

**Nutrition, Health, and Food Security Practices, Concerns, and Perceived Barriers of  
Latino Farm/ Industry Workers in Virginia**

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**HUMAN NUTRITION, FOODS, AND EXERCISE**

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**ABSTRACT**

Farm and industry workers are a growing population in the United States (U.S.) and are critical to the success of the agriculture industry. In 1993, the Migrant Legal Services estimated that there were 42,000 migrant and seasonal farm workers in the state of Virginia (Wilson, 1998). These workers are essential in the state's production of fruits, vegetable crops, and poultry. The 1995 National Agricultural Worker Survey (NAWS) indicated that 80% of farm workers in the U.S. are of Latino origin. Data from the Hispanic Health and Nutrition Examination Survey (HHANES) reveals that Hispanics in the U.S. are at a greater risk for developing serious health problems, such as tuberculosis, cancer, diabetes mellitus, and hypertension, than the general population (HHANES, 1990). Latino farm and industry workers are reported to be at a high risk of developing nutrition-related health problems as a result of their low socioeconomic status and migratory lifestyles (Loria et al., 1995). Farm and industry workers also are at an increased risk of food insecurity due to low incomes, low literacy, poor health, migratory lifestyles, and lack of transportation (Shotland, 1989). The evidence from the literature suggest that long work hours, low wages, inconsistent work opportunities, and linguistic and cultural barriers may make it difficult for Latino farm/industry workers to meet their nutritional needs (Kowalski et al., 1999). About 30% to 40% of the Latino population fails to meet the minimum nutrient standards of the World Health Organization primarily due to poverty (Kittler and Suchar, 1998). A study was conducted to assess the nutrition, health, and food security problems, concerns, and perceived barriers of Latino farm/industry workers in Virginia because Virginia Cooperative Extension is concerned about the nutrition and health status of this important agricultural workforce. Triangulation techniques employing qualitative (focus group discussions and participatory activities) and quantitative (questionnaires) methodologies were utilized. Six focus group sessions were conducted with a total of 51 Latino farm/industry workers. Lack of money, time, transportation, and linguistic barriers were predominant themes that emerged from the focus group discussions related to health and nutrition concerns and barriers. Farm workers reported osteoporosis, anemia, urinary tract infections, and HIV/AIDS as top health concerns. Industry workers indicated gastritis, arthritis, and cancer as their top health concerns. Apples, bananas, oranges, and watermelon were the most commonly consumed fruits. Beans, tomatoes/onions, potatoes, and chili peppers were the most commonly consumed vegetables. Participants indicated that they preferred learning about health and nutrition from non-interactive sources, such as cassettes, radio, brochures, and television, due to lack of time and their migratory lifestyles. The Cornell/Radimer Food Security Questionnaire was administered to assess hunger and food insecurity. Approximately 98% of the 49 Latino farm and industry workers surveyed suffer from food insecurity. Females were more food insecure when compared to males. Data obtained from this study will be used to develop useful and culturally appropriate nutrition education strategies to improve dietary habits and overall health and nutrition status of Latino farm/industry workers and their families.

## **Dedication**

I dedicate this thesis to my sister, Janan. You have always been my motivation, inspiration, and guardian angel. I love and miss you!

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## **CHAPTER 1: INTRODUCTION**

### Rationale and Purpose of the Study

The agriculture industry contributes significantly to the economy of the United State (U.S.). The United States Department of Agriculture (USDA) estimated the economic value of fruits, nuts, vegetables, and other horticultural crops to be 98 billion dollars in 1999 (USDA,1999). In Virginia, fresh fruits, vegetables, Christmas trees, poultry, and tobacco are among the agriculture products that significantly contribute to the state's economy. Approximately 93,100 acres of fruits, vegetables, and tobacco are harvested in Virginia each year by seasonal and migrant farm workers. This contributes between \$460 and \$630 million annually to the gross output in the state (Trupo. Alwang, and Lamie, 1998). Virginia is among the nations top poultry producers. Nationally, Virginia ranks 5<sup>th</sup> in turkey production, 9<sup>th</sup> in broiler production, and 24<sup>th</sup> in egg production. The poultry industry produces 220 million pounds each year with a contribution of approximately \$825 million annually to the states agricultural output (Virginia Agricultural Statistics Service, 1997).

The 1995 National Agricultural Worker Survey (NAWS) indicated that approximately five million seasonal and migrant farm workers are hired to work on the 800,000 farms in the U.S. Migrant farm workers make up 42% of the total agricultural workforce in the United States and approximately 54% of the labor force participating in short-term agricultural jobs (Trupo et al., 1998). Migrant farm workers are essential in the production of fruits, vegetable crops, and poultry. Over 85% of the fruits and vegetables produced in the U.S. are hand harvested or cultivated. Technology cannot

adequately replace the manual tasks of the farm worker who visually examines the fruit or vegetable for size, color, and ripeness (Trupo et al., 1998).

Seasonal and migrant farm workers are a growing population group in the U.S. and are critical to the success of the agriculture industry. There are many definitions of migrant and seasonal farm workers. The U.S. Department of Agriculture and Public Health Service defines migrant and seasonal workers as those who earn more than 50% of their earned incomes harvesting or performing agricultural labor, and/or spend the night away from home (or cross a county line) in order to perform agricultural work. While migrant and seasonal farm workers often perform the same tasks, seasonal farm workers live at home year-round whereas migrant farm workers move around the country in search of farm work. Most seasonal farm workers use their farm labor income to supplement income from other work throughout the year, while migrants depend on farm labor income for most of their yearly income (Slesinger and Ofstead, 1993).

Approximately 80% of seasonal and migrant farm workers in the U.S. are of Hispanic or Latino origin (NAWS, 1999). Latinos consist of many diverse ethnic subgroups, including Mexican-Americans, Cuban-Americans, and Puerto Ricans. Latino farm workers are reported to be at a high risk for developing nutrition-related health problems as a result of their low socioeconomic status and migratory lifestyles (Runyan and Morgan, 1987). Data from the Hispanic Health and Nutrition Examination Survey (HHANES) reveals that Latinos in the U.S. are at a greater risk for developing serious health problems, such as tuberculosis, cancer, diabetes mellitus, and hypertension, than the general population (HHANES, 1990). The risk of developing these problems largely depends on the individuals ethnic group.

In 1993 Migrant Legal Services estimated that there were 42,000 migrant farm workers (this includes their spouses and dependents) in the state of Virginia (Stallsmith, 1996). The majority of these migrants work in Virginia during the fall, spring, and summer months, but return to their permanent homes in Florida, Texas, or Mexico for the winter months. This is part of the migrant stream on the east coast. Other farm workers remain in Virginia during the fall and winter months (until December), then return to their homes in Mexico (Trupo et al., 1998).

Many of the individuals that come to Virginia as migrant workers settle down in the state. These individuals may advance to working in the agriculture industries. Many of the Latinos in industry migrated to Virginia to work as farm workers, but have now settled down working in industry. Rockingham, Page, Accomack, and Shenandoah counties are the top poultry producing areas in Virginia (Virginia Agricultural Statistics Service, 1997).

According to the U.S. Department of Labor, 50% of migrant farm labor workers perform jobs lasting less than 6 weeks and usually during peak harvest seasons (U.S. Department of Labor, 1994). As a result, farm workers are constantly moving around to search for various jobs to achieve acceptable incomes.

Cooperative Extension is an educational program administered and funded jointly through the USDA and land grant universities to improve the lives of families. This nationwide network seeks to meet the country's needs for research, knowledge, and educational programming by providing individuals with research based information on how to make informed decisions. Virginia Cooperative Extension (VCE) is an educational service that has provided over one million Virginians, including families and

farmers, with educational programs for more than 80 years (VCE, 1998). Virginia Cooperative Extension's mission is to enable people to improve their lives through an educational process that focuses on their needs. Past Extension programs have tended to be directed at the individual level, which includes one-on-one counseling, group classes, and distribution of printed self-help materials (Contento, 1995). Cooperative Extension has seen positive results from providing the community with short, concise, educational materials (Breckon, Harvey, and Lancaster, 1994).

The health and wellness of agriculture workers is significantly related to workforce productivity. Limited research studies have been conducted in an attempt to determine the health and nutrition problems and concerns afflicting Latino farm/industry workers. Despite their importance to the everyday lives of all Americans, farm/industry workers are usually invisible outside of the farms, camps, and industries in which they work and live. Farm/industry workers are at an increased risk for developing many diseases due to poor health and dietary habits. However, in Virginia, research has yet to be conducted regarding Latino farm/industry workers perceptions about health and nutrition. Thirty-seven Community and Migrant Health Centers exist in Virginia; yet, the majority of the farm/industry workers do not visit these health facilities (Nelson, 1998).

In order to help this growing population group, there is a need for nutrition education intervention. Also, there is a dearth of information on the nutrition knowledge and dietary practices of Latino farm/industry workers in Virginia. Due to the large economic impact that the Latino workforce has on the agricultural sector, Extension and other agencies are concerned about the nutrition and health status of this population group. Thus, it is obvious that there is a need for nutrition educators to research and plan

intervention strategies that would address the health and nutrition problems of Latino seasonal, migrant, and industry workers in Virginia. This study investigated the most effective way to provide this population group with educational programs in order to improve their health and quality of life by assessing their nutrition, health, and food security concerns.

#### Purpose of the Study

The purpose of this study was to assess nutrition, health, and food security practices, concerns, and perceived barriers of Latino farm/industry workers in Virginia by utilizing qualitative and quantitative methods. This information will be used to develop useful and culturally appropriate nutrition education strategies to improve dietary habits and overall health and nutrition status of Latino farm/industry workers and their families. In the future, the effectiveness of the resulting educational materials developed from the results of this study will be further evaluated.

