CONCERNS AND MISCONCEPTIONS ABOUT CARDIOVASCULAR DISEASE AND CARDIOVASCULAR DISEASE RISK FACTORS: A FOCUS GROUP EVALUATION OF LOW SOCIOECONOMIC STATUS HISPANIC WOMEN

by

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CERTIFICATE OF APPROVAL

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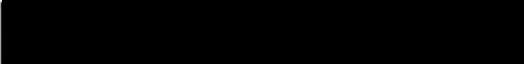This is to certify that the M.P.H. thesis of

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ABSTRACT

Adult Americans are living longer than they ever have, largely because of decreases in cardiovascular disease (CVD) since the 1960s. However, despite reduction in its mortality, CVD remains the main cause of death in the United States (1). Evidence from studies indicates that while CVD rates among some population subgroups are on the decline, rates among others are not. Variation in CVD reduction is associated with socioeconomic status (SES), ethnicity, and gender. Of particular interest regarding CVD are low SES Hispanic women.

The Hispanic population in the United States is large and increasing; it comprises 12 percent of the total population and increased by 53 percent between 1980 and 1990. By the year 2000, the Hispanic population is expected to grow to 30 million people (2). Hispanics are heterogeneous in their ethnic background, culture, race, country of origin and degree of acculturation. The term "Hispanic" is used in this study to refer to the predominantly Mexican American study population. The author acknowledges, however, the difficulty in determining accurate and culturally-sensitive ethnic terminology (3) for this diverse population.

As it is in most other subgroups in the United States, cardiovascular disease is the leading cause of death and disability in the Hispanic population (4). Furthermore, CVD risk factors are high among Hispanics, some especially among women. Hispanic women show high prevalence of obesity and diabetes, low levels of knowledge and exercise, and increasing rates of smoking among adolescents and more acculturated women. Additionally, Hispanics have less well-controlled hypertension compared with Whites (5-12). These risk factors are especially prevalent among low income Hispanics, namely the 30 who live below the poverty level (14).

In all populations in the United States, cardiovascular disease is the leading cause of death and disability in women (15), and low SES is inversely related to CVD risk (13). Accordingly, Hispanic women, especially those from low SES groups, comprise and important subgroup in need of appropriate risk reduction programs. Despite evidence of their need and the growth of the Hispanic population, few intervention programs have been developed that are tailored to low SES Hispanic women (16, 17).

The following project presents a literature review as well as new data presenting potentially effective intervention ideas for CVD risk reduction in low SES Hispanic women. Five focus groups with Hispanic women (primarily of Mexican American heritage) were conducted to learn about participants' general knowledge of heart disease and CVD risk factors, their health priorities, and their ideas for effective CVD intervention programs. The results from the focus groups comprise preliminary formative evaluation data to be used for planning targeted community-based CVD intervention programs for Hispanic women.

The findings of this study suggest the target community faces multiple barriers to individual and community change, yet motivation and concern about CVD and CVD risk factors. A future intervention should concentrate on the risk factors identified by participants: poor diet, lack of physical activity and obesity. Additionally, psychological stress reduction techniques should be incorporated into a future intervention. Future CVD interventions in this population should also emphasize the positive aspects of Hispanic culture, be culturally and socially sensitive, and target appropriate literacy levels. Finally, members of the community should be actively involved in the design, implementation, and interpretation of interventions since community involvement goes hand in hand with community empowerment and is necessary in any successful intervention.

INTRODUCTION

Cardiovascular Disease and Socioeconomic Status

The relationship between SES and health has long been established (13). Socioeconomic status, a complex measure conceptualized by educational, financial and occupational factors, is one of the strongest and most consistent predictors of an individual's morbidity and mortality (18). Cardiovascular disease is no exception in this association; it shows a strong inverse relation with SES (13). The various measures of SES have been demonstrated as inversely related to many aspects of CVD. For instance, Cassel et al showed the incidence of coronary artery disease among nonfarming white males to be highest among laborers and unemployed workers, and lowest among professionals (13). In the Whitehall Study of civil servants ages 40 to 64, the age-adjusted prevalence of angina pectoris was 53% higher and ischemic-type electrocardiogram abnormalities were 72% higher for men in the lowest employment grade than for those in the highest administrative grade (13). Data from three Chicago studies show a similar inverse relationship between education and long-term risk for coronary heart disease, CVD, and all-cause mortality (13). Many other studies demonstrate an inverse relationship between other measures of CVD related to education and income (13).

Not only are rates of CVD higher, but rates of CVD decline are lower in low SES population subgroups. Three recent United States community-based field trials, the Stanford Five-City Project, the Minnesota Heart Health Program and the Pawtucket Heart Health Program all indicate smaller declines in CVD rates in low SES groups versus higher SES groups (19). Several other studies confirm this finding. Feldman et al, using 1960 data from the Matched Record Study and 1971-1984 data from the First National Health and Nutrition Examination Survey and the Epidemiologic Follow-up Study, showed that mortality rates, largely due to deaths from CVD, had declined more rapidly for more

educated versus less educated men over time (13). Wing et al demonstrated that declines in cardiovascular mortality for men and women were strongly influenced by socioeconomic development, and that areas with poorest socioenvironmental conditions were two to ten times more likely to show late onset of decline of CVD mortality than areas with the highest levels (13).

As would be assumed, the prevalence of cardiovascular disease risk factors in addition to CVD, is inversely related to SES. Throughout several studies there is consistent and substantial evidence that low SES is related to the prevalence of hypertension (13). An inverse relationship has similarly been demonstrated between SES and cigarette smoking, obesity, physical activity and diabetes (13). Cardiovascular disease risk factor reduction is also less marked in low SES groups. Smoking cessation programs, such as COMMIT, for example, indicate such trends, using educational level as an measure of SES. The COMMIT trial showed that in 1960 prevalence of smoking among individuals with less than a high school education was only slightly higher than the prevalence in college graduates. In 1990, however, the prevalence in college graduates dropped to 13.5%, whereas, in those individuals without a high school diploma, the prevalence was 31.8%, a level close to that of 1960 (20).

Since low SES groups maintain disproportionately high rates of CVD, and represent a large proportion of Americans, it is appropriate that future interventions target this subgroup. In addition to improving the health of the overall population, creating interventions that target low SES and ethnic minority communities could lead to marked declines in the nation's health care costs. Kaplan et al examined the impact of changing rates of CVD on cost. It was estimated that if the lowest 25% of the SES distribution had the same disease rates as the median SES category, there would be 25 million fewer cases of heart disease, a figure that translates to a savings of 3.3 billion dollars annually (22). Additionally, risk factors

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for CVD overlap those for other chronic diseases. Accordingly, additional cost savings might be derived from reductions in other chronic diseases such as cancer, diabetes mellitus, chronic pulmonary disorders, and others (18).

Community-based Approach to CVD Prevention

Individuals with low educational attainment, low income, and/or low occupational status tend to face multiple barriers that impact their ability to modify lifestyle factors that increase CVD risk (23). Barriers to understanding the effect of lifestyle factors include the existing misperceptions about CVD coupled with low literacy levels that impede further CVD education (23). Societal barriers include restricted food choices, affected by a high prevalence of fast food restaurants in low SES neighborhoods (21), and unavailability of reasonably priced low fat foods in local stores (23). Tobacco advertising aimed at low SES and ethnic minority populations (24) and widespread availability of tobacco products (21) present additional barriers to healthy CVD lifestyle choices. Access to areas safe for exercise presents another impediment facing low SES populations (21). Lastly, low SES and ethnic minority status effects access to and use of medical resources, especially with respect to preventive care (24).

The barriers to positive lifestyle change facing low SES individuals may explain why rates of cardiovascular disease and risk are higher in this subgroup of the population. Cardiovascular diseases, primarily coronary heart disease and stroke, are preventable and potentially reversible through modification of most risk factors (25). Cardiovascular disease risk factors include: smoking, high cholesterol, high blood pressure, obesity, physical inactivity, psychosocial factors, diabetes mellitus (26) and family history of premature cardiovascular events (16). While genetics cannot be controlled, the other factors can be modified to substantially effect CVD outcome (16). Thus, given the need to reduce the societal and situational barriers to positive CVD behavior, it is apparent that changing

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entire communities would benefit the individuals who compose them. A community-based intervention is the most appropriate approach for a broad reaching and lasting CVD reduction program.

The theoretical perspectives of community health education, community empowerment, and social marketing are relevant to CVD risk reduction in low SES populations and guide this work. The community health education model, versus the medical model, is employed because it is known that the majority of population risk is due to moderate increases in risk factors in large numbers of people rather than severe increases in a few people (27,28). Additionally, the community model views behavior change as a shared responsibility between the individual and the community, and thus avoids victim blaming, and places the change process in a broad societal context (29-31). This emphasis is especially important in low SES communities where individuals face multiple barriers to the maintenance of healthy behaviors and to risk factor reduction because of few personal resources and adverse societal influences (23,24).

The value of the community health education rests on several assumptions, among them, Bracht's notion that the community approach augments the individual's capacity for change (30). Creating healthy communities facilitates individual decision making and behavior change, especially since behavior change is greatest when the individual is supported by his family, peers and community, such that his health actions ultimately become automatic (30). This view is applicable to behavior change required for CVD risk reduction. One idea for community-based change is urging fast food restaurants to modify their menus instead of targeting the individual's dietary choices alone (32). Local stores and school lunch programs are other potential targets for community-wide dietary modifications (33). This maximization of the environmental influences facilitates individual decision-making and is the goal of public health as well as community health behavior change (30).

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Additionally, community-based theory that incorporates community empowerment ideals would be of particular import to low SES populations (34). Community empowerment is a process that promotes people, organizations, and communities working towards the goals of increased individual and community control, political efficacy, improved quality of community life, and social justice (35). The process of involvement is critical for population groups that lack access to heart healthy foods, safe and inexpensive places to exercise, and smoke-free environments. Without such involvement, an attitude of fatalism colors the perception of poor Americans, especially with regard to chronic disease prevention (24,32). Such attitudes have led those in health promotion to observe that "poverty of the spirit and of resources remains *the* antecedent risk factor of preventable diseases" (34). In addition to predisposing poor individuals to the highest rates of morbidity and mortality and the lowest access to preventive services and primary care (34), poverty and powerlessness may potentially alter susceptibility of an individual to disease (36). Community empowerment, by increasing the control by groups over consequences that are important to their members, could serve, if not to reverse poverty, to alter some of its effects.

In order for community-based health campaigns to be most successful at targeting those population subgroups with highest rates of CVD, communities might require redefining. Social and/or cultural boundaries could be more appropriate than geographic ones in reaching individuals who maintain high rates of CVD and risk factors (16). In creating new community identities, however, ethnicity and SES cannot be equated. Recent community intervention studies have indicated that while SES appears to be the strongest predictor of CVD risk factors, ethnic differences remain after adjustment for SES (19). Similarly, SES differences exist within ethnicities. Thus, both factors must be considered when designing and implementing community health interventions (19).

