No. 99-3646 NHLBI
¡Póngase en acción—prevenga la alta presión!

Take Steps—Prevent High Blood Pressure!
¡Proteja su corazón—baje su colesterol!

Protect Your Heart—Lower Your Blood Cholesterol!

NATIONAL INSTITUTES OF HEALTH
National Heart, Lung, and Blood Institute and Office of Research on Minority Health

Module Two - Handout 3: 8 pages, Publication No. 96-4044 NHLBI
¡Cuide su peso!

Watch Your Weight!
¡Manténgase activo y siéntase bien!

Stay Active and Feel Better!

NATIONAL INSTITUTES OF HEALTH
National Heart, Lung, and Blood Institute
and Office of Research on Minority Health
Si se Puede: Prevenir y controlar la presión arterial alta con actividad física

Maneras simples de reducir su riesgo mediante la actividad física

Haga 30 minutos de actividad física todos los días

- Se puede realizar en una sola vez de 30 minutos, o dos sesiones de 15 minutos durante el día.
- Las actividades que aumentan el pulso como caminar, correr, nadar, patinar, saltar, etc., son muy efectivas.
- También puede ser cualquier otra actividad física que aumente el ritmo cardíaco.

Maneras de comenzar

Si su programa de actividad física puede resultar en manchas o un cansancio, intente comenzarlo de forma gradual, comenzando con ejercicios de tipo ligero para prevenir dolor muscular. Lo importante es que lo disfrute y sea constante.

Algunas actividades recomendadas incluyen:

- Caminado regular de 30 minutos.
- Nadar o natación de 30 minutos.
- Ciclismo de 30 minutos.
- Correr de 30 minutos.
- Baile de 30 minutos.
- Yoga o tai chi de 30 minutos.

Programas comunes sobre la actividad física

Aquí hay algunos programas comunes que pueden ayudar a prevenir la presión arterial alta:

1. **Programa de salón de fiestas**: Se trata de un programa que incluye actividades lúdicas y deportivas que pueden hacerse en el salón de fiestas.
2. **Programa de ejercicios de resistencia**: Se trata de un programa que se realiza en el gimnasio y que incluye ejercicios de resistencia.
3. **Programa de yoga y meditación**: Se trata de un programa que se realiza en centros especializados y que incluye ejercicios de yoga y meditación.
4. **Programa de ejercicios aeróbicos**: Se trata de un programa que se realiza en el gimnasio y que incluye ejercicios aeróbicos.
5. **Programa de ejercicios de fuerza**: Se trata de un programa que se realiza en el gimnasio y que incluye ejercicios de fuerza.

Recuerde que lo más importante es que el programa de actividad física que elija sea uno que le encante y que pueda mantenerlo a largo plazo.

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES**

**PUBLIC HEALTH SERVICE**

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**PUBLIC HEALTH SERVICE**

**PUBLIC HEALTH SERVICE**
¡Rompa con el hábito de fumar!

Kick the Smoking Habit!
La Diabetes y La Presión Arterial Alta

¿Qué es la Diabetes?
La Diabetes es una enfermedad que significa tener mucho azúcar en la sangre. Cuando comemos, el cuerpo transforma la comida en azúcar para usarla como energía. Con diabetes, el cuerpo no produce suficiente o nada de insulina, una sustancia química que nos ayuda a transformar los alimentos que comemos en energía. Sin ejercicio, una dieta nutritiva saludable, y algunas veces medicamentos, la diabetes no tendrá ningún control y la comida que no se use (azúcar) se quedará en la sangre y terminará por causar complicaciones en el cuerpo.

¿Qué es la Presión Arterial Alta?

Cuando sus vasos sanguíneos, como se muestra en el dibujo de la manguera, están obstruidos por grasa y colesterol, el corazón tiene que APERTURAR la Presión Sanguínea para mover la sangre por todo el cuerpo. Esto causa presión arterial alta.

Presión Arterial Alta = 140/90
Presión Arterial Buena = 130/85
Presión Arterial Muy Buena = 120/80

La Presión Arterial Alta es Peligrosa porque puede causar derrames cerebrales y ataques al corazón que amenazan su vida. Si tiene alguna señal de aviso de un ataque al corazón o derrame, obenga atención médica inmediatamente – no lo retrasa. Un tratamiento temprano de un ataque al corazón o un derrame en la sala de emergencias de un hospital puede reducir el daño al corazón o al cerebro.

¿Tener diabetes puede afectar a mi presión arterial?
- Si tiene diabetes, usted tiene el doble de probabilidades que otra gente de tener enfermedades de corazón o un derrame cerebral.
- Usted puede reducir o prevenir el riesgo de una enfermedad de corazón o un derrame cerebral controlando las cosas básicas de la diabetes – el A1C (prueba de la glucosa en la sangre), presión arterial, y colesterol, comiendo alimentos saludables, haciendo ejercicio con regularidad, bajando de peso, dejando de fumar y tomando medicamentos (si es necesario).

Module Four – Handout 1: 2 pages, MCN
¿Qué es la diabetes?