## Research Questions

1. What are the major sociodemographic characteristics of Latino farm/industry workers that may affect their health, nutrition, food security, and preferences for learning?
2. What do Latino farm/industry workers in Virginia perceive as their major health and nutrition concerns, barriers, and solutions?
3. What do Latino farm/industry workers in Virginia perceive as benefits and barriers to consuming fruits and vegetables?
4. To what extent are Latino farm/industry workers concerned about hunger and food insecurity?
5. What type of educational strategies do Latino farm/industry workers perceive as the most useful for learning about nutrition?

## Definitions

Migrant Farm Workers: Individuals whose principal employment is in agriculture on a seasonal basis (as opposed to year-round employment) and who established a temporary abode for the purposes of such employment. The dependent family members may or may not move with the worker or establish a temporary place of abode.

Seasonal Farm Workers: Individuals whose principal employment is in agriculture on a seasonal basis and who live in the same place year round. The family members of seasonal farm workers typically live with the worker.

Farm Work: Includes all crop, livestock, poultry production, and on-farm post-harvest handling jobs, such as grading and packing

Industry Worker: Members of the working class defined as holding industrial or factory type positions with limited opportunity for advancement, generally limited incomes, and limited educational backgrounds

## **CHAPTER II: REVIEW OF THE LITERATURE**

Research regarding the nutritional status of Latino farm/industry workers in the United States is limited. However, some research studies have examined the general health status of seasonal and migrant farm workers. The literature review focuses on the socioeconomic characteristics of Latino farm/industry workers, the overall health status of Latino farm/industry workers, the nutrition status of Latino farm/industry workers, dietary patterns of the Latino population, food insecurity among Latino farm/industry workers, and some of the perceived health care barriers faced by this population group. Finally, literature related to focus group and participatory rapid appraisal methodologies is presented.

### Characteristics of Latino Farm/Industry Workers

The U.S. Department of Labor conducted the National Agricultural Workers Survey (NAWS) to examine the basic demographics, education, family size and household composition, wages, and working conditions of the nation's migrant farm workers in 1995 (NAWS, 1995). Typically, this population consists of young adults; two-thirds of migrant farm workers were under the age of 35 and over one-fourth under the age of 21. The number of farm workers who were younger than 17 years of age doubled from 4% in 1989 to 8% in 1995. About 80% of the farm worker population is male. While the number of male workers has risen, the participation of women in farm work has recently declined from 25% to 19% (NAWS, 1995).

The migrant farm worker population consists of three U.S. born groups and three foreign-born groups (NAWS, 1995). The three U.S. born groups include (a) farm workers who are white and non-Hispanic, (b) farm workers who identify themselves as

Hispanic (most of these are Mexican-American), and (c) all other workers who were born in the U.S. The three foreign born groups include (a) workers born in Mexico, (b) workers born in other Latin American countries, and (c) workers born in other countries, including the Philippines, Southeast Asia, Haiti, and the Caribbean. Individuals of Latino origin are by far the most prominent ethnic group. The majority of farm workers, approximately 70%, are foreign born. While there are other ethnic groups, such as African American and Asian American, in the migrant farm worker population, it is a very small percentage of the total, less than 10% (NAWS, 1995).

The NAWS survey also reported on the family composition and living arrangements of migrant farm workers. Approximately three-fifths of farm workers ages 18 years or older were married; however, two in five of these were living away from their spouses and children while doing farm work. Considerable cross-marriages of U.S. born Latinos to Mexicans are evident within the farm workers' communities. Half of the adult farm workers have children under age 18 and 43% have children ages 14 and under. It was reported that about 20% of farm workers live in housing provided by their employer, and 25% said that they lived on the farm in which they worked. Often times, migrant farm workers must share small housing quarters with many people, including unrelated individuals.

Unsanitary living conditions are a major concern to migrant farm workers and farmer advocates. The houses of migrant farm workers are often dilapidated, infested with insects and rodents, and lack water or have contaminated water (NAWS, 1995). In a study conducted by Perilla, Wilson, Wold, and Spencer (1998), focus group participants reported that their living quarters were in extreme disrepair, lacked doors, screens, and

windowpanes. Also, many trailers had holes in the floor through which the ground could be seen. Due to these conditions, pests such as roaches, snakes, rats, and scorpions, are commonly found inside the trailers and posed serious health problems. Migrant farm workers perceived these poor living conditions as threats to their children. One focus group participant reported that she feared to put her baby down inside trailers for fear of pests; toddlers were at risk when trying to explore their surroundings, and children were unable to play outside the trailers due to hazards in the front yards (Perilla et al., 1998).

Harsh working conditions contribute to many of the health problems that affect farm workers. Running water and working toilets are available to farm workers sporadically since services and facilities often break down and require a long time to fix (Arbab, 1986). Many farms do not have toilets available in the fields. Of 70 farm workers interviewed, 66% reported that the farm that they worked on did not provide field toilet facilities and only one farm provided in-field hand washing facilities (Arbab, 1986). Since many migrants are paid according to the amount of produce they harvest, often workers do not take breaks required to walk long distances to a bathroom. The workers, especially the women, will either reduce their water intake or wait 12 to 14 hours before using a bathroom. This often results in dehydration and kidney and bladder problems (Perilla et al., 1998). Arbab and Weidner (1986) indicated that the lack of access to water and sanitation facilities in the work fields resulted in a significant number of infectious diseases among migrant farm workers. The rate of diarrhea per 1000 clinic visits was almost 20 times higher in the migrant population, nausea and vomiting was 13 times higher, abdominal or intestinal pain was seven times higher, gastroenteritis was 26 times higher, and bloody stools were nine times higher (Arbab and Weidner, 1986).

The Department of Labor (1988) claimed that agriculture was among one of the three industries that is most hazardous to worker's health. The dangers in agriculture lie not only in dangerous machinery, but also in various contaminants and pesticides used in the production of agricultural products. A study conducted in Washington State reported that 47% of farm workers had worked in a field within two days of its being treated with pesticides, and 43 % had been exposed from spraying accidents or drift (Zahm and Blair, 1993). Chronic exposure to pesticides has been associated with the prevalence of headaches and rashes, and also increases the risk of developing chronic diseases, such as cancer (Slesinger, 1992).

As a population group, migrant farm workers have one of the lowest incomes of any occupational category. Over three-fifths (61%) live below the poverty line, which is \$8,350 per individual (Federal Register, 2000). This percentage increased from the 1990 NAWS where only half of the farm workers reported living in poverty. Three-fourths earned less than \$10,000 annually. Fewer females (54%) live in poverty than males (63%); this is due to women living in households with more than one wage earner whereas more men live apart from their family. Very few farm workers owned any type of assets. Workers born in the U.S. were more likely to own houses than foreign-born individuals (28% versus 11%) and automobiles (63% versus 43%), respectively (NAWS, 1995).

#### Overall Health Status of Farm/Industry Workers

When examining the nutrition status of a population, it is necessary to look at the health status of that group. Farm/industry workers in the U.S. face many hardships, including physically demanding labor, crowded and unsanitary housing conditions, and

chronic poverty (Abrams and Meister, 1992; Wilk, 1988). These extremely strenuous and unsanitary work and living conditions exacerbate their health situations. In 1990, the National Family Resource Program indicated that the overall life expectancy of migrant farm workers was 49 years rather than the national life expectancy rate of 75.

Slesinger and Ofstead (1993) conducted a study to determine how migrant farm workers perceived their health status in comparison to the general adult U.S. population. Wisconsin migrant farm workers were asked to rate their health as excellent, good, fair, or poor. About 33.6% of migrant workers surveyed stated that they felt their health was “fair” or “poor” compared with 9.4% of the U.S. population. In contrast, 40.2% of the U.S. population said that their health was “excellent,” whereas only 13.3% of migrant farm workers felt they were in good health (Slesinger and Ofstead, 1993).

Perez, Garza, and Pinton (1998) conducted a research study to identify health problems perceived as having high priority by Northern California migrant farm laborers. The investigators surveyed 44 males ranging from ages 17 to 84. Approximately 91% reported being of Latino descent, 41% were married, and 88.6% came from Mexico. Thirty-eight percent of the subjects reported blurred vision as a health problem, followed by headache (22.7%), low back pain (20.5%), ear infection (20.5%), chest pain (18.2%), and dental disease (18.2%) (Perez et al., 1998). The report of chest pain was consistent with the high prevalence of cardiovascular disease and hypertension in migrant farm workers as reported by various researchers (Slesinger, 1992; Dever, 1991). The rate of parasitic infection in migrant farm workers is almost 50 times more prevalent than that of the total U.S. population (National Family Resource Program, Inc., 1990).

Exposure to sexually transmitted diseases (STDs), especially human immunodeficiency virus (HIV), is a concern of increasing importance among migrant farm workers. In 1992, a screening program of 310 Florida farm workers showed a 5% prevalence of positive HIV-1 serologic tests (Villarino, Geiter, Schulte, and Castro, 1994). In a study conducted by Perilla et al. (1998), migrant farm worker in Georgia expressed their concerns and fears regarding the increasing prevalence of STDs, HIV, and AIDS in their community. Female participants felt that there was a lack of education regarding STDs and indicated the need for men and young people to be educated in this area (Perilla et al., 1998). Russel, Alexander, and Corbo (2000) recognized the important of utilizing participatory tools among Latino women to determine high-risk sexual behaviors and concerns related to HIV among this population group.