Social marketing theories including audience segmentation and formative research, can also guide work with low SES communities and facilitate involvement of low SES populations. Social marketing theory emphasizes the development of products and services from the consumer's point of view; the consumer, in this case, being the target audience (37). The applicable elements of social marketing with regard to health education are grounded in voluntariness, self-determination, empowerment, and informed consent, and are not to be assumed similar to some marketing research that manipulates consumer decision making and behavior to profit companies and exploit consumers (38). Audience segmentation is a campaign planning strategy that identifies homogeneous subgroups of people based on common defining characteristics (39), and is an especially critical step in planning tailored health education campaigns (37). The marketing idea of formative research, conceptualized in this project by focus groups, is the main mode of enabling involvement of the target audience in program development (37)

Cardiovascular Disease and Women

Cardiovascular disease is the leading cause of death in women, surpassing the number of women's lives claimed by cancer, accidents, and diabetes combined. The death rate in women from CVD ranges from being one quarter the rate in men to being equal to that in men, the higher rates being among postmenopausal women. Cardiovascular disease is also the leading cause of disability in women, and accordingly, is costly. The proportion of CVD health care costs attributed to women is more than half (approximately 58%) the total health care costs related to CVD (15). Cardiovascular disease in women is of even more concern because of the aging United States population. Due to the large population of older women in 1990, for example, CVD caused a greater proportion of all deaths in women than in men. Lastly, initial CVD events appear to be more severe in women than men. Some

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studies indicate that first time myocardial infarction results in death more often in women than in men (15).

Cardiovascular disease risk factors are highly prevalent for women in the United States. Sixty percent of white women and 79% of black women over the age of 45 years, for example, have hypertension (defined as taking antihypertensive medication, or having a systolic pressure $\geq$ 140 mm Hg or having a diastolic pressure $\geq$ 90 mm Hg) (15). In 1988, approximately 30% of white women and 50% of black women were obese. In the same year, nearly six of every ten women lived a sedentary lifestyle (15). Overall smoking rates in women , unlike the other risk factors, had been improving for the most part. A Center for Disease Control survey of eight states, however, shows smoking declines seen from 1965 to 1990 stopped in 1991, when an increase in smoking between 1987-1992 was found among young white women (21).

Women of child-bearing age are of special interest in decreasing CVD risk. While CVD tends to effect postmenopausal women more frequently than younger women, prevention of morbidity and mortality from CVD must start early in life (15). Targeting women of child-bearing age to decrease CVD risk will mean not only targeting the women themselves, but presumably their families, since mothers are influential in determining the family diet and are often responsible for their children's medical care (33).

Cardiovascular Disease and Hispanic Americans

The growth rate of the Hispanic population is seven times greater than the general population, and in 1994, Hispanics represented 1 in 10 persons in the United States, including the island of Puerto Rico (14). Hispanic Americans will be the largest ethnic minority by the year 2010 (21-2). In eight states, California, Arizona, Colorado, Florida,

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New Jersey, New Mexico, New York and Texas, the Hispanic population represents at least 10% of the total population. Ironically, the growing Hispanic population has been successfully targeted by tobacco and alcohol advertisers without drawing equal attention in the health problems caused by these products (26). Ramirez and McAlister site "a conspicuous absence of health education programs directed at the United States Hispanic population" (24).

The Hispanic population in the United States face economic, housing and educational challenges. While 10.2 percent of non-Hispanic families live in poverty, 26.5 percent of Hispanic families live below the poverty line (14). When compared with other racial/ethnic groups, Hispanics are less likely to own their own residence and the average number of persons per household is 3.5 compared with 2.6 persons per non-Hispanic household. Hispanic individuals are twice as likely as their white counterparts to drop out of school. Only 1 in 10 (9.3%) Hispanics versus 1 in 4 (23.2%) non-Hispanic whites complete a bachelor's degree or higher level of education (14). These factors are all potential contributors to the overall health status of Hispanics.

Additionally, health insurance (4,14), access to health care (4,16) and health services utilization (14) are not widespread among Hispanics. Thirty nine percent of Hispanics are uninsured, versus 14 percent of non-Hispanic whites who are also uninsured (14). Access to health care is limited (4,16), and health services utilization is low among Hispanics. When compared to other population subgroups of the United States, Hispanic adults are the least likely to seek medical care. Mexican Americans, Cuban Americans and Puerto Ricans were found to visit a physician on average 4.8 times per year compared with 5.6 times for non-Hispanic blacks and 6.5 times for non-Hispanic whites (14). Eleven percent of Hispanic mothers versus 3.2 percent of their white counterparts are likely to have late or no prenatal care (14).

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Prevalence of CVD in the Hispanic Population.

Epidemiologic data regarding the Hispanic population is sparse and inconsistent (16).
Most of the data comes from local area, small-sample studies which cannot be generalized
to the national population (40). In most national surveys, Hispanic respondents have
comprised such a small sample that the data they create cannot be analyzed well (40).
Additionally, the definition of Hispanics is often a combination of all Spanish-speaking
groups with a failure to account for the differences between Hispanic subgroups (40) and
acculturation. Lastly, many of the prevalence estimates of various CVD conditions are
derived from self-report (16), and may be subject to recall bias either inflating or devaluing
actual occurrence of events.

Much of the mortality data for Hispanics is restricted to certain states in the United States,
is not classified by Hispanic subgroup, and is confined to Hispanics born outside of the
United States (4). Few studies consider the potential influence of SES on Hispanic/white
difference. Mortality data using death certificates introduces the possibility of
underdiagnosis, underreporting, misclassification and "return migration" of ill persons to
their country of birth (4). Mortality estimates relying on census data risks exclusion of
illegal immigrants and persons not living in a permanent house-hold. Missing these
individuals creates an unclear effect because it is not known whether those missed would
be healthier or sicker than those surveyed (4). When examining CVD mortality trends, the
use of postcensal population estimates requiring annual population projections by age, sex
and ethnicity creates errors of an unknown effect on age standardized death rates. Small
studies are most likely to suffer from these effects (41).

The available data for assessment of Hispanic health status consists of the two national data
sources, and several regional studies. The 1982-1984 Hispanic Health and Nutrition

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Examination Survey (HHANES) is the only survey of large representative samples of members of Hispanic groups in the United States that included objective measures of health through examination data, rather than self-report (40). Hispanic subgroups surveyed in HHANES include Mexican, Cuban and Puerto Rican (16). The HHANES is often used in parallel with the National Health and Nutrition Examination Survey, 1976-1980 (NHANESII) to compare data regarding Hispanics with data on non-Hispanic whites and African-Americans. Both surveys consist of interview and direct medical examination of individuals from a sample of civilian, noninstitutionalized persons age 6 months to 74 years (40).

Another national sample of mortality data was examined by Sorlie et al (4). From the Current Population Survey by the US Bureau of the Census for the Bureau of Labor Statistics, these investigators have developed the National Longitudinal Mortality Study (NLMS) that provides estimates of mortality in more than 40,000 Hispanics aged 25 years or older compared with approximately 660,000 non-Hispanics (4). This data has information on Hispanic status, country of origin, place of birth and elements of social and economic status (4).

The regional studies documenting the health status of Hispanics include the San Antonio Heart Study in Texas, the San Luis Valley Diabetes Study in Colorado, several California studies and some studies in New Mexico. The San Antonio Heart Study is the most extensive population-based regional study of CVD risk factors among Mexicans (16). It examined 1288 Mexicans and 929 whites living in three economically and culturally distinct neighborhoods including a high-income suburb, a middle-income transitional neighborhood and a low-income barrio (42). Both ethnic groups were represented in the sample of the first two mentioned neighborhoods, but only Mexicans were sampled in the barrio (16). Participants were men and non-pregnant women age 25 to 65 years old (42).

From the HHANES data, prevalence estimates of ischemic heart disease and stroke for

Hispanics can be derived from self-report of these events and of symptoms related to these

events. Self-reported heart attack and stroke rates of Mexicans indicates that 2% of men,

and 1% of women have had a diagnosis of heart attack, and less than 1% of both sexes

report stroke (16). A comparison to whites is not available (16). To estimate of symptoms

related to CVD, La Croix et al, using the HHANES and NHANES, evaluated the

prevalence of angina according to the Rose Questionnaire. Results of this valid and reliable

set of questions indicate that age-adjusted prevalence rates of angina for Mexicans are 5%

for women and 3% for men, for whites are 6% for women and 4% for men, and for

African Americans are 7% for women and 6% for men (16). However, even though

Mexican women are as likely as white and African American women to report angina on the

Rose Questionnaire, doctors were found to respond differently to African American and

Hispanic women than to white women. That is, in a clinical study in which half the

patients were Hispanic or African American, physicians were more likely to attribute chest

pain to psychiatric and noncardiac causes, even when objective evidence of ischemia was

present (16).

Mortality from CVD in Hispanics

The mortality data, for the most part, suggest that overall CVD mortality for all Hispanics is

equal to or lower than CVD mortality among whites (4). Data from San Antonio in 1950

and 1962 and from Texas in 1970 report lower mortality rates from CVD in Spanish-

surnamed men than white men (16,43). Studies in New Mexico from 1969 to 1975 and in

Los Angeles in 1980 show lower CVD mortality for both genders among Hispanics versus

whites and African Americans (16). Sorlie et al showed lower mortality from CVD for

both sexes using national Census data from the 1970s and 1980s (4). The San Antonio

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data from 1950 and Texas data from 1970, however, showed CVD mortality rates to be higher among Spanish surname females (43).

In addition to absolute mortality rates, trends in CVD mortality are of importance in examining CVD among Hispanics. Several researchers have attempted to determine whether Hispanics have shared declines in CVD mortality similar to those experienced nationally. Kautz et al showed that from 1970 to 1975, both ischemic heart disease and acute myocardial infarction mortality declined less among Spanish-surnamed men and women than whites and African Americans (41). However, chronic ischemic heart disease mortality increased for all sex-ethnic groups sampled except for Spanish surname females (41). Stern and Gaskill showed similar declines in chronic ischemic heart disease mortality in Spanish-surname females, as well as overall declines in ischemic heart disease mortality for Spanish surname men and women and other white men in San Antonio from 1970-1976 (44). In 1987, Stern et al again compared CVD mortality among Mexican American and non-Hispanic white males and females in Texas using 1970 and 1980 census data. They found that declines in mortality due to total ischemic heart disease and acute myocardial infarction to be evident in all groups, but least marked in Mexican American males (45).

Thus, Hispanic CVD mortality appears less than non-Hispanic white mortality in several studies in various Southwestern US states and one national study. However, trends in CVD mortality decline are less apparent in Mexican Americans in two studies in Texas. None of the data specifically describes CVD mortality rates in low SES Hispanic women, the subject of this project. It could be postulated that the low SES subgroup of the Hispanic population could be contributing to the less noteworthy decline in CVD mortality. Perhaps the effects of SES counter the apparent "protective" effects of being Hispanic on CVD mortality.

Given the apparent low CVD mortality rates among Hispanics, the CVD risk factor profile would be expected to be favorable. It is not, however. In most studies, Hispanics have been shown to have increased rates of obesity (6-10) and diabetes mellitus (4,10,26) compared with whites. Knowledge of CVD and risk factors is documented as lower among Hispanics (11,24,46,47). Physical activity is reported as lower among Hispanics in most studies (5,9). Blood pressure levels have been found to be the same or lower among Hispanics versus whites (16,43), yet blood pressure control appears to be worse for Hispanics (12). Total serum cholesterol levels in Hispanics versus whites vary according to the study, most showing equal or lower levels among Hispanics (14,16). Low-density lipoprotein levels among Hispanics appear equal to or lower than levels among whites (14,16), yet triglyceride (6,8,48) and high-density lipoprotein (7,49) levels show an unfavorable profile for Hispanics in most studies. Smoking rates are generally reported as lower among Hispanic men and women versus whites (16). Each CVD risk factor will be examined below.