La Diabetes simplemente es cuando el cuerpo tiene demasiado azúcar en la sangre. Este azúcar puede dañar al cuerpo y causar complicaciones.

En más detalle, la diabetes es una enfermedad en la que el cuerpo no produce ninguna o suficiente insulina. La insulina es una hormona que el cuerpo produce que permite a nuestra sangre absorber los alimentos que comemos. Cuando comemos alimentos, el cuerpo los divide en azúcar. Este azúcar actúa como energía para nuestros cuerpos. Sin insulina, el cuerpo no puede absorber el azúcar de la sangre, dejando al cuerpo sin la energía que necesita. Además el azúcar permanece en la sangre, con lo que daña nuestros cuerpos y puede causar complicaciones si no se controla.

Hay dos clases de diabetes

Tipo I o Diabetes Dependiente de Insulina: Con esta clase de diabetes, el cuerpo no produce ninguna insulina, o el cuerpo no puede reconocer la insulina que produce.

Normalmente se desarrolla a una edad temprana, y puede ser difícil de controlar porque los niveles de azúcar en la sangre pueden elevarse y caer rápidamente. La gente con diabetes Tipo I debe tomar insulina regularmente para controlar los niveles de azúcar en la sangre, en combinación con un estilo de vida saludable y nutrición balanceada.

Diabetes Tipo II: Con este tipo de diabetes, el cuerpo produce insulina pero no lo suficiente. Normalmente se desarrolla en adultos, pero puede también desarrollarse en la juventud y en la niñez.

La gente con diabetes Tipo II puede regular sus niveles de azúcar haciendo ejercicio con un estilo de vida saludable, nutrición balanceada, y con medicamentos recomendados por un doctor.

¿Quién está a riesgo de desarrollar diabetes?

- Españoles/Latinos, Nativos Americanos y Africanos Americanos
- La gente que tiene sobrepeso y no hace ejercicio.
- La gente con una historia familiar de diabetes.
- La gente mayor de 40 años

Module Four – Handout 2: Page 1 of Spanish version, MCN.
¿Cuáles son algunos síntomas de la diabetes?

- Sed constante
- Necesidad de orinar con frecuencia
- Pérdida de peso inexplicable
- Sensación de hormigueo en las manos o pies
- Visión borrosa
- Cambio en el apetito
- Cicatrización lenta de las heridas

¿Cómo afecta la diabetes a nuestros cuerpos?

**Síntomas de azúcar alta en la sangre:**
El azúcar puede subir cuando estamos enfermos, no tomamos la medicina o la insulina apropiadamente, o disminuimos la actividad física.

- Puede causar pérdida de apetito, sudor frecuente, debilidad, somnolencia, o dolor abdominal.

Constantes niveles de azúcar altos en nuestra sangre pueden dañar nuestros órganos, nervios y vasos sanguíneos en el cuerpo, causando complicaciones con nuestros pies, piel, ojos, corazón, riñones y mucho más.

**Síntomas de azúcar baja en la sangre:**
El azúcar puede bajar cuando esperamos mucho tiempo entre comidas, tomamos demasiado medicamento o insulina, o hacemos demasiado ejercicio.

- Puede causar hambre, temblores o sudores, mareos, ansiedad o irritabilidad, dolores de cabeza, debilidad, problemas con la visión y confusión.

El peligro inmediato de bajos niveles de azúcar en la sangre es pérdida de consciencia, coma y posiblemente la muerte.

"Si tiene estos síntomas llame al doctor o al 911, o vaya a la sala de emergencias!"

**¿Cómo puedo prevenir las complicaciones relacionadas con la diabetes?**

- Cheque su nivel de azúcar regularmente
- Tenga una dieta balanceada
- Haga ejercicio
- Tome medicamentos recetados por un médico

Module Four - Handout 2: Page 2 of Spanish version- MCN
Como Leer una Etiqueta de Nutrición

**TAMAÑO DE UNA PORCIÓN**

Primero, mira al tamaño de la porción y el número de porciones en el paquete. Todo lo que encuentres en esta etiqueta está basado en este tamaño de porción. Si comes la doble del tamaño de porción, consumirás el doble de calorías, carbohidratos, grasas y otros nutrientes.

**CALORÍAS**

Las calorías nos dan una medida de cuánta energía conseguimos cuando consumimos una porción de este alimento. También aparece la porción del total de calorías que provienen de las grasas. Por lo general es buena comida que muestra un tercio o menos del total de calorías provenientes de las grasas.

**SODIO**

Este muestra la cantidad de sodio (sal) en una porción. Es importante si el uso está en una dieta baja en sodio o si tiene la creación de azúcares orgánica.

**CARBOHIDRATOS Y AZÚCARES**

Este muestra la cantidad de carbohidratos por porción que viene del azúcar. Esto incluye tanto azúcares naturales como añadidos.

**PROTEÍNA**

Este muestra la parte del total de grasas por porción. La proteína es un nutriente esencia para el crecimiento y la salud.