Research has indicated that tuberculosis (TB) is a serious health problem among migrant farm workers, especially those working in eastern states (Ciesielski, Seed, Esposito, and Hunter, 1991). TB occurs with much greater frequency among minorities and the poor. Migrant farm workers often originate from Mexico, Central America, and Haiti, where the annual case rates of TB are three to 60 times that of the U.S. A study that examined the rate of TB in Florida migrant farm workers revealed that 44% of the 310 subjects tested positive for the disease (CDC, 1992). Wingo, Borgstrom, and Miller (1986) also found high rates of TB in migrant farm workers in Virginia. The prevalence of infection was 2% for the 204 children tested, 49% for the 517 workers age 15-34, and 59% for the 408 migrant farm workers age 35 years or older that were tested (Wingo et al., 1986). Several cross-sectional studies have documented the prevalence of TB infection among migrant farm workers using purified-protein derivative skin tests. These

studies indicated a prevalence of reactivity of 16% in California, 23% in North Carolina, and 28% in Indiana (Karr, Demers, and Costa, 1992; Ciesielski et al., 1991; Garcia, Dresser, and Zerr, 1996). Such a high prevalence of infection suggests the possibility that transmission of TB may be associated with the crowded living conditions of migrant farm workers who often have low immunological status and malnutrition.

Agricultural work poses many well-recognized risk factors for musculoskeletal disorders, including repetitive lifting, bending, and stooping; working with arms above shoulder level; and repetitive movements of the hands and wrists in hand-intensive field work (Mobed, Gold, and Schenker, 1992). Studies of the general health of agricultural workers have found that back complaints and other musculoskeletal pain are among the most common health problems reported by farm and industry workers (Mines and Kearney, 1982; Mobed et al., 1992; Wilk, 1988). In 1996, the Bureau of Labor Statistics indicated that 34% of lost time injuries were sprains and 24% were back injuries. A study of 200 disabled adult agriculture workers found that the top two causes of disability were back and other musculoskeletal conditions, 22.5% and 12.7% respectively (Strong and Maralani, 1998).

Research studies have documented that dental carries are a health concern for Latino farm/industry workers. While more than 98% of the U.S. population 15 years of age and older have seen a dentist at least once (National Center for Health Statistics, 1989), only 75% of Wisconsin migrant farm workers reported ever seeking dental care. About one-half of the migrant farm workers surveyed needed dental care at the time of the interview, but only 7% of those needing care were actually seeing a dentist. The most common reasons given for not seeking care include lack of money and having too much

work to do. Fifteen percent of participants were fearful or felt uncomfortable about dental care (Slesinger and Ofstead, 1993).

Due to the chronic exposure of pesticides and exposure to dirt and mud, farm workers have the highest incidence of skin disorders of all industrial classifications (Bureau of Labor Statistics, 1996). A study by the Migrant Clinicians Network of 6,969 patients encountered in four clinics located along the Midwest migrant stream found that dermatitis was the primary cause of clinic visits for males age 20-29, and was second only to hypertension related visits for males age 30-44 (Dever, 1991).

Within the seasonal and migrant farm communities, pregnant women are considered to be a group at high risk for illness. The Centers for Disease Control (CDC) analyzed data from 1989-1993 in an attempt to characterize pregnancy related behaviors of migrant farm workers. Prenatal care, weight gain during pregnancy, and birth outcomes among migrant farm workers enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children in four states was examined. The data revealed that a greater proportion of migrant women (52%) gained less weight than the Institute of Medicine's recommendations compared to non-migrant women (32%). Pregnant migrant farm workers are expending more energy working in the field and may have decreased food intake. The mean weight gain for migrants was lower (22.9 pounds) than non-migrant women (29.7 pounds). It has been found that the infant mortality rate among migrants is 25% greater than the national average (National Family Resource Program, Inc., 1990). Several barriers, including poor access to services, frequent relocations, occupational exposure to agricultural chemicals, lack of continuity of care, language and cultural barriers, and lack of transportation, were reported by migrant

women as to reasons why they did not receive prenatal care services during their first trimester (CDC, 1997).

The children of seasonal and migrant farm workers have a higher than average prevalence of hospitalizations and chronic illnesses compared to other children in the U.S. (Kupersmidt and Martin, 1997). As a result, the infant mortality rate among migrants is 25% greater than the national average (National Family Resource Program, Inc, 1990). Many migrant farm worker children suffer from malnutrition, which can have a detrimental effect on growth and proper development (National Family Resource Center, Inc., 1990). As a result, these children suffer disproportionately from low weight-for-age and linear growth retardation (stunting). The dietary intake for migrant children was found to be below the standard recommendations for calories, protein, and iron (Cardenas, Gibbs, and Young, 1976). Ratcliff, Lee, and Lutz (1989) also noted that iron deficiency was common in children of Utah migrant farm workers.

It is estimated that only about 60% of migrant children are adequately immunized for childhood illnesses (Gergen and Russell, 1988). Lee, McDermott, and Elliot (1990) examined children of migrant farm workers in South Carolina to determine the level of completed immunizations by the age of 10 years. A complete series of immunizations consisted of four doses of diphtheria, pertussis, and tetanus vaccine (DPT); three or more doses of oral poliomyelitis vaccine (OPV); and one dose of mumps, measles, and rubella vaccine (MMR). The data revealed that only 10% of migrant children completed the immunization series by age 2 and only 35% by age 10. In addition, this study concluded that the migrant children who are getting immunized are receiving their initial immunizations much later in age than the general population. About 64% of the children

in the general population received their first DPT by age 2 months and 96% by age 11 months. The mean age of migrant children in South Carolina to receive their first DPT was 12.4 months, and only 47% had received the immunization by 11 months. Delays in immunization also were noted for the OPV and MMR vaccines (Lee et al., 1990).

Children of migrant farm workers have the additional stress of living a migratory lifestyle. These children are constantly moving around and never stay in one area long enough to become part of a community or school. Frequently, they are ostracized and labeled by people in the stable communities as undesirable and inadequate playmates (Kupersmidt and Martin, 1997). Henggeler and Tavormina (1978) reported that Spanish-speaking children of migrant farm workers had lower IQ's, lower academic achievement test scores, poorer self-concept, and higher external locus of control than do children who are relatively comparable in family income, but do not migrate. The study reported that these children have a high incidence of mental health problems (Henggeler and Tavomina, 1978). Kupersmidt and Martin (1997) examined 110 children of migrant or seasonal farm workers in North Carolina to assess the prevalence of psychiatric disorders. Data from this study indicated that 66% of the children met the criteria for one or more of the psychiatric disorders examined. Anxiety disorder was the most common diagnosis; attention deficit hyperactivity disorder (ADHA), affective disorders, and disruptive behavior disorders were other common mental health problems observed (Kupersmidt and Martin, 1997). The stressors of chronic poverty, unsanitary living conditions, migratory lifestyle, poor health status, parents' uncertain employment, and inadequate medical and social services all contribute to the high incidence of mental health problems in these children.

## Health Care and Barriers

The U.S. government made an attempt to improve the health and well-being of migrant and seasonal farm workers by passing the Migrant Health Act of 1962. Under this act, migrant health centers were formed to provide a means of meeting the primary health needs of the population by providing medical services, outreach education, and using the farm workers themselves as health aids. However, it is estimated that less than 20% of farm workers seek care at the migrant clinics established by the Migrant Health Act of 1962. A majority of farm workers come from impoverished areas, with little or no exposure to the concepts of disease prevention and health promotion, and their use of health services are only in extreme cases of illness (Perilla et al., 1998).

Numerous barriers are encountered by migrant farm workers that keep them from using health care services provided by the migrant clinics. Perez et al. (1998) interviewed migrant farm workers in northern California in an attempt to identify priority health problems and barriers to the use of health services among these workers. Most of the interviewed participants (48.3%) expressed a lack of knowledge that they had these services available to them. Those workers who knew about the migrant health clinics expressed a lack of general information about the availability of services, the hours of operations, and the eligibility for services (Perilla et al., 1998). Forty-three percent of the sample indicated that cost was a major barrier when using any type of health services. The loss of wages due to attendance of health care facilities was reported by 35% as a major barrier. Inconvenience of the hours of operation of the health care centers was reported by 33.3% as a barrier. Also, 20.8% of the sample population indicated that the lack of Spanish-speaking staff was one reason that they did not utilize health care

services. In addition, many farm workers are illegal immigrants and fear interacting with official channels. They do not visit health care facilities because they are afraid of being identified as an illegal immigrant and deported out of the country. One of the primary concerns expressed was the lack of dental and eye care services, despite the direct impact of working conditions on the eyes of farm workers (Perilla et al., 1998).

#### Nutrition Status of Latino Farm/Industry Workers

Although research on the dietary practices and nutrition knowledge and perceptions of Latino farm/industry workers in the U.S. is limited, several studies have examined the diet and nutritional status of the general Latino population. According to data from the 1982-1984 Hispanic Health and Nutrition Examination Survey (HHANES), the percentage of overweight is higher among Mexican American males (39.5%) than male non-Latino whites (32.1%) and male non-Latino blacks (31.5%). Overweight is more prominent in Mexican American females (47.9%) than in non-Latino whites females (32.4%), but lower than in non-Latino black females (49.5%). This data indicates that over half of Mexican American women in the U.S. are overweight.

In contrast to the problem of overweight is the prevalence of under nutrition among the U.S. Latino population. About 30% to 40% of the Latino population fails to meet the minimum nutrient standards of the World Health Organization primarily due to poverty. HHANES reported that deficiencies of calcium and riboflavin are common due to low consumption of dairy products. Although the traditional Mexican diet provides adequate sources of vitamins A and C, thiamin, niacin, B6, folate, phosphorus, zinc, and fiber, low intakes of these nutrients are reported by Mexican Americans. This difference is primarily due to inadequate income or lack of traditional ingredients in the U.S. (Kittler

and Sucher, 1998). Also, fruit and vegetable consumption is low among this population group. Data from HHANES indicated that less than 25% of Mexican American children and 50% of adolescence consumed fruits and vegetables less than once a day (HHANES, 1982-1984).