With two exceptions (5,50), Mexican Americans have been found consistently to be overweight in studies from California, New Mexico and Texas (6-10). Burchfiel's analysis of the San Luis Valley Diabetes Study in Colorado found lower body mass index among Hispanic males compared with non-Hispanic white males. The authors attribute this finding, however, to the rural environment of the San Luis Valley (5). Friis et al also reported that the groups of Hispanics and non-Hispanics in their study in Orange County, California had comparable overall weights (50). National data from 1990, however, shows that age-adjusted prevalence of overweight among women is 39% for Mexican Americans, 34% for Cuban Americans, and 37% among Puerto Ricans compared with 24% for non-Hispanic whites and 44% for non-Hispanic blacks (14). Diehl and Stern also

emphasize that increase body mass found in Mexican Americans is indeed excess adiposity and that it exceeds what is expected on the basis of SES alone (10). Given the high rates of overweight documented in face of apparent low CVD mortality, Stern et al suggest that Mexican Americans can tolerate higher body weights without adverse impact on mortality, and perhaps tables of ideal weights specific to Hispanics need to be derived (51).

Rates of diabetes mellitus have also been found to be consistently higher among Hispanic Americans than among whites (4,10,26). NHANES and HHANES data show the prevalence of self-reported diabetes among persons age 45 to 74 is 23.9% for Mexican Americans, 15.8% for Cuban Americans, and 26.1% for Puerto Ricans, compared with 19.3% for non-Hispanic blacks and 12.0% for non-Hispanic whites (14). Several studies also investigated rates of previously undiagnosed diabetes and found excesses among Mexican Americans (8,10,42,52).

Additionally, it is well substantiated that Hispanics have less knowledge about CVD and its risk factors. Ford and Jones found that CVD knowledge was lower among Hispanics when compared with whites, and lower among individuals with less education and income and those with less access to medical care (46). When comparing low SES Hispanics and whites, Winkleby et al found significantly less nutritional knowledge in Hispanics versus whites (47). Similarly, Ramirez and McAlister report less knowledge among Hispanics with regard to warning signs and risk factors associated with CVD (24). As part of the San Antonio Heart Study, Hazuda et al examined knowledge of Hispanics and non-Hispanic whites in three neighborhoods. In the areas of general knowledge, preventive behavior, knowledge about heart attack symptoms and knowledge about prompt action in response to heart attack, it was found with one exception, that Mexican Americans lagged behind whites. The exception was that Mexican Americans in the lowest SES neighborhood showed highest level of awareness of the need to get prompt treatment when heart attack

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symptoms occur. Since this subgroup of Hispanics in the study simultaneously showed low knowledge levels about recognizing heart attack symptoms, however, the significance of the observations about prompt response might be questionable (11).

Physical activity levels in most studies appear to be lower for Hispanics versus non-Hispanic Whites (9). Burchfiel et al found that Hispanic males and females were significantly less physically active at work than were whites (5). Friis et al also observed recreational exercise to be more frequent among whites, but physical activity at work to be similar between the two groups (50).

Investigations of the San Antonio Heart Study participants generated conflicting data about the prevalence of physical activity among Hispanics versus non-Hispanic whites (11,53). Hazuda et al asked San Antonio Heart Study participants a series of open-ended questions in order to ascertain what CVD protective health measures individuals were practicing. Participants were asked, "Are you presently doing anything specifically to keep from getting a heart attack?" If participants answered "yes," then they were asked, "What things are you doing to keep from getting a heart attack?" From the answers to these questions, it was found that Hispanics engaged in exercise at a level that was significantly lower than the level of their non-Hispanic white counterparts in all neighborhoods considered together and among women in the suburb (11). From the same San Antonio Heart Study population, Haffner et al recorded self-reported minutes of exercise per day classified by participants as strenuous (running, swimming, jogging, basketball, etc.) or light-to-moderate (walking, gold, light housework, etc.). Strenuous exercise was weighted more heavily than light-to-moderate. From the results of this reporting system, it appeared as if Hispanics exercised more than whites among both sexes (53).

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These conflicting data from the same study participants question the reliability of self-report and also suggest the possibility that Hispanics exercise without acknowledging the value of physical activity in protecting oneself against heart disease. That is, more Hispanic participants reported exercising in the Haffner investigation than did in the Hazuda study where participants were asked specifically what they did to protect themselves from a heart attack. It is important to recognize this discrepancy and realize potentially unintentional protective measures that Hispanics employ against heart disease.

Blood pressure levels vary depending on the study (16). Most investigations indicate that blood pressure levels are the same or lower for Hispanics than they are for whites (43), yet other studies present higher levels. Markides' review of the health status of Hispanics in the Southwestern United States cites Kautz's national data showing that Mexican Americans have the lowest systolic and diastolic blood pressures compared with whites and blacks (43). Studies in California and Texas, however, found no differences in blood pressures in Hispanics versus non-Hispanics, except in women in a Texas study where Mexican Americans had higher blood pressures (43). Analysis from the San Antonio Heart Study showed higher blood pressure levels among Hispanic versus non-Hispanic white men and women (49). However, these blood pressure levels were not classified as hypertension. In fact, among women, there was little difference in the percentage of Hispanics and whites with hypertension. Among men, there was little overall difference between Hispanics and whites except the prevalence of hypertension was higher among Hispanic men at younger ages and higher among white men at older ages (49).

When HHANES data is compared with NHANES data, rates of hypertension for all Hispanic subgroups are lower than for whites and African Americans (16). The rates of hypertension were so exceedingly low, however, that Geronimus et al reanalyzed the HHANES data, and found that it is potentially unreliable in the area of hypertension

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measures for Hispanic women. Geronimus et al propose that too few physicians performed the majority of the blood pressure readings on the Mexican and Puerto Rican women creating a statistically inefficient measure of blood pressure (40).

While levels of blood pressure have been found to be the same or lower for Hispanics compared with non-Hispanic whites in most studies, level of hypertension control is lower for Hispanics compared with non-Hispanic whites (12). Hypertensive subjects in the San Antonio Heart Study were compared, with poor hypertension control being defined as a systolic blood pressure ≥ 160, a diastolic blood pressure ≥ 95 mm Hg, or both. After adjustments for age, gender, obesity, body fat distribution and level of educational attainment, Mexican American subjects were found to be in significantly poorer control than non-Hispanic white subjects (12).

Prior to the HHANES results, serum cholesterol was found to be similar in Mexican-Americans and whites in several studies, and higher for Mexican Americans in others (16). The HHANES data, however, compared with national data for whites and African Americans indicates lower total cholesterol levels for Hispanics when compared with the other population subgroups (16). The proportion of individuals with a serum cholesterol of 240 mg/dL or higher was approximately 17% or 18% for all Hispanic subgroups, compared with national data showing 27% of adult whites and 24% of adult African-Americans with similar levels (16). More recently, as reported by the US Department of Health and Human Services in 1992, it has been found that Mexican American men are more likely to have high serum cholesterol levels when compared to non-Hispanic black and non-Hispanic whites males (20.3% compared with 16.6% and 19.1%) (14). However, Mexican American women were less likely than non-Hispanic black and non-Hispanic white women to have high cholesterol levels (19.4% compared with 20.7% and 20.0%) (14).

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The rest of the lipid profile of Hispanics appears mixed from most studies. Triglycerides are most consistently high, especially with regard to Hispanic women (6,8,48). In the San Antonio Heart Study, triglyceride level among women decreased from the barrio to the suburb samples. High density lipoprotein levels were on average lower among Hispanics versus whites (7,49). Low density lipoprotein levels have been found to be the same or lower in Hispanics compared with non-Hispanic whites (16).

Prevalence of smoking has been consistently demonstrated to be lower among adult Hispanic women than among white women, but inconsistent between studies comparing Hispanic and white male differences (16). In studies which show increased numbers of smokers in Hispanic versus white males, however, Hispanic males tend to smoke less (16,49). Even though rates of smoking among adults show that Hispanic women smoke less than white women, the HHANES data for Latino adolescents aged 13 to 19 showed that Mexicans showed the same rates of smoking as whites and African Americans (16). A variety of other studies show that Mexican American youths are more likely to adopt cigarette smoking than Anglo American youths (24).

Additionally, while there are currently lower rates of smoking among Hispanic women, there is evidence that smoking is on the rise in this subgroup. Twenty seven percent of Hispanic female high school students reported being current smokers in a 1991 National Center for Health Statistics National Health Interview Survey. Also 23% of second-generation Hispanic women versus 15% of first-generation Hispanic women reported smoking in a recent survey in San Francisco (14). These finding stimulates concern for the adolescent Latino women in these subgroups (16).

In summary, some CVD risk factors are more prevalent in Hispanics versus whites while others are less prevalent. However, an analysis of the San Antonio Heart Study data indicates that the combined effects of multiple risk factors is higher among Hispanics of both sexes than it is among whites (49). If the overall risk factor profile for Hispanics is less favorable than it is for non-Hispanic whites, then the overall mortality CVD rates do not reflect this. Some authors suggest that a protective effect, perhaps genetic or life-style, exists for Hispanics (49). Markides and Coreil describe the health of Hispanics in the Southwestern United States as an "epidemiologic paradox," and suggests that cultural factors may play an influential role in it (43). Hazuda et al suggest that studying Hispanic-Americans, an ethnic group with relatively low SES, may be strategic in understanding which factors have been most important in producing the national decline in CVD (11).

Role of Acculturation

Acculturation creates subgroups within the major groups of Hispanics and plays a key role in CVD risk factor prevalence. Smoking rates, for instance, among Mexican participants in HHANES, are higher among more acculturated women than among less acculturated ones (16). Other studies confirm this finding in Mexican women as well as Central American women. Smoking rates among less acculturated Latino men, however, are higher than those in more acculturated Latino men (16). Thus, it seems that smoking behavior among Hispanics becomes more similar to that of whites as levels of acculturation increase (16).

Other CVD risk factors are also affected by acculturation. Rates of obesity and diabetes mellitus, for instance, were shown to decline with increased acculturation of Mexican women in the San Antonio study (54). Acculturation was measured by three scales that assess the following: functional integration with mainstream society, value placed on preserving Mexican cultural origin, and attitude toward traditional family structure and sex-role organization (54). Socioeconomic status was another variable that paralleled decreases

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in obesity and diabetes in Hispanic women in this study (54). Thus, as SES and acculturation increased, rates of obesity and diabetes mellitus in Mexican-American women decreased (54).

In a unique study of low SES whites and Hispanics, the effects of acculturation were examined within this socioeconomic group (47). The study population, a subset of the Stanford Five-City Project, was low educated Hispanic and white adults and children in Northern California. Over 90% of participants were Mexican-American, yet analysis was not limited to this Hispanic subgroup. Acculturation was measured by primary language spoken at home.

The study found that the sample of white adults were significantly more likely than the Hispanic adults to have eaten high-fat foods in the last 24 hours, and the white adults consumed significantly more fat, and significantly less dietary carbohydrate and fiber than the Hispanic adults (47). Adult Hispanics also showed slightly lower plasma cholesterol and higher adiposity than did white adults. The youth sample showed similar, yet not statistically significant, findings. Additionally, there was a graded relationship between acculturation and dietary intake. More acculturated Hispanics showed eating habits that were more similar to the white sample than the less acculturated Hispanic sample (47). Thus fat consumption increased with increasing acculturation in this low-educated Hispanic sample.

Review of the Past CVD Interventions

The investigator initiated the review of previous CVD interventions by conducting a Medline search of the past ten years under subject headings: CVD, women, community intervention, SES, ethnic minority, and Hispanic. From references of initial articles, additional literature was found. In reviewing the literature, the investigator looked for

elements of current CVD interventions that were specifically applicable to low SES

Hispanic women. These elements were few, but included methods and materials that were

culturally appropriate and/or geared toward low literacy audiences, and those that

incorporated community involvement. Particular attention was also paid to articles that

discussed formative evaluation methods used in program development.

History of Community-based CVD Interventions

The historic aim of community-based CVD prevention programs is to decrease the

prevalence of cardiovascular risk factors and incidence of CVD in entire communities (33).