**VITAMINAS Y MINERALES**

Este muestra la parte del total de carbohidratos por porción que es lenta. Comiendo una dieta alta en fibra promueve una buena función del intestino.

**GRASAS**

Este muestra la cantidad de grasas totales de grasa en una porción de este alimento.

**FIBRA ALIMENTARIA**

Este muestra la parte total de carbohidratos por porción que es fibra. Comiendo una dieta alta en fibra promueve una buena función del intestino.

**VITAMINAS Y MINERALES**

Este muestra la parte del total de carbohidratos por porción que es lenta. Comiendo una dieta alta en fibra promueve una buena función del intestino.

**CALORÍAS**

Las calorías nos dan una medida de cuánta energía conseguimos cuando consumimos una porción de este alimento. También aparece la porción del total de calorías que provienen de las grasas. Por lo general es buena comida que muestra un tercio o menos del total de calorías provenientes de las grasas.

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**GRASAS**

Este muestra la cantidad de grasas totales de grasa en una porción de este alimento.

**FIBRA ALIMENTARIA**

Este muestra la parte total de carbohidratos por porción que es fibra. Comiendo una dieta alta en fibra promueve una buena función del intestino.
APPENDIX G: PERMISSIONS
Permissions

August 18, 2008

Carol Lieber
University of Arizona student
Family Practice Nurse Practitioner Student
600 Oliver Circle
Bisbee, AZ 85603

Dear Ms. Lieber:

The American Academy of Family Physicians (AAFP) thanks you for your request for permission to use the following:

Figure 1A. The newest vital sign and Figure 1B. Questions and answers score sheet for the newest vital sign from "Quick Assessment of Literacy in Primary Care: The Newest Vital Sign" [Barry D. Weiss MD, Mary Z. Mays, PhD, William Martz, MD, et al-author(s); Annal Family Medicine 3(6):519; Nov/Dec 2005]

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Thank you for your interest in the publications of the American Academy of Family Physicians. If you have further questions, please refer to Request #O-4146

Sincerely,
Balcazar, Hector G [Hector.G.Balcazar@uth.tmc.edu]

Sent: Tuesday, September 02, 2008 7:22 AM
To: Lieber, Carol
Attachments:

Dear Carol:

I am sending you two versions of the questionnaire we have used in several of our projects. As you will see we have adapted the one about my family habits to my habits. We have found that capturing family habits is more difficult to interpret. Some of the coding has to be reversed for a few questions- greater means healthier (4 as supposed to 1). The scale goes from 1 to 4- never to always

Yes- you can use the questionnaire!

Here are few published articles for your perusal!

I wish you the best in you project!

Sincerely:

Dr. Hector Balcazar

-----Original Message-----
From: Lieber, Carol [mailto:clieber@nursing.arizona.edu]
Sent: Sunday, August 31, 2008 2:40 PM
To: Balcazar, Hector G
Subject: RE: Promotores de Salud

Dr. Balcazar,
Thank you for your prompt and positive reply. I will look for the questionnaire on Tuesday. Should I find my report suitable for using the questionnaire, do I have your permission to do this?
Thank you once more,
Carol Lieber

From: Balcazar, Hector G [Hector.G.Balcazar@uth.tmc.edu]
Sent: Sunday, August 31, 2008 7:05 AM
To: Lieber, Carol; amedina@lunginfo.org; mhollen@hsc.unt.edu

Carol- I will be glad to send you the questionnaire in both Spanish and English by Tuesday! Salutations
Hector Balcazar
From: Wagner, Julie [juwagner@uchc.edu]
Sent: Wednesday, August 27, 2008 7:18 AM
To: Lieber, Carol
Subject: - RE: heart disease fact questionnaire

Hi,
You are welcome to use the English and/or Spanish versions, they are attached. Please do not make changes to the language, and always reference the attached papers when you are writing/discussing the measure.
It was designed for people with diabetes, so I don't think it would be good for nondiabetics, but you are free to take a look. I've also attached a low-literacy article for you.
JW

-----Original Message-----
From: Lieber, Carol [mailto:clieber@nursing.arizona.edu]
Sent: Tuesday, August 26, 2008 8:07 PM
To: Wagner, Julie
Subject: heart disease fact questionnaire
Importance: High

Dear Ms. Wagner
I am a student at the University of Arizona. I am in a graduate nursing program and am writing a report on a proposal for a health education project about heart disease, with Latino migrant farm workers as my target population. I have been searching many, many hours for a questionnaire specific to heart disease knowledge. I have found they are rare. I came across your 2005 article "Development of a questionnaire to measure heart disease risk knowledge in people with diabetes: the Heart Disease Fact Questionnaire" This questionnaire seems the most well suited for my target population, although the Spanish version would be best. Can you tell me where I might locate a copy of this version?
May I have your permission to use the HDFQ in my report as an example of a knowledge assessment tool I would use? Was the original version ever used for a general population, in other words not necessarily for those with known Diabetes?
Again, this report is a proposal only.
Thank you for any feedback and considering giving me permission to use the HDFQ.

Carol Lieber
clieber@nursing.arizona.edu
REFERENCES