As early as the 1970's, researchers have been interested in gaining a better understanding of the food practices of migrant agriculture families. Bruhn and Pangborn (1971) conducted a study using an open-ended questionnaire that consisted of 100 questions. This questionnaire was given to 65 migrant families of Mexican descent and 26 migrant families of Anglo heritage. The low-income levels evident in both groups contributed to the similarity in dietary habits, but differences were evident in dietary meal patterns. Due to poverty in both groups, the high consumption of inexpensive foods such as beans, white bread, and tortillas was evident. More (46%) Mexican families tended to eat a large breakfast compared with only 15% of the Anglos. This is consistent with the traditional meal pattern in Mexico. A large breakfast consisting of eggs, fried beans, bread or tortillas, cereal, and a beverage is common among Mexican Americans. A beverage only breakfast pattern was consumed by 42% of Anglo migrant families. About 83% of the Anglo migrant families consumed a sandwich and a beverage for lunch, while the majority of Mexican families had a hot meal typically consisting of beans and/or tortillas, meat or stew, and a beverage. Dinner was the largest meal of the day for both groups. Dinner as the largest meal of the day is not traditional in Mexican culture and may occur due to work conditions. However, while a vegetable or salad was added to dinner by 65% of the Anglo migrant farm workers, only 23% of Mexican families added one (Bruhn and Pangborn, 1971).

A study of 150 migrant farm workers in northwest Michigan was conducted to determine the occurrence of diseases related to inadequate nutritional intake and food consumption practices in this target population (Kowalski et al., 1999). Blood samples were collected and analyzed, and a 24-hour dietary recall using three dimensional food models to identify portion sizes was administered to each subject. It was found that the mean energy intake was 1,398 kcal for women and 1,894 kcal for men. About 60% of

the migrant farm workers were diagnosed as obese, more than 33% had diabetes, and more than 22% had hypertension (Kowalski et al., 1999).

Silva-Barbeau (1997) conducted focus groups to obtain information on the nutrition education topic of most concern to minority population groups in Virginia. The target population for this study was non-student low income Women, Infants, and Children (WIC) clients from three major minority groups, including Latinos (primarily Mexican Americans). The focus group sessions questioned Latinos' perceptions of their primary health concerns. When asked about the relationship between nutrition and disease, the subjects did not mention any nutrition-related disease, but rather indicated that nutrition prevented diseases (Silva-Barbeau, 1997).

Type II diabetes mellitus is a serious health problem that affects Hispanic farm/industry workers. More than one million Hispanics, nearly 1 in 10 adults, suffer from diabetes (Bonilla, 1994). An examination of data from approximately 7,000 medical visits to migrant health clinics from 1986 through 1987 revealed that diabetes was the most common disease in migrant farm workers (Migrant Clinicians Network, 1991). This high rate is partly due to such a great proportion of this population being obese (60%) (Kowalski et al., 1999). The results of this study correlate with the findings of other researchers who found 56.5% obesity among Latino farm workers (Runyan and Morgan, 1987). In addition, evidence exists that Latinos have twice the mortality rate from diabetes as non-Hispanic whites (Select Committee on Aging, House of Representatives, 1992). Another study sponsored by the National Eye Institute (NEI) and the National Center on Minority Health and Health Disparities also found that the rate of diabetes among Hispanics age 40 and older was 20%, almost twice of non-Hispanic whites. In addition, 15% of those with diabetes had the diseases before their participation in the study. Nutrition education directed towards this group is vital for prevention and control of this disease.

Another prominent nutrition-related health problem for Latino farm/industry workers is hypertension. Kowalski et al. (1999) found that one-third of males in their study had hypertension. Researchers Slesinger (1992) and Dever (1991) also reported a high prevalence of hypertension in migrant farm workers that was associated with an increased risk for cardiovascular disease.

The repeated and prolonged exposure to pesticides and other chemicals, along with the poor dietary habits of Latino farm/industry workers, increases their risk of becoming ill or developing long-term diseases, such as cancer. Lantz, Dupuis, Riding, Krauska, and Lappe (1994) observed that socioeconomically disadvantaged groups have the lowest relative survival rates for nearly all types of cancers. One significant factor associated with increased cancer mortality is delay in diagnosis and inappropriate care. Migrant farm workers and others with socioeconomic hardships, are often more concerned with day-to-day survival than seeking care for minor, vague symptom and taking part in preventative health services, such as disease screening (Lantz et al., 1994).

Lantz et al. (1994) used focus group interviews to collect information regarding Wisconsin migrant workers' perceptions and beliefs regarding the causes of cancer; their attitudes in regards to cancer detection, treatment, and cure; and their concerns regarding their occupational exposure to pesticides. From the focus group sessions, it was concluded that the farm workers in this study were aware that agricultural pesticides are toxic and can cause health problems, such as cancer. However, the majority of them were reluctant to raise issues regarding protective clothing or equipment that is offered by laws such as the Federal Insecticide, Fungicide, and Rodenticide Act in fear of losing their jobs. When asked about the etiology of cancer, the participants discussed a wide variety of beliefs. They were aware that that a poor diet, smoking, and sun exposure cause cancer. However, they also had some misperceptions regarding cancer causes. For example, the most common cause of cancer mentioned was injury. This belief that an injury can lead to cancer was accepted and promoted by several participants in all of the focus groups. In regard to cancer and its treatment, the migrant farm workers displayed widespread fear and fatalistic attitudes (Lantz et al., 1994).

The rates of cancer among various Latino ethnic groups vary. Cervical cancer may be high among this population due to high rates of papilloma caused by males multiple partners who bring home the pap virus to their wives. The rates of breast cancer also differ among various ethnic groups (Lantz et al., 1994).

The high incidence of cancer rates in farm/industry workers may be attributed to poor dietary habits. Research indicates that a strong connection exists between diet habits and cancer. The American Cancer Society (ACS) claims that one-third of all

cancer deaths are related to dietary habits (ACS, 2000). Numerous studies have shown that a diet low in fat, and high in fruits, vegetables, and grain foods decreases the risk for developing cancers of the pharynx, esophagus, oral cavity, pancreas, colon, rectum, larynx, lung, bladder, cervix, and ovary (Steinmetz and Potter, 1991). However, the diets of many Latino farm/industry workers, especially women, lack these dietary factors that have been found to have protective roles against cancer. Inadequacies of nutrient intakes were prevalent among female migrant farm workers with nearly twice as many women as men eating inadequate servings of fruits and vegetables each day (Kowalski et al, 1999).

The diets of migrant farm workers appear to be inadequate in many micronutrients. Low fruit and vegetable consumption was documented in Michigan migrant farm workers (Kowalski et al., 1999). As a result, many migrant farm workers are not getting enough vitamins C and A in their diets. Data from the HHANES indicated that Hispanics have low serum vitamin A levels, which ultimately can lead to health and vision problems. Shotland (1989) also concluded that vitamin and mineral inadequacies, including vitamin A, iron, and calcium, were a major problem among migrant farm workers. Findings from Kowalski et al.'s (1999) study reported that over 50% of all female migrant farm workers had inadequate intake of dairy foods. This may be due to the high prevalence of lactose intolerance among the Mexican Americans population (Kowalski et al., 1999).

#### Dietary Patterns of the Latino Population

Data from the Hispanic Health and Nutrition Examination Survey (HHANES) showed that while similarities exist in the prevalence of chronic disease and other health risk factors, there are also distinct differences among the Latino subgroups, especially in their dietary habits. Diversity among these Latino groups must be taken into consideration in dietary studies because eating patterns vary considerably within and between different ethnic groups. Loria, Bush, Carroll, Looker, McDowell, Johnson, and Sempos (1995) used 24-hour dietary recall interviews to examine the average consumption of energy, fat, carbohydrate, protein, fatty acid components, and cholesterol among adult Mexican Americans, Cuban Americans, and Puerto Ricans. While energy intakes did not differ significantly between ethnic groups, Puerto Ricans and Cuban Americans had a higher percent of calories coming from carbohydrates. Cuban

Americans had the highest protein intakes but the lowest total fat intakes. Mexican Americans had a higher total saturated fat intake than the other two groups. When compared with non-Hispanic groups (whites and African Americans), the data indicates that Hispanics consume more carbohydrates and protein but less total fat than the non-Hispanic populations (Loria et al., 1995).

### Food Insecurity

Food insecurity is a common problem that farm/industry workers face. Factors common among this population group, including low incomes, low literacy, poor health, living in a remote location, and lack of transportation, increase the risk of food insecurity. A study examining Florida migrant worker found that many families did not receive food stamps even though they were eligible (Shotland, 1989). In addition, 30.6% of the study's respondents indicated that they had experienced a period during which they ran out of food or did not have enough food to eat. About 44% of the migrants indicated seasonal food shortages (Shotland, 1989).

Kasper, Gupta, Tran, Cook, and Meyers (2000) used the USDA Food Security Scale to examine the prevalence of food insecurity and hunger in a sample of low-income legal immigrants in the U.S. About 53% of these low-income immigrants were of Latino ethnicity. The results indicated that hunger was very prevalent among the legal immigrants surveyed at a rate of 41%. In addition, this rate was found to be almost twice the rate of the general population of low-income non-immigrant families. Despite the apparent lack of money to purchase foods, subjects reported low participation in public assistance programs despite eligibility (Kasper et al., 2000).

It is evident that Latino farm/industry workers have a variety of health and nutrition problems. The evidence from the literature suggests that long work hours, low wages, inconsistent work opportunities, inadequate cooking and food storage facilities, and linguistic and cultural barriers may make it difficult for farm/industry workers to meet their nutritional needs (Kowalsi, Hoffman, and McClure, 1999). Due to the poor health and nutrition status of this population group, Virginia Cooperative Extension is concerned about gaining a better understanding of Latino farm/industry workers concerns related to their nutrition and health status so that appropriate educational programs can be developed to improve quality of life.