Currently, the third generation of such programs are in place. The first generation began in

the early 1970s with the North Karelia program in Finland, and the Stanford Three-

Community Study in California. These two studies showed significantly positive results.

The North Karelia study reduced coronary heart disease mortality among men age 30-59 by

24% over 10 years compared with 12% in the comparison community (33). Additionally,

the program showed significant effects on reducing the prevalence of smoking,

hypertension, and high serum cholesterol levels (33). The Stanford Three-Community

Study demonstrated positive program effects after two years on several indicators,

including saturated fat intake, number of cigarettes smoked per day, plasma cholesterol

level, systolic blood pressure, and knowledge of CVD risk factors (33).

The second generation of large community-based interventions took place in the 1980s and

consisted of the Stanford Five-City Project, the Minnesota Heart Health Program, and the

Pawtucket Heart Health Program (33). All three of the programs targeted major CVD risk

factors. The results of the Stanford Five-City Project showed greater improvements in

treatment versus comparison communities (55). Results were transitory in the other two

studies. All three studies were evaluated during a decade where most cities, both treatment

and control, were experiencing strong improvements in CVD risk reduction. Therefore,

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other health interventions likely diluted the effects of these three community-based interventions (55). Thus, future community-based interventions face two challenges: outpacing secular trends and reaching subgroups of the population that remain at high risk for CVD (19).

The Stanford Five-City Project was the only second generation community-based CVD intervention where data on Hispanic-Americans could be extracted. When data from the study were reanalyzed using the signal detection method, the subgroup with the lowest proportion of positive change was found to be most likely Hispanic, to be the least educated, and to have the lowest health knowledge and self-efficacy scores (56). These results suggest that certain community subgroups were not effectively reached, and there is a need for segmentation of audiences into more homogeneous and identifiable subgroups. Sociodemographic, psychosocial, and psychological variables need to be used when segmenting audiences. Lastly, community health education efforts needs to develop specific interventions for different age, socioeconomic, and cultural subgroups (56).

Current Community-based CVD Interventions

The third generation of community-based CVD programs faces the challenge of reaching here-to-fore "unreached" subgroups of the population. The Washington Heights-Inwood Healthy Heart Program, San Diego Family Health Project, Stanford Nutrition Action Program, *A Su Salud,* and *Programa Latino Para Dejar de Fumar* all represent interventions that have targeted low SES individuals, low literate individuals, Hispanics and/or other ethnic minorities for overall CVD and risk reduction. The Washington Heights program is the only one that is part of the third generation of large community-based multifactor studies. The others are smaller and do not focus on all risk factors, yet they may provide successful program elements to be incorporated into future community-based CVD reduction programs aimed at low SES Hispanic women. Additionally, while the

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populations of each of the following studies might not be specifically low SES Hispanic women, some program elements still apply.

Washington Heights-Inwood Healthy Heart Program

The New York State Healthy Heart Program consists of eight programs, one of which, the Washington Heights-Inwood Healthy Heart Program (WHIHHP), is based in a multiethnic, low SES, urban community. The WHIHHP is unique in that it attempts to adapt the community CVD prevention model to an underserved urban community (33). The population of the WHIHHP is two-thirds Hispanic (predominantly Dominican), one-sixth African-American and the remainder, less than 20%, white. The goal of WHIHHP was to decrease the prevalence of CVD risk factors, specifically smoking, sedentary lifestyle, obesity, hypertension, and hypercholesterolemia in the target population, and consequently reduce the CVD morbidity and mortality (28). At year six, partial evaluation of program became available, and at year seven the program was transferred to the Dominican Women's Development Center (28).

The Washington Heights-Inwood Healthy Heart Program was an ambitious program with successes and failures, most of which are as yet unevaluated due to budgetary constraints (28). The successful elements include the following: a low-fat milk campaign and a volunteer-led exercise club. The low-fat milk campaign involved development of a cartoon character, "Lowfat Lucy" who was featured at school-based presentations as well as several other innovative elements. The particularly successful elements were the popularity and demand for Lowfat Lucy presentations in the schools, the popularity and high rates of participation in the low-fat milk taste tests, and large increases in the proportions of students in targeted public schools who chose low-fat milk at lunch. Perhaps the most lasting effects of the low-fat milk campaign were the policy changes that resulted in increased availability of low-fat milk in childcare centers and schools. Before the

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campaign, only 6 of 28 schools or child care centers served low-fat milk, but 20 of 28 did so afterward (28).

The other successful element of the WHIHHP was the volunteer-led exercise clubs. This element consisted of many clubs, 21 of which were active for 6 months or longer, that served more than 1200 individuals in 1992 and 1993. Greater than 90% of the participants were Hispanic and female and two thirds were age 18 to 39. The long-term sustainability and health effects of the clubs have not been assessed (28).

In the area of smoking cessation, the WHIHHP had several successes. For instance, with guidance from WHIHHP, the community saw successful removal of tobacco company sponsorship and promotion from a festival that attracts 500,000 people every year. Also, while not completely attributable to WHIHHP, but during its course, one major local hospital and one main youth services organization in the area, became entirely smoke-free (33). Another program element which the developers of the WHIHHP deemed successful, but which is not yet evaluated, is a Spanish-language smoking cessation video, which was created due to the lack of such a resource. The video showed real people, some of whom are were well-known in the community, discussing the positive aspects of smoking cessation on a personal level. The video was distributed to local doctors for office use, to teachers for parent education activities, to community based organizations, and to the State Department of Health for airing on Spanish-language cable television shows (28).

Unsuccessful program elements of WHIHHP included: school-based smoking prevention activities; cholesterol screening, counseling, education, and referral; and motivating community-based physicians to promote heart health in their practices. These activities were terminated during the ongoing course of WHIHHP. The school-based smoking prevention activities were limited by competing problems, budget problems and personnel

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turnover. The cholesterol program reached few individuals and was found to be extremely labor-intensive and logistically complex. Motivation of physicians to promote heart health in their practices was also abandoned due to the lack of response from the physicians. Since the doctors were friendly and supportive of the program, it was concluded that competing demands on their time and attention precluded the level of involvement needed by the WHIHHP (28).

While success of WHIHHP are not overwhelming or fully evaluated, the program presents some potentially successful ideas and strategies. The WHIHHP showed that the community health education model is possible in a socially disadvantaged, minority community (28). Also WHIHHP demonstrated that community health education programs can be successfully transferred from academic health centers to a community-based organization, such as the Dominican Women's Development Center in this case (28). Additionally, the communication channels chosen for targeting participants present innovative avenues for interventions. Mothers of young children, for example, were reached via school-related activities, such as screening events and presentations at meetings of parents' groups. Additionally, children were conduits of information, bringing home information and activities. Working-age Hispanic men were reached through social organizations and small businesses such as local taxi companies (33).

San Diego Family Health Project

The San Diego Family Health Project is a family-based CVD risk reduction intervention that evaluated healthy, volunteer low-to-middle income Mexican American and non-Hispanic white families (57). The intervention is an educational program grounded in social learning theory, based at schools, and aimed at decreasing the family's intake of high salt, high fat foods, and at increasing their regular physical activity. The families were measured at a 24-month follow-up. Results of the intervention show that both Mexican

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American and non-Hispanic white intervention families showed significant positive improvements over control families in several areas: knowledge of skills required to change dietary and exercise habits, eating habits, and systolic and/or diastolic blood pressures. Both groups showed no differences in reported physical activity or in tested fitness. In two areas, non-Hispanic white intervention families showed significant change over control families, whereas Mexican American intervention families did not show the same change. These areas of non-Hispanic white change were lower total fat and sodium intake, and lower LDL levels (57).

The methods of the San Diego Family Health Project followed social learning theory and consisted of two main parts: intensive sessions and maintenance sessions. Intensive sessions began with rationale and strategies for self-monitoring, the basis for early behavior change efforts. Next came a gradual introduction to aerobic exercise, and reinforcement of self-monitoring. The following two sessions increased the aerobic exercise and focused on positive social support. Physical activity was part of every session, while dietary education was introduced in the later sessions. The first three nutrition sessions focused on salt, and the next three emphasized saturated fats. "Stop light categorization" was used for foods, based on their relative content of saturated fats and sodium. High fat, high salt foods, for instance were indicated with red meaning "whoa." Lesser offenders were marked with "yellow" meaning "slow," and low fat, low salt foods received a "green" rating meaning "go." The last intensive session consisted of a potluck banquet to which families brought food prepared in heart healthy ways. Maintenance sessions followed. These aimed to teach specific skills for enhancing the participant's ability to continue new dietary and physical activity habits. Problems addressed included breaking behavior chains and supermarket shopping skills (57).

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Unfortunately, the San Diego Family Health Project did not stratify participants by SES, and it is therefore difficult to separate the effects of ethnicity versus SES. The authors note that SES and ethnicity were confounded in this study and this could account for the greater effect detected in Anglo-Americans compared with Mexican-Americans. The authors suggest that apparent lesser effect of the intervention detected among Mexican-Americans might reflect situational barriers experienced by more stressed, less advantaged populations. The authors also advise that despite rigorous attempts at appropriate translations, the written food diaries and questionnaires might have created cultural and comfort barriers for the less-educated Mexican-American participants (57). Additionally, for very low SES individuals, the potluck dinner might have alienated those with means barely sufficient for their own families.

Despite its shortcomings, the San Diego Family Health Project had several elements that could be useful in the design of an intervention targeting low SES Hispanic women. The study, for instance, supports the idea of aiming a CVD intervention at women and families instead of men. The Mexican-American fathers appear to experience barriers to behavior change that might include work conditions or eating outside the home environment. The intervention, therefore, was not successful at facilitating behavior change in men (57). Families, however, can be beneficially involved in a health promotion project, and change at the family level can produce long-term changes (57). Using schools resources is also noted as part of a successful family-based intervention. Lastly, the use of the "stop light" categorization of foods could work well with low literate populations because it is easy-to-read and has concrete, culturally relevant messages (23). While the stop lights are not relevant specifically to Mexican Americans, they are somewhat universally known, and the system of categorizing foods this way is clear, eye-catching and creative.

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Stanford Nutrition Action Program

Another recent CVD intervention, the Stanford Nutrition Action Program (SNAP), targets nutrition alone in young, multiethnic adults with low literacy skills. The SNAP participants attended educational and occupational classes, and were mostly women (84%) and Hispanic (62%) (23). The SNAP curriculum was created by extensive formative evaluation including analyses of epidemiological surveys and review of published nutrition surveys, consultations with a community advisory board, focus groups and brief questionnaires, and pilot testing of the course materials and curriculum (23).

The six week, one hour curriculum was based on methods designed for low literate audiences. These included small and large group activities, interactive discussions, skill building tasks, audio-visual materials, and food demonstrations and tastings (23). Its interactive methods had the goal of facilitating participant sharing and peer support as well as encouraging application of problem solving skills to break barriers to change (23). Few printed materials of SNAP require reading skills. Cultural beliefs and food preferences were addressed and culturally acceptable modes of lowering fat intake were encouraged (23). The comparison groups were taught a general nutrition curriculum. This basic nutrition information and food safety course was taught by a nutrition education assistant from the Expanded Food and Nutrition Program of the USDA Cooperative Extension of the University of California (23).

Focus group findings helped form the SNAP curriculum. These findings indicated that the target population was concerned about their diet and overall health, as well as the health of their families. Cost was a main priority for participants when shopping for their families, and many participants reported that healthy and low fat foods were more expensive than other food items. It was important to participants that dietary changes taste good and involve little change to flavor and texture of food, since changes needed to be accepted by

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the entire family. New purchasing and preparation methods needed to be quick and convenient. Lastly, participants wanted to learn how other low income families made dietary changes (23).