## Research Methodologies

### Focus Groups

The use of focus group methodology is a valuable way to collect qualitative data (Knodel, 1993). Focus group interviews bring individuals together to discuss a topic of common interest to uncover people's perceptions, feelings, and opinions. Focus groups create a natural environment that allows people to feel free to talk and share insights, opinions, and observations regarding a specific topic. This research technique takes advantage of group dynamics to produce data.

Typically, focus groups are composed of 6 to 10 people who share certain characteristics that relate to the topic of common interest. These individuals usually have similar social status, educational level, occupational status, socioeconomic status, age, and/or gender. Focus groups are most successful when individuals are unfamiliar with one another. When members of the focus group are friends, family members, or relatives, this tends to inhibit disclosure during the discussions (Krueger, 1994). The focus group should be led by a neutral moderator who keeps the respondents "focused" on a particular topic (Frey and Fontana, 1993). This individual takes on a less directive and dominating role allowing the members to share their own ideas and stimulate new topics of concern regarding the subject being discussed. The moderator is not in a position of authority or power and should encourage all types of comments, both positive and negative (Krueger, 1994). Predetermined, open-ended questions are asked in a natural, logical sequence to encourage group discussions. The researcher must create an accommodating environment that nurtures different perceptions and points of view, without pressuring participants to agree or reach a consensus (Krueger, 1994).

The advantages of using focus group research to collect data are numerous. As a socially oriented research procedure, focus groups place individuals in natural real-life situations as opposed to controlled experimental situations. The focus group format allows the moderator greater flexibility to explore unanticipated issues, which is not possible with the more structured questions used in mail surveys. In addition, findings of focus group research are easily understood (Krueger, 1994).

Like any type of research methodology, focus groups have limitations. As compared to an individual interview, the researcher has less control over the situation.

Focus groups allow and encourage participants to interact with one another. However, participants can influence other members and lead the discussion away from the original topic. The sharing of group control results in some inefficiencies when detours in the discussion occur or when irrelevant issues are brought up (Krueger, 1994). Thus, it is essential that the moderator keep the discussion focused and on target. Another limitation of this type of research methodology is that focus group findings cannot be generalized to a wider audience. The data collected from one group is specific to that target population and cannot be used to design education materials or programs for other groups (Krueger, 1994).

Focus groups have been used to learn about the health and nutrition beliefs, perceptions, and knowledge of target groups, especially minority or low-income populations. Results obtained from focus groups have been used to develop appropriate nutrition education and implementation programs. For example, Almond and Stadler (2000) used focus groups to determine blue-collar workers' perceptions regarding dietary practices and cancer prevention and the types of educational strategies that this population group found the most useful. Lantz et al. (1994) conducted focus groups to collect background information about migrant workers' knowledge and beliefs about the causes of cancer, their attitudes in regard to cancer detection, treatment, cure, and their concerns regarding their occupational exposure to pesticides. The results of this study were intended to inform and guide cancer control research and screening interventions for migrant farm workers (Lantz et al., 1994). Perilla et al. (1998) also chose to use focus group methodology to question Latino migrant farm workers ideas about their health and service needs to provide the basis for developing interventions in South Georgia. Silva-Barbeau conducted focus group sessions to determine the preferences of the Latino population in Virginia regarding types of nutrition education delivery. The data revealed that Hispanic participants preferred written and audio/visual media (including videos, radio, and audio cassettes), especially pamphlets with many visuals containing nutrition information directly targeted at them (Silva-Barbeau, 1997).

The use of focus groups in this study will provide a better understanding of Latino farm/industry workers health and nutrition concerns and the types of health and nutrition services they perceive as most beneficial. Studies, such as this one, can also be

informative for health professionals planning preventive health service projects in migrant communities.

### Participatory Methods

The use of participatory rapid appraisal (PRA) methods is a valuable way to collect information about a population group. Historically, PRA techniques originated to be used in agricultural development. Today, these techniques have gained academic credibility and have been shown to produce quick, valid, and reliable results in determining and understanding a groups concerns and perceptions (Heaver, 1992). This method of research is a ground up rather than top down approach that grew in part out of recognition of the limitations of expert knowledge and narrow single discipline approaches to complex human problems (Minkler, 2000). Participatory research actively involves the study's participants by enabling them to voice their concerns, priorities, and solutions to their problems, and thus, improve their quality of life (Cerqueira, 1991). Participatory research focuses on community strengths and issues and explicitly engages those who live in the community into the research process (Minkler, 2000). Participatory methods allow researchers and educators to discover a groups' perceptions of overall life concerns and needs, and develop an appropriate community solution to the perceived problems (Cerqueira, 1991). A wide range of participatory methods exist, including mapping of villages or bodies, verbal autopsies, visual rankings and surveys, time line analysis, and seasonal diagramming (Chambers, 1992).

Participatory methods have been used to examine health and nutrition issues with diverse populations. Stadler (1997) used participatory action methodologies to determine Dominican women's perceptions of their overall life concerns, priorities, and causes of problems. Community activities and social diagramming were participatory methods that were effectively utilized by researchers in Alaska to plan, manage, support, and operate sanitation projects (Berardi and Donnelly, 1999). Cornwall (1992) used body-mapping techniques to determine Zimbabwe women's understanding of reproduction and the use of contraceptives. In India, Heaver (1992) used various participatory methods, including group interviews and village mapping, to gain information on Indian people's perceptions of their health and nutrition status; this data was used to develop effective health programs for the target population.

In this study, participatory methods were incorporated into the focus group discussions to allow participants to further “give voice” to their concerns regarding nutrition and health. Visual aids are effective in extracting information from participants with limited reading, writing, and language skills. Latino farm/industry workers tend to have low educational levels and many of them are not proficient in English (NAWS, 1995). The use of visual participatory methodology, including food models, visual rankings, and drawings, is appropriate for gaining insight about the nutrition and health concerns, practices, and barriers of Latino farm workers.

#### Triangulation of Methodologies

Triangulation of qualitative and quantitative methodologies has been utilized to gather data about the perceptions of a certain population group. Triangulation techniques involve integrating different types of data, methods, and approaches within a single research project to validate information obtained. Triangulation permits more in-depth understanding of issues, provides different perspectives on the problem, and helps ensure accuracy of conclusions (Goldberg, Rudd, & Dietz, 1999).

Several studies have been conducted that employ triangulation techniques. Stadler (1997) incorporated participatory action research and key informant interviews to test an Empowerment Process Model that describes the context of food and nutrition problems of Dominican Women. A study by Goldberg et al. (1999) triangulated interviews and focus group discussions to determine the specific needs and preferences of African American women in order to design an effective, culturally relevant, community-based communications campaign to promote more healthful lifestyles.

This study used a combination of focus groups, participatory activities, and a questionnaire to elicit qualitative and quantitative information and validate the data. Information from the each type of methodology was compared to see if similar results were generated.

### **CHAPTER III: METHODOLOGY**

This chapter describes the methods utilized to gather data for this research. The following sections are included: (a) overview of the research design, (b) sample description and sample selection process, (c) pilot focus group, (d) focus group procedures, and (e) data analysis procedures.

#### Overview of the Research Design

Triangulation techniques employing qualitative and quantitative methodologies were used to determine the nutrition and health practices, concerns, and perceived barriers of Latino farm/industry workers in Virginia. These include focus group discussions, participatory rapid appraisal methods, and a questionnaire. Five research questions were investigated by correlating one or two focus group questions with participatory activities. The 13-item Cornell/Radimer Food Security Scale Questionnaire, developed by the U.S. Department of Agriculture, was administered to estimate the prevalence of hunger and food insecurity among this population. Seven sessions were conducted with 64 participants from four different worksites/areas. The first meeting on April 27, 2001 was conducted as a pilot test in Accomack county. Major modifications in the research design were made following the pilot focus group. The other six sessions, comprised of both males and females, were conducted during the weeks of June 3, 2001. This study received approval from the Institutional Review Board for Research Involving Human Subjects at Virginia Tech.

#### Sample Description and Sample Selection Process

Virginia Cooperative Extension agents from Accomack County, Rockingham County, and Frederick County volunteered to recruit male and female adult Latino laborers working at farms or in industrial worksites to participate in this study. Subjects were recruited by contacting individuals who worked in the community with the migrant and seasonal farm workers or contacting Human Resource managers from poultry industries located in Virginia. These poultry industries included Perdue Processing Plant in Accomack County and the Rocco Plant in Rockingham County. Also, the Extension agents arranged for the locations of the focus groups and provided refreshments and/or meals for each meeting.

### Pilot Study Focus Group

The pilot group session for this research was held on Friday, April 27<sup>th</sup> in Accomack County Virginia at Ames Tomato Farm. The pilot test was conducted prior to the beginning of the study to (a) familiarize data collection personnel with the methodology, (b) examine interactions between the participants, (c) identify potential problems that might arise in the questioning, and (d) modify the focus group questions appropriately (Krueger, 1994). Data from the pilot test was not used in the study.

Cooperative Extension agent Llewellyn Allison worked with the migrant minister Jim Albright to organize the group session. This pilot session was held on a Friday. We arrived at the migrant camp around 5:00 pm. The children were returning from Migrant Head Start. The majority of adults were still working. After an hour, the adult males and female workers began to return from the fields. They were tired from working all day long and were in a hurry to go to cash their paychecks at the bank and do their grocery shopping.

Six male farm workers were recruited to participate in the focus group session. However, after about 30-45 minutes they had to leave to go run their errands. As a result, another group of individuals was recruited to participate in the participatory activities. It became evident that Fridays were a very hectic day for the workers. For future sessions, Sundays would be a better day to hold focus groups because it was their day off.

Dr. Rodrigo Armijos served as the moderator and led both sessions in Spanish. Dr. Armijos began with a brief introduction about the research. After the introduction, the consent form was given to the participants and read aloud. However, this population group had low Spanish literacy skills making it difficult for them to follow the form as it was being read out loud to them. Also, the migrants were very hesitant to sign the consent form. Asking them to sign this form scared and discouraged them from participating. Thus, obtaining verbal consent for participation from the migrants at the beginning of the session would work better. When working with a group such as this, gaining their trust is essential in order for them to feel comfortable discussing personal issues.

The first group of migrant farm workers completed the food security questionnaire. The questionnaire was too difficult for this group since they were not

literate. A simpler questionnaire to assess food security would be more appropriate. In addition, this questionnaire would work better if it incorporated pictures/visuals into the answer choices to make it easier for the participants. For example, a happy face would indicate having food all the time, whereas a sad face would indicate not having food. The questions should be read out loud and participants will only have the answer choices represented by the visuals in front of them.

The visual participatory activities were administered to a second group of migrant farm workers. This group consisted of seven individuals, 5 males and 2 females. The visual participatory activities worked well. The participants easily understood what they were suppose to do. However, once again the participants were influenced by those around them, especially with the question regarding health concerns. The participants may have been hesitant to be completely honest for fear of revealing private issues in front of their friends and family. For future sessions, to avoid participants feeling hesitant to truthfully answer, it was decided to conduct the health participatory activity individually and in a private area where others could not see the rankings made by each individual.

After the pilot study, it was concluded that research protocol would be incorporating participatory activities after a similar focus group question. Participants would give verbal instead of written consent indicating they agreed to take part in the study. The participatory activity dealing with health concerns would be conducted individually and in a private setting. If time permitted, the food security questionnaire would incorporate visuals and be administered on an individual basis at the end of each session.

### Focus Group Procedures

Six focus group sessions were conducted based on procedures suggested by Krueger (1994). Dr. Rodrigo Armijos, the moderator for all sessions, is Latino (Ecuadorian) with experience in Mexican culture and language idiosyncrasy. He led the discussion and kept the conversation going by asking open-ended questions. All sessions were conducted in Spanish. The presence of a Latino moderator helped to deal with the cultural and linguistic barriers that often result when working with various ethnic populations. A Latino moderator maximized the groups' cohesiveness and openness by

maintaining cultural homogeneity and language use. A co-moderator who was fluent in Spanish also was present and responsible for taking notes during the sessions.

Two assistant moderators were present who were responsible for making observations, operating the tape recorder, recording the data from the participatory activities, and handling the logistics. After each focus group session, a short debriefing was held between the moderator, co-moderator, and assistant moderators to compare notes, discuss themes, and express areas of improvement. This debriefing allowed the focus group team to arrive at a short summary that described the findings and interpretations of the key issues discussed (Krueger, 1994).

As participants arrived at the focus group sessions, they were welcomed and refreshments were provided to help establish rapport and develop a comfortable, relaxed environment, which is essential for focus group success (Krueger, 1994). Participants were introduced to the moderator, co-moderator, and assistant moderators. The moderator began the discussion with a brief introduction and overview of the research topic. Ground rules, as indicated by Krueger (1994), were also presented to the participants before the questions and participatory activities began. Each participant verbally agreed to participate in the session. Permission to audio record the session was also obtained by each individual. Once permission was obtained, tape recording of the session began. Before and after the focus group discussion, the assistant moderator checked audiocassettes to ensure proper recording.

The moderator followed the focus group interview guide (Appendix A) and asked open-ended questions to generate discussion. After the discussion of each focus group question, a visual participatory activity was conducted that correlated with the previous focus group question. Participatory activities were incorporated into the focus group discussions to further collect information on nutrition and health practices, concerns, and perceived barriers. Visual illustrations or pictures were developed and used for all the participatory activities. The moderator reviewed all visual materials with participants and any additional visuals were added.

The first two participatory activities, which involved the collection of demographic data on the group, served as examples to show the participants how these activities would be conducted. All participants were involved in each participatory

activity. For the ranking and prioritizing activities, different colored note cards were used to indicate the top three preferred choices among the participants. For example, green note cards indicated the top choice, pink note cards indicated the second preference, and orange note cards indicated the participant's third choice. Envelopes were attached to the visuals and the participants ranked and prioritized their health and nutrition concerns. The note cards given to the females were marked so gender differences could be compared. Female participants were unaware that their cards differed from the males. For a detailed outline of the focus group questions and the participatory activities, refer to Table 1.

The 13-item Cornell/Radimer Food Security Scale Questionnaire (Appendix C) developed by the U.S. Department of Agriculture was used to assess food security status among this Latino population. If time permitted, the moderator and co-moderator administered food security questionnaires on an individual basis at the end of a session to all participants involved. The survey was read to the participants in Spanish and visuals were used to represent the answers to the questions. The moderator and co-moderator marked the participants choices.

An additional 15 Latino female farm workers from Winchester that were not involved in the focus groups were also recruited to complete the 13-item Food Security Scale Questionnaire. This study was conducted before apple harvesting season. Thus, these individuals represent seasonal farm workers who have established permanent homes in the Winchester area and remain there throughout the year. A Migrant Head Start Coordinator administered these questionnaires in Spanish during home visits. In order to be eligible for Migrant Head Start, at least 51% of the family's income must come from farm work. The Migrant Head Start Coordinator was of Latino background and was trained by the moderator on how to administer the questionnaire. These individuals also completed a demographics questionnaire (Appendix B).

After all activities were completed, both focus group participants and the non-focus group participants were thanked for their help. Focus group participants were presented with thank you gifts and nutrition education materials in Spanish.

### Data Analysis Procedures

As described by Krueger (1994), thematic analysis was used to analyze the data collected from each focus group discussion. Krueger (1994) suggests that data be reviewed to determine trends and identify major themes or patterns across the groups as well as themes that relate to participants with similar demographic characteristics. The co-moderators took notes and made observations during each focus group session. Each focus group session was audio taped. Audio-tapes were translated from Spanish into English by two individuals of Latino origin who were not involved in the actual data collection. Written transcriptions were developed from the tape recordings. Two individuals of Latino origin reviewed each audio taped session and transcriptions to assure consistency and accuracy. Written transcripts provide a major advantage in speeding up the process of sorting and categorizing emerging themes. This enables others to verify the analysis more quickly (Krueger, 1994). For transcription analysis, each page of the transcript was sequentially numbered and read several times to become familiar with the data (Krueger, 1994). While reading the data, predominant themes and sub-themes emerging from the focus group discussions were noted and an outline (Table 2) was developed to organize the major themes.

The participatory activities were analyzed by examining the frequencies among all the choices presented. The participatory activities that involved ranking preferences were analyzed by determining preference scores. The first choice preferences received three points, second choice preferences received two points, and third choice preferences were given one point. Points were added up for a total preference score to determine the priority nutrition and health concerns and practices among the participants. Choices are also expressed as percentages of the total. When comparing participatory activity data, gender differences were noted. Comparisons were also made between the farm workers and industry workers.

Data from the 13-item Cornell/Radimer Food Security Scale Questionnaire was analyzed using Statistical Package for the Social Sciences (SPSS 10.0). Frequency counts were used to determine the extent of food insecurity among participants. Results from the questionnaires completed by farm workers were compared to industry workers. Gender differences were also noted. Chi-square tests were used to determine statistically

significant differences between males and females within groups, between groups, and among the total population.

The Cornell/Radimer Food Security Scale was used to assess the two levels of food insecurity, household and individual. Answers to the eleven statements are considered positive if they are “often true” or “sometimes true.”

A household is:

1. food secure if none of the answers to items 1 to 11 are positive.
2. food insecure if one or more answers to items 1 to 11 are positive.
3. individual insecure if one or more answers to items 6 to 11 are positive.
4. individual hungry if one or more answers to items 6 to 8 are positive and one or more answers to items 12 to 13 are positive, or one or more answers to items 9 and 10.

The percentages of farm and industry workers that are food insecure were examined.

## **CHAPTER IV: RESULTS**

This chapter begins with a brief summary of the demographic characteristics of the participants. Next, five research questions are discussed, which employed focus group questions and participatory activities (Table 4.1). Research questions with correlating focus group questions and participatory activities are presented. Themes and sub-themes that emerged from the focus groups for research questions two through five are outlined and discussed (Table 4.2). Quotes are used to illustrate predominant themes. Data from each participatory activity and from the Cornell/Radimer Food Security Questionnaire are provided and discussed.

**Table 4.1**

Focus Group Questions as Related to Research Questions

RQ 1: What are the major sociodemographic and other characteristics of Latino farm/industry workers that might affect their health, nutrition, food security, and preferences for learning?
RQ2: What do Latino farm/industry workers in Virginia perceive as their major health and nutrition concerns, barriers, and solutions?
FGQ 1: What do you feel are health concerns for you and your family? PA 3: Do you think that you are healthy? PA 4: Rank your top three health concerns for you and your family.
FGQ 2: What do you feel are eating concerns for you and your family? PA 5: How do you rate your eating habits?
FGQ 6: If you had a wish list of services related to food and health that could be available to you, what would this list include?
RQ3: What do Latino farm/industry workers in Virginia perceive as benefits and barriers to consuming fruits and vegetables?
FGQ 3: What are some of the fruits or fruit juices that you eat or drink? PA 6: Rank the three fruits or fruit juices that you eat the most.
FGQ 4: What are some of the vegetables or vegetable juices that you eat or drink? PA 7: Rank the three vegetables or vegetable juices that you eat the most.
RQ4: To what extent are Latino farm/industry workers concerned about hunger and food security?
FGQ 5: What concerns do you have for you and your family regarding having enough food?
RQ5: What type of educational strategies do Latino farm/industry workers perceive as the most useful for learning about nutrition?
FGQ 7: Who talks to you about foods?
FGQ 8: Who talks to you about how to stay healthy?
FGQ 9: What would be the easiest way for you to learn about food and health? PA 8: Rank the three methods that you would prefer to receive educational information about health and nutrition.