The results of SNAP are in press (23), but the study holds promise due to significant changes in nutrition knowledge, nutrition attitudes, saturated fat intake, and calories due to total fat intake between SNAP intervention and comparison classes at the 5-month follow-up (21). One limitation of SNAP is that it was taught solely in English (23). Since most of the participants were Hispanic, a Spanish curriculum could have reached more individuals. Along the same lines, cultural beliefs, food preferences, concerns, and misperceptions about CVD might have been different for adults with less acculturation, who did not speak English (23). The lack of appropriate language, thus, limited the investigators' exposure to these other views and perhaps to an entire subgroup of high-risk Hispanics.

SNAP exemplifies the needed emphasis on low literacy and cultural sensitivity in future CVD community interventions. Another CVD prevention program focused on nutrition and aimed at a low SES minority population is Project Salsa (16). This community-based intervention, designed in San Diego, aims to alter nutritional habits among low-income Mexicans. The results of the project are not yet available, but hold promise.

A Su Salud and *Programa Latino Para Dejar de Fumar*

Several smoking prevention and cessation interventions have appeared in the past decade, but the results of most are as yet unavailable. In the mid-1980s, the National Cancer Institute funded four large studies of to decrease smoking rates in Hispanics (16). Two of the studies focused on adolescents in New York City and the Boston-Hartford area. The others are *A Su Salud*, based in small urban areas of Texas, and *Programa Latino Para Dejar de Fumar*, based in the San Francisco Bay Area of California (16).

A Su Salud employs some innovative approaches to CVD risk reduction, yet the results of the study are unavailable, and hence the success of the program cannot be evaluated. *A Su Salud* is a mass media health promotion program aimed primarily at smoking prevention and cessation among Hispanic Americans (nearly all Mexican Americans) of southwest Texas. The strategies utilized by *A Su Salud* were based on past findings. First, prior research indicates preference among Mexican Americans for watching Spanish language television over English language television (24). Next, print media, such as posters, direct mail, and flyers has been found to be less effective than broadcast media. Lastly, short, radio mini-dramas regarding cardiovascular risk factors have been found to increase knowledge about heart disease, especially in nonacculturated Mexican Americans (24).

Based on these past findings and the mass media model, *A Su Salud* was created. The final product consists of nineteen television health promotion programs. All were aired on local Spanish stations at strategic times over a three month period with reruns six months later. The programs starred selected individuals from the community who served as role models in either quitting smoking or resisting pressures to smoke. The individuals "looked, talked, and acted like the target audience, and ... describe(d) with clarity the skills they used to change their behavior." Nonsmoking teenagers discussed their motivations and skills related to resisting pressures to smoke. Before the programs were aired, the community was alerted of their impending arrival via a press conference held with the mayor and other individuals involved in the study, and via flyers presenting unhealthy life-style habits as "assassins." The flyers, which also promoted the airing times of the television program, were delivered to homes, and placed in two local newspapers (24).

Programa Latino Para Dejar de Fumar was similar to *A Su Salud* in its use of mass-media, yet different in its heavy reliance on a printed document, the *Guia Para Dejar de Fumar*

(16). The *Programa* sought to inundate the Hispanic community in San Francisco with culturally appropriate information about why and how to quit smoking. Two years of basic research guided the development of the intervention by uncovering differences between Hispanic and white smokers. To begin with, Hispanic smokers report fewer cigarettes smoked per day, which suggests less dependence on nicotine, and a greater likelihood of quitting smoking with appropriate minimal contact intervention (58). Additionally, among Latinos, the increased importance of family and need for positive social interactions are important elements in promoting smoking cessation (58). Lastly, Latinos were apparently less knowledgeable about where to obtain information on cessation services, but also claimed they needed less help in quitting (16). They stated they felt capable of quitting on their own, using most often *voluntad propia*, or will power, when quitting (16).

Media use in the *Programa* included television and radio public service announcements on major Spanish-language stations in the San Francisco area (16). Announcements were culturally appropriate and featured community leaders as well as former smokers. The community leaders talked about the disadvantages of smoking. Former smokers discussed why they had quit and what they had gained from their quitting. Unlike models in *A Su Salud* who performed new strategies and techniques for quitting smoking, the former smokers in *Programa Latino Para Dejar de Fumar* discussed their motivations for quitting and the benefits of their decision (16,24). Due to the importance of family as discovered by preliminary work, the media campaign of the *Programa* incorporated it into smoking cessation. One example of this was a television sketch that showed the joy a mother received when she discovered her son quit smoking on Mother's Day. Print messages similarly involved nonsmoking members of the family in smoking cessation efforts (24).

The heavy emphasis on printed materials was unique to the *Programa*. Its *Guia Para Dejar de Fumar* was a 36-page Spanish-language smoking cessation self-help guide with full-

color photographs throughout it (16). Its distribution was wide, and included community health centers, restaurants, schools, and significant community activities (16). Posters, flyers, pamphlets and billboards supported the *Guia* and the *Programa*. Other components of the *Programa* included a community organization component and contests. The community was involved primarily through a community advisory board which provided ongoing consultation as the project evolved. Contests were held in association with important holidays such as Mother's Day and New Year's Day and served to motivate smokers to quit (16).

The creators of the *Programa* assert that its "validated quit rate of 8.4 percent at mean follow-up of 14 months and a continuous nonsmoking rate of 4.4 percent among 431 Latino smokers who received the *Guia* suggests that a culturally appropriate, self-help smoking cessation manual may be an effective approach to promoting nonsmoking among this population" (58). This assertion is made while considering the limitations of the study (58). The *Programa* had no control group, and therefore, may reflect the natural evolution of smoking cessation in a self-selected population (58). It also took place within the context of a community-wide smoking cessation intervention, which could have enhanced the observed results of the *Guia* (58). Another consideration, however, might underestimate the effectiveness of the *Guia*. The *Programa* lost 40% of its sample to follow-up interviews after the initial response. These nonrespondents were considered individuals who continued to smoke. Counting them as such could underestimate actual quit rates (58).

The quit rates observed in the *Programa*, however, are reported to be lower than those found in recent studies using English language materials (58), and thus, are not the focus of the study results. The *Programa* confirmed its quit rates with a biochemical measure, whereas the other studies did not (58). Biochemically confirming the observed quit rates of

other studies might have lowered these levels to ones close to, but still not as low as, those found in the *Programa* . Since the quit rates are not high, they are not emphasized by the investigators. Instead, emphasis is placed on the conclusion that the *Guia* is an appropriate, well-accepted manual. Support of this finding rests in the fact that after 14 months, only 22% of *Guia* copies distributed to the sample population were lost or discarded. The remaining 78% were at the home of the initial recipient or had been given to a friend (58).

Additional evaluation of the *Guia* by participants in the *Programa* identify successful elements of the manual and parts of it that need revision. Participants most frequently mentioned *voluntad propia* (will power) as a useful quitting technique mentioned by the *Guia*. They most appreciated a photograph contrasting a normal lung to a lung with cancer. Other elements that they liked about the *Guia* were the overall format, general information about the adverse health effects of smoking, the family emphasis, and a photograph of a smoker's wrinkles (58)

Summary

The *Programa* as well as the other mentioned interventions all have elements that are applicable to a CVD intervention for low SES Hispanic women. From the interventions with available results, the following is a list of potentially useful elements to apply to future CVD risk factor reduction and CVD reduction interventions for low SES Hispanic women: 1) Target women in communities through their children. 2) Target risk factors at a community level, i.e. through school lunch programs, local stores and community event sponsorship. 3) Use existing school resources to reach families. 4) Use easy-to-read, concrete, culturally relevant messages such as "stoplight" categorization of foods. 5) Emphasize the importance of family and the need for positive social interactions when discussing smoking cessation. 6) Emphasize *voluntad propria* (will power) when

discussing smoking cessation. 7) Consider a culturally appropriate, well-accepted printed document such as *La Guia* when designing a CVD intervention.

METHODS

Low socioeconomic status individuals represent a population subgroup at high risk for chronic disease who were "missed" by large community-based CVD reduction interventions of the 1980s (19). The focus of this project is to discover how to reach communities that were least affected by previous intervention efforts. In defining which communities to target, social and cultural boundaries instead of pure geographic ones were employed (16). The community defined in this project is low SES Hispanic women in the San Jose, California area. Eventually, the formative information in this project may be used for a community-based intervention in the same area, involving larger groups of women.

The theoretical perspectives of community health education, community empowerment, and social marketing theory guide this work and together dictate that any intervention needs to begin in the community with input from the involved individuals (27,37). Focus groups, the formative evaluation tool employed in this project, were used to learn directly from low SES women about their knowledge is of CVD and CVD risk factors, which CVD risk factors they believe are most important, and how they would like to be involved in any future CVD intervention.

Participants

The focus groups were conducted in English and in Spanish during June and July 1995. The target population for the focus groups was low SES Hispanic women, ages 20-50, living in the San Jose, California, the third largest city in California. Participants for the focus groups were identified through three community organizations in San Jose that serve low-income women. One was a center that provides job training, remedial education, and English language instruction to low-income adults, one was a birthing class for Spanish

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speaking women at a large hospital, and one was an inner-city soup kitchen. Participants were not paid, but were provided hygienic items (such as toothbrushes), refreshments and CVD educational materials as incentives to attend. Cardiovascular disease educational materials were distributed at the end of the sessions to avoid influencing responses.

Each of the focus group sites has an ongoing relationship with Stanford Center for Research in Disease Prevention (SCRDP), an institute that fosters interdisciplinary research into prevention and control of chronic disease and that is administer through the Stanford University Medical School (59). Because of this relationship and the affiliation of the author with SCRDP, the leaders at the community organizations were willing to have their centers participate in this project. Due to the high turnover of individuals in each of these community organizations, none of the recruited participants had ever participated in another SCRDP study.

Recruitment of participants varied according to the site of the focus group. Participants at the center for adult education were recruited by one of the instructors who offered volunteers credit toward a "human development" requirement each student must fulfill in order to graduate from the program. Volunteers were informed that they would be helping gather information about a study of women in their community. Focus groups took place on days when no scheduled "human development" instructor was expected to be present. Participants from the birthing class were recruited by the author during the class that occurred one week before the scheduled focus group. The author asked for volunteers who would like to come to class one hour before the next scheduled birthing class to participate in a study about women in their community. Volunteers were asked to bring along a female friend or relative. Healthy snacks were offered since the session was to take place during normal dinner hours. Participants from the soup kitchen were similarly recruited by the director of the soup kitchen who asked for volunteers who would like to

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participant in a study about women in their community. Efforts were made to urge recruiters other than the author not to mention heart disease when they were asked for volunteers.

A self-reported questionnaire on sociodemographic and risk factor data was administered at the beginning of each focus group. Questionnaires were printed in both English and Spanish, and assistance was available for participants with low literacy skills. The number of questions was limited in order to avoid response burden and to maintain a relaxed and informal environment.

Discussion Guide

The "rolling discussion guide" (60) was employed such that the basic topics of discussion remained the same throughout all five focus groups, but probing questions were modified with each group. Initial probing questions were derived from the literature and a pilot focus group, and subsequent questions developed from insights of the previous groups. The discussion guide included the following main topics: general knowledge about heart disease, CVD risk factors, health communication, and intervention ideas. The first two topics were addressed generally by all groups, whereas the third and fourth topics were examined more specifically in each group.

In order to expose the focus group discussion guide and the moderator to a trial audience, and to generate initial probing questions, a pilot focus group occurred the week before the study focus groups began. The participants in this group were female high school seniors from low income and ethnic minority backgrounds who were attending a special summer program at Stanford University. The program, the Stanford Medical Youth Science Program (SMYSP), has the primary goal of "facilitating the entry of academically talented, underserved, predominantly minority high school students into the health care professions"

(61). Young women from SMYSP were recruited to discuss heart disease in the communities in which they live. Participants were of mixed ethnicity, and all from very low SES families. Their discussion, based on their observations of their mothers and other women in their communities, generated ideas that were useful in development of the initial discussion guide.

Moderator

The investigator served as the moderator, being trained by experts in the field, reading several guides (62-67), and listening to audio tapes of sample focus groups. Additionally, the pilot focus group served as training for the moderator. The moderator's background as a teacher assisted her with the group dynamic aspects of moderating, and her training as a medical interviewer aided in open-ended interviewing techniques. The moderator was of mixed non-Hispanic ethnicity and was fluent in Spanish.

Content Analysis

Audio recordings of each focus group were collected, and from these verbatim transcripts were generated and analyzed. The transcripts were made by the moderator and by two transcribers. Those created by the transcribers were reviewed by the moderator to assure completeness and accuracy. As necessary, both the Spanish and English transcripts werechecked for accuracy by a bilingual/bicultural reader.

Content analysis of the transcripts was completed by the moderator, a female health professional, and a male non-health professional. The readers worked independently until themes were identified. Each reader reviewed the transcripts once to familiarize him/herself with the content of the session. A second reading then occurred where themes were identified in the text. Each reader developed labels for themes, and indicated which parts of

the text exemplified each theme. The moderator then met with each of the readers separately to compared themes.

The moderator synthesized all themes and coded each transcript accordingly. Themes were rank ordered according to the number of times mentioned. A theme was counted separately when it was mentioned by different participants. Comments made by the same participant on the same topic were counted separately if they occurred at different times during the session. If, however, one participant's comments were grouped together as part of an ongoing dialogue, they were counted only once to avoid inflating the ranking of a particular theme. (68). Additionally, mention of risk factors was followed throughout transcripts to assess level of interest and value on each CVD risk factor. Rank ordering of risk factors occurred as did theme ordering.

RESULTS

Participants

Five focus groups were completed and involved 32 women (5-8 women per group). Three of the groups were conducted at the center that provided job training, remedial education, English language instruction to low-income adults. These three focus groups were conducted primarily in English, with occasional discussions in Spanish. The other two focus groups were conducted in Spanish. The fourth focus group was held at the birthing class; half of the participants were expectant mothers and the other half were family members. The fifth focus group was held at the inner-city soup kitchen, and included women who were current or past clients.

The sociodemographic and CVD risk profile of participants is summarized in Table 1. The age range of participants was 21-76, with 90.6% of participants between 20 and 50. The majority of participants (70.9%) reported annual household incomes of less than $10,000. Over 85% of participants had completed 12 or fewer years of formal education. A variety of occupations was represented, with most women being clerical or sales persons, followed by unskilled blue collar workers, and homemakers. Over 80% of participants spoke at least some Spanish at home. One half were born in the United States; the others were born primarily in Mexico (40.6%). The average number of years in the United States for foreign-born participants was 11.4. Marital status varied, with most participants being either married or a member of an unmarried couple (45.2%), or separated, divorced, or widowed (41.9%). The participants had, on average, between 3 and 5 children, with 6.3% having no children and 15.6% having more than 5.

Fewer than one third of participants were smokers and the most any woman smoked per day was 10 cigarettes. Obesity was measured by body mass index (weight (kg)/height

(m)^2). Overweight or severe overweight were defined from cut points used by the second National Health and Nutrition Examination Survey (1976-1980 NHANES II). The body mass index cut points for overweight and severe overweight were 27.3% and 31.2% respectively. Fifteen percent of women were overweight and over one-third were severely overweight. Only one fourth of the women reported ever having their cholesterol level measured and of these women, only two knew the numeric value. One fourth of the women reported having been told by a medical professional that they had high blood pressure.

Rank Ordering of CVD Risk Factors

To assess knowledge about CVD risk factors and their relative importance, participants were asked a set of questions including, "What do you think of when you hear the words 'heart disease'?" Participants were then asked "What are some things that cause heart disease?" and "Which of these things is the most important to you, and why?" Based on the rank ordering of CVD risk factors, it was found that women discussed dietary risk factors, especially high dietary fat intake, most frequently. When compared to other risk factors, poor diet and nutrition dominated all discussions. Concepts regarding diet and nutrition were mentioned 543 times (Table 2). Participants saw greasy, oily, fatty food as extremely unhealthy, and believed avoidance of these foods would be beneficial to one's heart. Physical inactivity, obesity and smoking were the next most frequently discussed risk factors, being mentioned 127 times, 86 times, and 78 times, respectively. After smoking, psychological stress was the next most discussed CVD risk factor, followed by cholesterol and hypertension. Diabetes and heredity were mentioned least frequently, being tallied only 9 and 7 times respectively. As seen in Table 2, the rank ordering of risk factors was highly consistent across the five focus groups.

Focus Group Themes

The focus groups generated 7 main themes (table 3). These themes were: concern about CVD, misconceptions about CVD and risk factors, barriers to a healthy diet, barriers to exercise and smoking cessation, sources of health information, cultural traditions, and intervention ideas. The discussion below summarizes the main findings of these themes.

Concern about cardiovascular disease

All groups showed awareness, concern and motivation about reducing risk of CVD. General awareness of CVD was evident by the mention of heart attacks, stroke, angina, high blood pressure and high cholesterol in response to the question, "What do you think of when you hear the words, 'heart disease'?" Many had become familiar with CVD through experiences with close family members. They were concerned about heart disease, describing it as "terrible," "frightening" and "dangerous."

Participants were not only aware of heart disease, they described it as a health priority. This priority was best reflected by the soup kitchen focus group. Prior to the focus group, the director of the kitchen suggested that daily survival needs would be of higher priority to the participants than heart disease. In order to explore this, the moderator initiated a discussion about general life concerns. The overriding focus of participants was their children. Specific concerns centered on one child's smoking, one child's nervous overeating, and another child's level of obesity. When asked about their own health concerns, each participant (except one who reported no health concerns) answered her own heart or a CVD risk factor, such as overweight or hypertension.

Participants' concern about CVD was expressed in a desire for heart disease information. They complained that there was not enough heart disease information available. One participant declared: "I don't even get enough of that information where I could really say I

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have information." Another woman added, "but I don't know where to get information." Participants also perceived an unjustifiably higher amount of media attention and available information on diseases other than heart disease, especially breast and lung cancer.

Participants demonstrated a desire to stay healthy for their children and for the future. In all groups, children held an extremely important place in the lives of participants. "To me everything is them right now," asserted one woman. When asked "What in your life is most important to you?" one participant answered: "My children, the first thing. And my health so that I can raise them." Not only did mothers express a desire for good health for the present, they also spoke of preserving health for the future. One participant stated: "What matters to me is I want to live as long as possible. I want to be healthy. I want to be able to run with my kids. I don't want my body limiting me."

Other participants emphasized that developing healthy habits was valuable not only for them, but for their children, and for future generations. For example, several women discussed their mothers' lack of knowledge regarding diet and cooking as a behavior they inherited, but wanted to change before their children inherited it.

Misconceptions about cardiovascular disease and risk factors

Participants know that blood pressure was related to CVD, and that high cholesterol and smoking were predictive of CVD, but also had many misconceptions about risk factors and CVD in general. CVD was not clearly understood as a progressive, chronic process. On the contrary, participants viewed it as a "very quick illness," in which "one could die in a moment." Additionally, there was confusion about the relationship of risk factors to CVD. One participant asked "What is the difference between high and low blood pressure?" Other participants thought: "When your arteries are clogged, then you can't breathe," and "the blood can't move because of the amount of grease."

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Dietary factors, especially excess fat intake, were recognized as important, yet not well understood, risks. While participants clearly described a desire to avoid fat, many of them did not know how to do so. Many expressed confusion caused by conflicting or changing media presentation of various foods, especially eggs, pasta and rice. Others debated the virtues of various ethnic foods. For example, Mexican food was considered unhealthy, because of its fat content, yet healthy, because of its vegetable content.

Many overweight participants did not clearly connect obesity with heart disease. In terms of the relationship of obesity with CVD, one participant stated: "A lot of times they say it's from being overweight, but it really isn't that. It just depends on what you eat. It has nothing to do with your weight, really." Many participants displayed an attitude of denial about obesity as a physical condition. In describing her obese daughter, one woman described overweight as a condition invented by society: "She weighs quite a bit, but it doesn't look bad on her but they're always telling me she should be on a diet. My daughter feels like she should be on a diet because the way society is." Some participants suggested comfort with their bodies as long as they were attractive to men. One young obese woman stated that she never felt overweight because, "I've never had a problem getting a man." Additionally, words such as "big," "chunky," and "thick" were often used instead of "fat," "overweight," or "obese." For example, one participant described her mother: "She's a good candidate to have a heart attack, because she's big. She's not overweight, but she's big."

In addition to not understanding risk factors, there was more belief in unproved risk factors than proven risk factors in relation to increasing one's risk of CVD. For instance, stress and psychological factors were mentioned more times than blood pressure as a risk factor. One women stated: "Someone could be yelling at somebody, and, boom, have a heart

attack. Their blood boils too much, you know?" Other participants spoke repeatedly of certain teas known for "calming the nerves" that consequently "help the heart." Another participant described her father's hypertension: "His high blood pressure is from stress, daily stress. Just work topics get him mentally and work on his heart."

Lastly, in all the focus groups there was the application of unproved CVD risk reduction strategies to CVD prevention. For instance, participants believed that "drinking a lot of water" protected an individual from heart disease. "Water," one participant proclaimed "helps cleanse your body, and then flushes it out." Similarly, grapefruit juice was mentioned as weight loss device, and eating late in the day was deemed harmful to one's heart health. Pesticides and " 'special chemicals' so chickens can grow bigger," were also considered damaging to the heart.

Barriers to a healthy diet

Barriers to a good diet included time, money, convenience, traditions, and reluctance of family members to support dietary modification. Time pressures were described by a young single mother: "I go to work and go to school and I do not have time to do anything. I'd be cooking for 30 minutes or something, and I don't got 30 minutes." Fast food restaurants presented a solution for busy mothers. Despite knowing that fast food is "not good for you," many participants described it as convenient, ubiquitous, and predictable. The ubiquity and predictability of fast food was described as part its allure: "Wherever you go, they're there... You want it. You already know the taste if it."

Fast food restaurants additionally challenged heart healthy behaviors by attracting children. One mother stated: "They get 'Happy Meals.' They love going out to eat." Other women described the free toys as their children's attraction to the fast food restaurants. One mother claimed that her son did not enjoy the food itself, but asked to go to a fast food restaurant

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because "he likes to play in the balls, the toys and stuff." Attracting children to fast food restaurants was seen as not only bad for the children but for the mother's eating habits as well. One mother explained: "You're sitting there and you think, I might as well have something there with my son."

Lack of money and inconvenience surfaced repeatedly as barriers to healthy food choices. The perception that low-fat and healthful items cost more than other items was expressed by several individuals: "It is difficult sometimes to go and eat healthy food because of your budget. It's usually more expensive." Healthy foods were perceived as something separate and extra in addition to what participants bought for their families. Fresh food was seen as costly: "We can't afford all the vegetables and fruits." Healthy options at fast food restaurants, such as salads, were also viewed as more expensive than the higher fat foods. In addition to the notion that healthy food costs more, was the idea that cooking healthy was inconvenient and complicated. One participant suggested, "If you're going to buy low in fat, you got to buy this and this and this and this to make a lot."