**Note.** RQ = Research Question; FGQ = Focus Group Question; PA = Participatory Activity

## **Table 4.2**

Summary of Predominant Themes and Sub-themes Emerging from Focus Group Questioning

### **Research Question 2: What do Latino farm/industry workers in Virginia perceive as their major health and nutrition concerns, barriers, and solutions?**

- I. FGQ: What are health concerns for you and your family?
  - A. Chronic Diseases
  - B. Sexually Transmitted Diseases
  - C. Infections caused by bacteria
  - D. Obesity
- II. FGQ: What are eating/feeding concerns for you and your family?
  - A. Lack of money
  - B. Lack of fruit and vegetable consumption
  - C. Balanced diet
  - D. Lack of time to prepare healthy meals
  - E. Communication and language barriers
  - F. Fear or confusion in trying new foods
- III. FGQ: If you had a wish list of services related to food and health that could be available to you, what would this list include?
  - A. General Services
    - i. Medical Services
    - ii. Information
    - iii. Services for children
  - B. Specific Services
    - i. Free individualized dietary counseling
    - ii. Nutrition classes
    - iii. Daily services available

### **Research Question 3: What do Latino farm/industry workers in Virginia perceive as benefits and barriers to consuming fruits and vegetables?**

- IV. FGQ: What are some of the fruits or fruit juices that you eat or drink?
  - A. Daily fruits and fruit juices consumed
  - B. Preparation methods
  - C. Importance of fruits
  - D. Barriers to consumption
- V. FGQ: What are some of the vegetables or vegetable juices that you eat or drink?
  - A. Daily vegetables and vegetable juices consumed
  - B. Preparation methods
  - C. Importance of vegetables
  - D. Barriers to consumption

### **Research Question 4: To what extent are Latino farm/industry workers concerned about hunger and food security?**

- VI. FGQ: What concerns do you have for you and your family regarding having enough food to eat?
  - A. Money
  - B. Transportation to stores

C. Language Barriers

**Research Question 5: What type of educational strategies do Latino farm/industry workers perceive as the most useful for learning about nutrition?**

VII. FGQ: Who talks to you about foods?

VIII. FGQ: Who talks to you about how to stay healthy?

XI. FGQ: What would be the easiest way for you to learn about food and health?

Research Question 1: What are the major socioeconomic and other characteristics of Latino farm/industry workers that might affect their health, nutrition, food security, and preferences for learning?

Participant's Characteristics

A total of 51 subjects, 29 males and 22 females, were recruited to participate in six focus groups. Demographic information, including age and country of origin, was collected during the first two participatory activities. These participatory activities were conducted before the focus group questions and served as examples of how the other activities would be completed. The largest percentage of both males (31%) and females (47%) were 21-30 years of age. Seventy percent of all participants were originally from Mexico, 22% were from Guatemala, and 8% were from Honduras. This data is shown in Table 4.3 and 4.4. Demographic information indicating worksite and gender is illustrated in Table 4.5.

**Table 4.3**  
Participant's Age

<b>Age</b>	<b>Males n (%)</b>	<b>Females n (%)</b>	<b>Total n (%)</b>
Under 21	7 (22%)	2 (11%)	9 (18%)
21-30	10 (31%)	9 (47%)	19 (37%)
31-40	7 (22%)	6 (31%)	13 (26%)
41-50	6 (19%)	2 (11%)	8 (16%)
51-60	2 (6%)	0	2 (4%)

**Table 4.4**  
Participant's Country of Origin

<b>Country of Origin</b>	<b>Males n (%)</b>	<b>Females n (%)</b>	<b>Total n (%)</b>
Mexico	22 (69%)	14 (74%)	36 (70%)
Guatemala	8 (25%)	3 (16%)	11 (22%)
Honduras	2 (6%)	2 (10%)	4 (8%)

**Table 4.5**  
Gender and Worksite of Participants

<b>County/City</b>	<b>Farm/Industry</b>	<b>Total Participants n</b>	<b>Females n (%)</b>	<b>Males n (%)</b>
Accomack	Ames Migrant Camp	13	2 (15%)	11 (85%)
Accomack	Perdue Chicken	5	1 (20%)	4 (80%)
Accomack	Perdue Chicken	7	2 (29%)	5 (71%)
Rockingham	Rocco Poultry	6	4 (67%)	2 (33%)
Rockingham	Rocco Poultry	10	4 (40%)	6 (60%)
Fredrick	Montague United Methodist Church	10	6 (60%)	4 (40%)

Migrant farm workers in this study were employed in packing houses, fields, or both. The minimum wage (\$5.15) is the rate of pay for those working in the packing houses. Workers in the fields receive a “piece rate” depending on the amount of product that they pick. For tomatoes, this “piece rate” is a penny per pound. Migrants also may be involved in putting down plastic in the fields. In this case, they are paid minimum wage. There are no overtime rates in agriculture. A typical day consisted of 8 hours of work in the fields. During the planting and harvesting seasons, the migrants may work up to 16-hour days. In the Eastern Shore, July through September is the busy season. The month of August is not a busy month for the migrants in this area and thus, many of them go to work in other areas, including Winchester and Pennsylvania, to pick apples (Jim Albright, personal communication, June 4, 2001).

The majority of migrants either came to the area on their own, or were contracted by farmers through a crew leader to come up from Florida for the busy months. The majority of these migrants have permanent homes in Florida, Texas, or Mexico in which they return to during late fall and winter months. Most of the native Spanish speakers were not fluent in English and had low literacy skills in their own language (Jim Albright, personal communication, June 4, 2001).

The migrant camp communities run by local farmers consisted of several small homes where families reside and single male accommodations. These houses contained one to two bedrooms, a bathroom, and a kitchen. The single males lived in a house that

contained several bunk beds and a shared communal kitchen and bathroom. In the migrant camp in Accomack county, there were no pay phones or regular house phones. However, a camp in Winchester did contain a pay phone.

The majority of migrants ride a bus provided by the farmer to the worksite. Departure to the field may be as early as 6:00 am during the hot months. They are given 30 minutes for a lunch break. They usually pack a lunch from home or go to a nearby convenient store to buy food (Jim Albright, personal communication, June 4, 2001).

The Latino migrant farm worker population on the Eastern Shore of Virginia is comprised of primarily young male adults. Although the majority are single males, there are several families with children. Virginia Census statistics indicate that approximately 70% to 80% of Latinos in this area are males, and the other 20% to 30% is comprised of women and children (Virginia Census Statistics, 2000). The minimum age for employment in the packing houses is 18 years of age. However, the minimum age is much younger for those working in the fields. Child labor laws for agriculture allow 14-year-olds to work for unlimited hours and 16-year-olds can perform hazardous jobs, such as operating heavy equipment, working on a 20-foot ladder, or handling pesticides. A child as young as 12 years can be employed in the fields if a guardian is also present working (Flores, 1996). Jim Albright, a migrant minister, indicated that the Employment Commission estimates that there are approximately 3,800 beds in all the migrant camps on the Eastern Shore. However, he reported that many of these camps are overcrowded and he estimates that there are around 5,000 Latino migrant farm workers in the area (Jim Albright, personal communication, June 4, 2001).

A total of 190 Latinos are employed at the Perdue Processing Plant in Accomack county. During an eight-hour shift, they are given one 30-minute lunch break and two 15-minute breaks. A significant percentage of individuals currently working in the poultry industry originally came to the area to work on farms (personal conversation with Perdue Human Resource Manager, June 30, 2001).

Approximately 865 Latinos are employed at the Dayton Rocco Poultry Plant in Rockingham County where the sessions were conducted. About 52% are male and 48% are female. Rocco Industries employs a total of 1551 Latinos. Again, the majority of

these industry workers originally came to Virginia to work on farms (personal conversation with Estaban Enzo, Human Resources Manager, July 17<sup>th</sup>, 2001).

#### Services Available to Hispanic Farm/Industry Workers in Virginia

Several services are available throughout the commonwealth for Latino farm/industry workers. This population is eligible for various health, educational, and legal services. For example, legal and non-legal migrants have access to local Virginia Public Health Departments, which deal with maternity issues, sexually transmitted diseases, and has the Women, Infants, Children (WIC) program which provides food and nutrition education for mothers and children age five and under. On the Eastern Shore of Virginia, there are 4 migrant health clinics available located in the towns of Franktown, Onley, Atlantic, and Sheraton. Winchester also has a Free Medical Clinic that provides health services for this population.

Migrant Education is another service available to this population. This is a quasi-national organization that works with children 0-21 years of age. Migrant Education keeps records of all the children's vaccinations in a computer system. Migrant children are constantly moving to different areas and this service provides a way to keep track of the vaccinations of migrant children, regardless of where or how many times they move.

Migrant Head Start works with children 0-5 years of age. This service takes the migrant children from 6:30 am till 6:00 pm while their parents work on the farms or in industry. They also run a summer school and various health services for the Latino children. To qualify for Migrant Head Start, a family must earn at least 51% of their income from agricultural work. A new Migrant Head Start facility was recently opened in Winchester County where approximately 200 children are involved in the program.

A Legal Aid Office helps Latino farm/industry workers when they have conflicts with their directors at work regarding pay or unfair treatment, with government documents, and in other legal matters. The migrant branch is located in Charlottesville, Virginia.

#### Focus Group Analysis

Research Question 2: What do Latino farm/industry workers in Virginia perceive as their major health and nutrition concerns, barriers, and solutions?

A primary purpose of this research was to assess the health and nutrition concerns, barriers, and solutions of Latino farm/industry workers. Three focus group questions and three participatory activities were conducted to generate information on this topic. The focus group questions included (a) what do you feel are health concerns for you and your family, (b) what do you feel are eating/feeding concerns for you and your family, and (c) if you had a wish list of services related to food and health that could be available to you, what would this list include?