Participants also said that knowing how to shop in a healthful way was difficult because they did not know "automatically what to buy." Participants expressed lack of knowledge about healthful cooking practices due to a generational perpetuation of the lack of knowledge about preparing healthy foods: "Our mom used to let us eat whatever we wanted. And she was raised without a mother, so that she really had nobody to teach her how to cook or what was good for her." Unhealthy behaviors were maintained due to a sense of tradition or comfort. "That's her style, ... that's the way she was raised" mentioned one participant when describing her mother's unhealthy cooking practices. Another woman stated: "Us Mexicanos, we eat ... a lot of the things are bad for us, (and) ... it's harder for us to change the way we eat, because we've been eating those foods since we were little kids."

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Mothers and their traditions were not the only barriers to change. The men in the lives of many of the participants presented significant impediments to dietary modification. One woman said: "My husband cannot go a day without eating meat. If there's no meat, he won't eat." Another agreed: "A lot of Hispanics are like that." She elaborated: "Hispanic people, men, especially those that have the old ways, they have to have the meat, the chili, the beans, the rice, and they are not really into the vegetables."

Barriers to exercise and smoking cessation

Multiple barriers to good health surfaced despite many positive associations with potential ways to prevent heart disease. Positive associations included comments that exercise makes an individual feel good: "I walked this morning. My body feels good. I feel energized." Additionally, several women discussed negative associations with smoking. Regardless of the positive associations and skills, however, many barriers to exercise and smoking cessation were described.

In the realm of exercise, participants faced hindrances such as limited baseline fitness, family support, time, child care, and safety. Several individuals reported feeling discouraged by exercise experiences. One participant shared a common feeling: "it's hard, you know, it's real hard. ... I can only exercise for twenty minutes and then I'm tired." Additionally, many husbands and boyfriends were described as disapproving of exercise, especially when time was taken away from them. For example, when a participant told her husband that she needed some time to exercise, he responded, "You don't love me anymore." Other women described the multiple demands on their time and emphasized that their male partners did not assist with child care or household responsibilities.

Faced with responsibilities of school, work, and children, many participants expressed that there simply was not enough time for exercise. Additionally, their child care responsibilities influenced their ability to exercise. One participant said: "At the gym, sometimes they don't have child care, or I don't have money for child care." Lastly, safety was a concern of many participants. While many participants felt safe walking or exercising in their neighborhoods during the day, they excluded evening and early morning as a safe time to be outside

Weight gain was presented as the number one barrier to quitting smoking. One participant said that when she quit smoking, she "could eat everything in the refrigerator," but that when she started smoking again, she returned to her desired weight. Others described similar experiences. Additional barriers to smoking cessation included the belief that cigarettes were a mode of stress-relief and a relaxant. One participant described her motivation to smoke: "I smoke because I am stressed. I get mad at everybody, then I'll smoke."

Sources of Health Information

Participants mentioned many sources of information, among them doctors, who were mentioned with least frequency. Family and friends were the most frequently mentioned sources of health information for participants. Participants also mentioned television programs as important sources of health information. Talk shows such as "Oprah Winfrey," and "Donahue" were popular sources for the English speaking participants. Spanish speakers gave names of specific Spanish language channels they watched. News programs featuring doctors were also well-accepted. Next frequently mentioned sources of health information were magazines, especially "women's magazines" such as "Redbook," and health related magazines such as "Prevention."

Doctors were seen as sources of health information, but generally were portrayed negatively. With the exception of a few participants who had good relationships with their doctors, most expressed a distant trust at best. Interactions with doctors were reported unfavorably. "It took [my grandmother] to practically have a heart attack before they checked her," describes one woman. Others suggested that doctors "treat you different if you're on Medical than if you have a private insurance company." Participants also expressed distrust of allopathic medicines, viewing them as worthless and potentially dangerous, especially to the kidneys. Lastly, participants felt that they could not tell doctors if they were taking traditional herbs, because the doctor would "get mad" at them.

Cultural Traditions

Cultural traditions were influential on the lives of participants, and they were seen as both healthy and unhealthy. There was a general idealization of the traditional life in Mexico. Life there was described as hard, but healthy. Participants recognized the aspects of life there that they believed would protect one from heart disease. They mentioned walking instead of driving; doing physical labor for work; and eating beans and rice instead of "oils, fast foods, McDonald's" that are found readily in the United States. Participants also identified unhealthy cultural traditions such as cooking with lard and eating other high fat items, such as "chicarrón" (pork crackling).

The traditional use of medicinal herbs, passed down for generations, was also discussed. At least four separate herbs were mentioned as protective of the heart. One woman claimed she controlled her hypertension using "Jamaica" and "magnolia." Others in the group had heard of these herbs as well as a special tea for calming the nerves and, consequently, helping the heart. Herbs were connected to a long history, one participant asserting that "the Indians took them."

Community-based intervention ideas

Participants demonstrated enthusiasm about the possibility of an eventual CVD intervention in San Jose. One woman stated: "... if you ever made a community thing in the future, the way, way future, I know, that'd be really good, because I know there are none." Participants had many specific recommendations for designing a community-based CVD intervention. Different areas of intervention design were probed in each group.

With regard to general CVD intervention ideas, one group recommended that educational materials include graphics and be written in idiomatically correct Spanish, because other printed health material was written in "weird Spanish, from Spain or something." When discussing locations for interventions, church programs that provide cholesterol screening and other preventive care were positively identified. Participants recommended schools, homes of friends and relatives, and parks as other potential meeting places where interventions could occur. Children in school were included as ways to distribute information to mothers. Participants also felt there was more information about cancer than there was about CVD in doctors' offices, and recommended increased availability of CVD information in pamphlets similar to those available for breast self examination for cancer prevention.

Most specific intervention ideas were with regard to dietary factors and weight loss. Participants recommended working together in groups for weight loss to "get other people's input," and benefit from the "competition thing." Participants also emphasized their desire to lose weight was based on "feeling good" rather than "looking good." They emphasized the need for simple nutrition training without nutrition wheels, and cooking classes that avoided complicated measurements. Nutrition classes should be culturally relevant, as well. Participants requested cooking classes that teach "a healthier way to cook Mexican food." Practical concerns regarding cooking classes included the following: "We

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all don't have measuring cups. I just bought one, and it cost me $5, and that hurt me because it's expensive."

Participants had many ideas regarding community involvement. For instance, participants recommended that CVD risk information be available in grocery stores. One participant suggested warning labels "like on cigarettes and alcohol" be posted in stores near oils and lard. Participants also suggested that there be local billboards about heart disease with announcements such as "Heart disease is the number one killer of women." Participants at the adult education center were asked how they would like to be involved with changing unhealthy food choices available to them. They suggested replacing the fast food trucks that sold unhealthy food at lunch time with vendors that offered more healthy options. They also expressed interest in changing vending machine offerings.

Lastly, participants had a few ideas about incorporating exercise into their lives. Some women suggested walking instead of driving, or going dancing for exercise. Others recommended walking with children or grandchildren to parks where adults could exercise while children played.

DISCUSSION

The focus group results presented here comprise preliminary formative evaluation data to be used for planning targeted community-based CVD interventions for low SES Hispanic women. The focus groups was an appropriate qualitative research tool that obtained perceptions of participants in a permissive, non-threatening environment (64) and successfully establishing knowledge, priorities and concerns of the target audience as well as their visions of possible future interventions. Because focus groups have been found useful in eliciting opinions from people who have historically had limited power and influence (64), focus group interviews are especially appropriate for low SES Hispanic women. Focus group methodology, however, is limited by potential subjectivity and the chance of introducing bias at all stages of development (69) and analysis (60). Therefore, the data from this research should be used cautiously and not be generalized to all low SES Hispanic women. Additionally, it is important to follow this research with quantitative data gathered from a larger sample (70), such as a survey of a large number of low SES Hispanic women in the San Jose area.

Despite the appropriateness of the focus group methodology, it was lacking in certain areas. For instance, ideally, the moderator would have been a member of the target community, because a peer often facilitates more comfort in such groups (67). Due to time and financial constraints, however, this was not possible. However, for focus groups whose members are part of a specific cultural group, it is recommended that someone with appropriate sensitivity (64), but not necessarily with the same background (60) serve as the moderator. Thus, the female gender of the moderator, her mixed ethnic background, her sensitivity to Mexican-American culture, and her Spanish speaking served to amply facilitate comfort among participants.

Another potential limitation of this study is in the failure to use acculturation as a variable in audience segmentation (37). While general factors indicative of degree of acculturation were recorded, and focus groups were conducted in both English and Spanish, a specific acculturation scale was not used. For immigrant groups, level of acculturation is a variable that can be pertinent to the development of behavior change strategies (37), and should have been included in our audience segmentation. Additionally, acculturation is influential in determining CVD risk (16,47,54), and would have provided interesting information regarding health priorities and risk factor importance to participants.

Other potential pitfalls of the study are in the realm of analysis. Stewart and Shamdasini agree, "indeed, there is no one best or correct approach to the analysis of focus group data" (60). To minimize bias, three reader coded transcripts independently and one reader was chosen intentionally because he had no CVD background. This number of readers and method of analysis was recommended by several texts (60,68,69). Another potential problem with data analysis was inflation of one individual's responses. To avoid this problem, the investigator followed the strategy recommended by Buttram. That is, a theme was counted separately if different individuals mentioned it. If the same individual mentioned a theme repeatedly as part of an ongoing dialogue, it was only counted once. If however, that same individual brought up the same theme during a different time in the session, it was counted twice (68).

Additional efforts to avoid subjectivity and bias in the interpretation of the data were made. For example, the investigator used rank ordering of themes to support findings. Rank ordering of themes deliberately occurred before interpretation, to avoid introducing subjectivity to the findings. The value of rank ordering is the availability of frequency of mention of themes to support interpretations. For example, when stating that misconceptions and knowledge were mentioned with equal frequency, one could refer to

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the number of times each of these items was mentioned, instead relying on impressions or notions.

The rolling discussion guide, a tool which allows in-depth questioning of the participants, is viewed as problematic because it makes comparison across groups difficult (60). The goal of the focus group discussions, however, was not to compare groups, but rather, to obtain in-depth questioning of a representative sampling of the targeted population. This was achieved by the rolling discussion guide and the diverse focus groups.

The diverse sample of focus group participants was important because it allowed focus group findings to reflect the range of individuals who can be considered "low SES" women. The women in the groups were from very low income, low education backgrounds. Some of them, however, were seeking an education to improve their job options, whereas others were barely surviving and depending on soup kitchens for assistance. Our participants might have been an overrepresentation of the former group, since three of our groups were held through the adult education center. It is important, therefore, to follow up this focus group study with a large traditional survey of the target population to further define the issues raised by the groups.

Implications for Interventions

Previous research shows that low SES individuals face multiple barriers to behaviors that prevent CVD (21,23,24) and possess an attitude of fatalism toward chronic disease (24,32). The focus group findings support the former finding but offer a different perspective on the latter. The focus group participants showed awareness, concern and motivation regarding CVD and CVD risk factors. The participants affirmed a desire to stay healthy for their children and for the future. Any health intervention in this community

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must aim to maximize this forward-looking concept by creating program elements which validate the importance of children and the future.

Aiming a CVD intervention at children and their mothers is an important strategy to consider. Not only did the participants state that their children were their health priority, they also stated that their own health was a priority, so that they could raise their children and be healthy for them in the future. An intervention that focused on the mother-child pair could be extremely effective in reaching low SES Hispanic women. One activity that such an intervention could include is the changing milk options in school lunches, as in the Washington Heights-Inwood Healthy Heart Program (WHIHHP) (28,33). This program element was deemed a success by organizers and resulted in policy changes. If parents were involved directly in changing school lunch options, they might also pay more attention to their own diets. Also, they would be in contact with the schools on a regular basis, and through this relationship, they could receive intervention materials.

In addition to pointing out the potential for involving children in a CVD intervention, the focus groups identified the areas of CVD risk factor concern and priority. Clearly, diet, exercise and obesity were the main concerns of these women. This finding is not surprising due to the high prevalence of hypertriglyceridemia, obesity and diabetes in Hispanic women, and, specifically, the high levels of overweight documented in our sample. Because of the identification of these risk factors as priorities, a future intervention should focus on them instead of attempting to achieve reductions in all risk factors.

Multifactor community-based interventions may be too taxing on low income communities. The WHIHHP faced multiple challenges not the least of which were the lack of defined geopolitical boundaries and governmental infrastructure and competing problems of urban life such as crime, housing, jobs, crowded schools and other health problems (28). In

addition to these problems at the community level, our participants described personal challenges, such as time pressures, lack of support from boyfriends and husbands, and multiple competing life issues. Hence, low income, low educated individuals may have few personal resources available to direct toward behavioral change. Similarly, low SES communities may have few resources available to allocate toward health concerns. These issues may dictate that any future CVD intervention in a low SES community focus on a few related risk factors instead of multiple CVD risks.

The successes of single or two factor interventions such as the Stanford Nutrition Action Program (SNAP) and San Diego Family Health Project (SDFHP) could serve as models for future similar efforts. Stanford Nutrition Action Program involved similar participants to the women in our focus groups (23). During the formative evaluation phase of SNAP, some of the same themes surfaced as did in our groups. Similar findings included participants' concern about diet and overall health as well as health of their families, cost, convenience, and cultural/familial acceptance of new recipes (23). The SNAP curriculum dealt successfully with these findings by creating simple recipes that did not require reading skills and by addressing cultural beliefs and food preferences (23). One key element that SNAP lacked, however, was language acceptability (23). As mentioned by our participants, it is important that intervention materials be in Spanish. Additionally, our participants emphasized that nutrition classes should not require purchase of additional cookware such as measuring cups. Other socially sensitive considerations need to be explored and would be appropriate to include in such an intervention.

The San Diego Family Health Project attempted to change diet and exercise habits, but was more successful with the diet arm of the project (57). Certain findings and program elements of this study echo the findings of our focus groups. Namely, SDFHP emphasized involvement of the family unit with emphasis on women as facilitators of

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change and use of schools as conduits of information to families (57). These elements should be incorporated into a future intervention as should an element similar to the SDFHP's "stop-light categorization" of foods. This graphic, concrete, easy-to-read depiction of fat content in foods is especially appropriate for our low SES audience.

While a future intervention should focus on diet, exercise and weight loss, smoking must not be ignored in this community. Focus group participants, on the whole, were non-smoking, and if they did smoke, they reported smoking few cigarettes per day. Smoking was mentioned with nearly one tenth the frequency as diet, exercise and obesity combined. However, recent studies indicate that more acculturated Mexican women and adolescent Mexican women are experiencing increases in smoking prevalence (16). A large scale survey needs to be conducted to clarify the prevalence of smoking in the target population. If most of the smokers in this community are younger women, a separate anti-smoking campaign may be appropriately targeted at this population subgroup.

Another risk factor to consider is psychological stress which was mentioned more often than hypertension, high cholesterol and diabetes as a CVD risk factor. Participants frequently mentioned the stress in their lives due to multiple responsibilities, low incomes and lack of support from husbands and boyfriends. Although psychological stress is not a well established CVD risk factor, its importance in the lives of participants should not be ignored. Incorporating personal coping skills training in a CVD intervention could possibly reduce the prevalence of other risk factors. For instance, such skills could assist participants in addressing the challenges presented by fast food restaurants that attract their children with toys. Other skills training could focus on encouraging support from husbands and boyfriends. Additionally, a recent article in a well-known medical journal reported that mental stress, including feelings of tension, frustration, and sadness, during daily life could more than double the risk of myocardial ischemia in the subsequent hour

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(71). Due to this finding, the authors recommend that CVD interventions designed to reduce mental stress might have a direct impact on cardiovascular health (71).

In addition to identifying risk factor priorities, the focus group findings suggest several specific program element possibilities. Given the heavy emphasis on family and friends for health information, an intervention might consider the use of peer educators within this community. Peer educators are effective teachers while simultaneously benefiting from sharing information. Freimuth and coworker site a study in which women who share information with friends about nutrition showed improvement in their own knowledge, attitude and behavior when compared with women who did not share information (32).

One might also consider linking a future intervention with already existing programs such as church programs identified by our focus group participants as offering preventive health care in their communities. The WHIHHP reports success with such linkage (28). That is, the intervention coordinators worked with an existing school program, and with it saw three successful annual special events. Unfortunately, when the WHIHHP withdrew from the event, the existing school program was unable to sustain the event without it (28). The lesson from WHIHHP is to identify existing programs that can sustain additional intervention elements.

Other specific program elements include incorporation of cultural traditions in an intervention. Winkleby et al (72) suggest that "traditional life-style and cultural values of Hispanics may counter the negative consequences of poverty and low education." Traditional values about smoking, for instance, might be the reason for low rates of smoking among less acculturated Hispanic women (1). Focus group participants themselves identified positive aspects of traditional Mexican culture. These aspects as well

as elements of their own, less traditional Mexican culture, need to be emphasized in a future intervention.

Summary and Conclusions

When employing the community empowerment theory, it is important to avoid the ethical problem described by Morgan as "the risk associated with first empowering people to express their views and then ignoring these views" (64). It is therefore critical that this research be followed by effective interventions that involve low SES Hispanic women. This qualitative investigation was an essential first step in planning a community-based intervention targeting low SES Hispanic women, especially since few CVD interventions have been developed specifically for any low SES groups. The information garnered from our focus groups must now be followed by a large-scale survey to assess whether the findings of the group are consistent throughout the target population. Assuming that our findings are truly representative of the target population, the following recommendations can be made.

Our findings suggest the target community faces multiple barriers to individual and community change, yet motivation and concern about CVD and CVD risk factors. A future intervention should concentrate on the risk factors identified by participants: poor diet, lack of physical activity and obesity. Additionally, psychological stress reduction techniques should be incorporated into a future intervention. Future CVD interventions in this population should also emphasize the positive aspects of Hispanic culture, be culturally and socially sensitive, and target appropriate literacy levels. Finally, members of the community should be actively involved in the design, implementation, and interpretation of interventions since community involvement goes hand in hand with community empowerment and is necessary in any successful intervention.

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Table 1 Sociodemographic and Risk Factor Profile of Participants

Sociodemograghic Factors	% of Total Participants (N = 32)
Age (years)	
20-50	90.6
>50	9.4
Annual Household Income	
< $10,000	70.9
≥ $10,000	29.1
Education (years)	
≤12	87.6
13-15	12.5
Occupation	
Clerical/Sales	31.0
Blue collar/unskilled	27.6
Homemaker	24.1
Other	17.2
Language Spoken at Home	
English only	18.8
English and Spanish	43.8
Spanish only	37.5
Country of Birth	
USA	50.0
Mexico	40.6
Other Latin American Countries	9.4
Place of Residence	
Years in USA for foreign born	11.4
Years in San Jose	15.9
Marital Status	
Married or Member of Unmarried Couple	45.2
Separated or divorced or Widowed	41.9
Single/Never Married	16.1
Number of Children	
0	6.3
1-5	78.1
>5	15.6
CVD Risk Factors	
Smoking	
Current smoker	28.1
Body Mass Index [a]	
Overweight [b]	14.8
Severe Overweight [b]	33.3
Cholesterol	
Ever measured	25.8
Value recalled	6.5
Blood Pressure	
Ever medically diagnosed hypertensive	25.8
Currently hypertensive	9.7
Taking antihypertensive medication	3.2

[a] BMI = (weight in kilograms/height in meters^2)

[b] Overweight and severe overweight are defined by the second National Health and Nutrition Examination Survey (1976 - 1980 NHANES II). The cutpoints for overweight and severe overweight are 27.3% and 31.2% respectively.

Table 2   Rank Ordering of Focus Group Risk Factors

Risk Factor	Vocational Training #1 n = 8	Vocational Training #2 n = 7	Vocational Training #3 n = 6	Birthing Class n = 6	Soup Kitchen n = 5	Total n = 32
Poor Diet/Nutrition	112	134	211	63	23	543
Physical Inactivity	37	24	42	10	14	127
Obesity	13	19	25	16	13	86
Smoking	19	11	29	13	6	78
Psychological Stress [a]	6	23	0	2	13	44
High Cholesterol	11	11	20	0	0	42
Hypertension	2	18	1	11	2	34
Diabetes	0	1	8	0	0	9
Heredity	0	4	0	3	0	7

[a] Perceived as an established CVD risk factor, yet unproven in the scientific literature.

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Table 3　Summary of Focus Group Themes

Concern about cardiovascular disease

•Participants correctly associated CVD with heart attacks, stroke, angina, high blood pressure, and high cholesterol.

•Participants feared CVD due to experience with family members afflicted with it.

•CVD was described as a health priority.

•Participants desired heart disease information.

•Children and "the future" were considered motivations to stay healthy.

•Mothers wanted to learn about risk factor reduction for their own health and also for teaching to their children.

Misconceptions about cardiovascular disease and risk factors

•CVD was seen as an acute disease, not a preventable, chronic process.

•Dietary factors, especially fat excess, were recognized as important, yet not well understood, risks.

•Obesity was not viewed as clearly connected with CVD.

•Psychological stress was mentioned more often than hypertension as a CVD risk factor.

•Participants applied unproven risk reduction strategies to CVD prevention.

Barriers to a healthy diet

•Barriers to a good diet included lack of time, money, and convenience; unhealthy traditions; and reluctance of family members to support dietary modification.

•Despite knowing that fast food is unhealthy, many participants described it as alluring because it tasted good and was convenient, ubiquitous, and predictable.

•Fast food challenged mothers by attracting children with toys and play areas.

•Nutritious, low-fat cooking was considered inconvenient, complicated and costly.

•Low fat and healthful items were considered separate from regularly bought groceries.

•Unhealthy behaviors were passed through generations and maintained due to a sense of tradition and comfort.

Barriers to exercise and smoking cessation

•Multiple barriers to exercise and smoking cessation surfaced despite positive associations with these preventive health measures.

•Patients felt discouraged about exercise because they were so easily tired by it.

•Husbands and boyfriends were described as unsupportive of exercise.

•Lack of time, child care and safety were the main causes of limited exercise opportunities.

•Weight gain and not having smoking to relieve stress were the main barriers to smoking cessation.

Sources of Health Information

•Family and friends were the most frequently mentioned sources of information.

•Talk shows and magazines were also important sources of information.

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•Doctors were seen as sources of information, but generally were portrayed negatively.

Cultural Traditions

•There was a general idealization of the traditional life in Mexico.

•Participants also identified unhealthy cultural traditions.

•The traditional use of medicinal herbs, passed down for generations, was also discussed.

Community-based intervention ideas

•Participant demonstrated enthusiasm about the possibility of an eventual CVD intervention in their community.

•Intervention materials should be written in idiomatically correct Spanish.

•Churches, schools, parks and homes of friends and relatives are potential locations for intervention programs.

•Children in school were included as ways to distribute information to mothers.

•There is more information about cancer than there was about CVD in doctors' offices, and more CVD information should be available.

•Working in groups is a favorable way to change behavior, such as losing weight.

•Motivations to lose weight were based on feeling good rather than looking good.

•Nutrition training should be simple and not include nutrition wheels or recipes calling for complicated measurements.

•Warning labels, similar to those found on cigarettes and alcohol, should be placed on cans of oil and lard at grocery stores.

•Local billboards should have announcement such as "heart disease is the number one killer of women."

•Fast food trucks and vending machines at school should be replaced by more healthy offerings.