Focus Group Question: What do you feel are health concerns for you and your family?

Four major themes emerged regarding participants health concerns. These included (a) chronic diseases, (b) sexually transmitted diseases, (c) bacteria/infections, and (d) obesity/overweight. Many comments were directed towards specific chronic diseases, such as cancer and diabetes. Although elaborations were not made, the majority of participants indicated that they feared the seriousness of these diseases. One participant expressed the concerns of many: “I am concerned about diabetes. I heard it’s a really tough illness.”

Male farm workers voiced their concerns of contracting sexually transmitted diseases, specifically AIDS. The majority of farm workers live away from their families. Individuals indicated that prostitutes were often brought into the camp communities where they live. Participants expressed that language barriers prevented them from obtaining condoms from the local stores.

Bacteria and pesticides were another theme that emerged regarding health concerns. Bacteria and pesticides were identified as root causes of many minor infections and illnesses. The following quote is representative of the concerns expressed:

We come here to work in the farms and pick the fruit, work in the ground and in the dirt and sometimes you just go to the bathroom where you are. There are chemicals, pesticides, and bacteria. And you just don’t have time to wash your hands before you eat lunch.

Obesity and overweight was another concern identified. Participants reported being concerned not only about problems with their own weight, but also about their children being obese. Participants often commented about obesity and being overweight;

however, they tended not to elaborate or express great concern. This participant captured the essence of what many were saying:

I have an overweight problem, but I feel okay. I am pretty agile and I have energy and flexibility. I feel fine even though I am a little overweight. It doesn't bother me.

Participatory Activity: Do you think you are healthy?

This participatory activity was used to determine Latino farm/industry workers perceptions of their health status. Participants indicated their perceived health status by placing a note card in the envelope attached to the face pictures that indicated health status as poor, fair, good, or very good.

The majority of farm workers (54%) felt that their health status was good. Approximately 31% indicated that their health was poor and 15% thought they were in very good health. The majority of Latino industry workers (73%) also felt that their health status was good. The results for farm/industry workers perceptions on their health status is displayed in Table 4.6.

**Table 4.6**  
Results of Latino Farm/Industry Workers Perceptions of Their Health Status

<b>Health Status</b>	<b>Males n (%)</b>	<b>Females n (%)</b>	<b>Total n (%)</b>
<b>Farm Workers:</b>			
<b>Poor</b>	0	0	0
<b>Fair</b>	3 (23%)	1 (8%)	4 (31%)
<b>Good</b>	6 (46%)	1 (8%)	7 (54%)
<b>Very Good</b>	2 (15%)	0	2 (15%)
<b>Industry Workers:</b>			
<b>Poor</b>	1 (3%)	0	1 (3%)
<b>Fair</b>	3 (8%)	3 (8%)	6 (16%)
<b>Good</b>	15 (39%)	13 (34%)	28 (73%)
<b>Very Good</b>	2 (5%)	1 (3%)	3 (8%)

Participatory Activity: Rank your top three health concerns for you and your family.

To understand the specific health problems and concerns of this population, participants were asked to rank the three top health concerns that they had for themselves and their families in the United States. Due to the sensitivity of this issue, this activity was conducted individually in a private setting. Total scores for each health problem

were calculated, and the results are illustrated in Table 4.7 (farm workers) and Table 4.8 (industry workers).

Farm workers ranked their top health concerns as osteoporosis, anemia, AIDS/HIV, and urinary tract infections. Primary health concerns differed greatly between men and women. Male farm workers ranked their top concerns as osteoporosis, anemia, AIDS/HIV, and urinary tract infections. Female farm workers ranked their top three concerns as hypertension, back pain, and osteoporosis. The data for this participatory activity is illustrated in Table 4.7.

**Table 4.7**  
Top Health Concerns of Latino Farm Workers

<b>Health Concern</b>	<b>Males n (%)</b>	<b>Females n (%)</b>	<b>Total n (%)</b>
<b>Osteoporosis</b>	11 (17%)	2 (17%)	13 (17%)
<b>Anemia</b>	10 (15%)	0	10 (13%)
<b>AIDS/HIV</b>	9 (14%)	0	9 (11.5%)
<b>Urinary Tract Infections</b>	9 (14%)	0	9 (11.5%)
<b>Respiratory Infections</b>	7 (11%)	1 (8%)	8 (10%)
<b>Back Pain</b>	4 (6%)	3 (25%)	7 (9%)
<b>Tuberculosis</b>	7 (11%)	0	7 (9%)
<b>Hypertension</b>	1 (1.5%)	5 (42%)	6 (8%)
<b>Diabetes</b>	4 (6%)	0	4 (5%)
<b>Heart Disease</b>	2 (3%)	0	2 (2.5%)
<b>Obesity</b>	1 (1.5%)	1 (8%)	2 (2.5%)
<b>Cancer</b>	1 (1.5%)	0	1 (1%)

Industry workers indicated that their three primary health concerns were gastritis, arthritis, and cancer. As with the farm workers, males and females had different health concerns. Male industry workers indicated that gastritis, arthritis, and AIDS/HIV were their three top health concerns. For female industry workers, cancer and respiratory infections were ranked as first and second. Heart disease, arthritis, and depression all received the same ranking score for the third top health concern. Results are shown in Table 4.8.

**Table 4.8**  
Top Health Concerns of Latino Industry Workers

<b>Health Concerns</b>	<b>Males n (%)</b>	<b>Females n (%)</b>	<b>Total n (%)</b>
<b>Gastritis</b>	24 (19%)	7 (8%)	31 (14%)
<b>Arthritis</b>	18 (14%)	8 (9%)	26 (12%)
<b>Cancer</b>	5 (4%)	19 (21%)	24 (11%)
<b>Heart Disease</b>	12 (10%)	8 (9%)	20 (9%)
<b>Respiratory Infections</b>	8 (6%)	9 (10%)	17 (8%)
<b>AIDS/HIV</b>	14 (11%)	1 (1%)	15 (7%)
<b>Depression</b>	3 (2%)	8 (9%)	11 (5%)
<b>Back Pain</b>	4 (3%)	6 (7%)	10 (5%)
<b>Osteoporosis</b>	5 (4%)	4 (4%)	9 (4%)
<b>Headache</b>	4 (3%)	4 (4%)	8 (4%)
<b>Diarrhea</b>	7 (6%)	0	7 (3%)
<b>Hypertension</b>	4 (3%)	3 (3%)	7 (3%)
<b>Eye Problems</b>	6 (5%)	0	6 (3%)
<b>Obesity</b>	2 (2%)	4 (4%)	6 (3%)
<b>Tuberculosis</b>	1 (1%)	5 (6%)	6 (3%)
<b>Ear Infections</b>	0	4 (4%)	4 (2%)
<b>Diabetes</b>	3 (2%)	0	3 (1%)
<b>Anemia</b>	3 (2%)	0	3 (1%)
<b>Urinary Tract Infections</b>	3 (2%)	0	3 (1%)

Focus Group Question: What do you feel are eating/feeding concerns for you and your family?

The second focus group question asked participants about their eating/feeding concerns. Predominant themes included concerns about (a) lack of money, (b) fruit and vegetable consumption, (c) balanced diets, (d) lack of time to prepare meals, (e) communication and language barriers, and (f) fear or confusion in trying new foods.

The most predominant concern that emerged throughout the discussion was lack of money. Nearly all participants agreed that the cost of food seriously affected their nutrition status. Two participants described their particular situations:

We don't always have everything we need to cook. Sometimes, I am missing something and it is usually because I don't have the money to buy it.

...When I moved to Virginia, the cost of living is so high I won't consider buying fruits and vegetables. In New Jersey, \$100 for grocery can last me almost a month. But here, it doesn't even last my family a week. This situation really affects the nutrition and eating of my family.

Participants expressed concerns about their family eating too much meat and not consuming enough fruits and vegetables. Reasons for inadequate fruit and vegetable intake included expense and the unappealing taste of vegetables. Many comments were directed at the attempt of having a balanced diet. Participants recognized the importance of variety and balance; however, some were unclear about the exact meaning of a balanced diet. Most of them agreed that their diets were not balanced. One participant said, "I believe in a balanced diet, but I just don't do it." These participants described the difficulty in having a balanced diet:

...It is really difficult. Having a balanced diet requires money and most of the time, we don't have enough money.

For example, when I go to the store I have a budget and have to stick to it. Based on it, I make my selections. Within my means, I try to have a balanced meal every week. But most of the time it doesn't happen because of the money constraints.

One participant expressed that they were unclear about the exact meaning of a balanced

diet:

I think that none of us really understands the meaning of what it means to have a balanced diet. We all eat some fruits and vegetables and meats, but what do you really mean to have a balanced diet. We don't know. We eat milk, cheese, vegetables, meats, and fish. Is fish a meat? I don't know.

Lack of time to prepare healthy meals was a root cause directly connected with eating problems and concerns. Several individuals reported that after working long days, they did not have the energy to cook for themselves or their families. These individuals explained how lack of time affected their eating habits:

Because I work so many hours, my day is such a long day. Once I get home, I don't have the energy to cook or make something. I just eat fast foods. I don't think it is the right thing, but I am too tired.

In my case, my biggest concern is that I work so many hours. In my country, I don't work so many hours and we have time to cook healthier meals...

Because we don't have the time to cook, sometimes we get in the situation that we have to throw away some of the food that has been spoiled because we don't have time to cook it. It is different in our country because we usually go daily to buy the foods that we need. Here we can't do this and go everyday because the store is too far away.

Communication and language barriers were another concern that participants emphasized as a major problem affecting their eating. The following comments are reflective of the concerns expressed:

When we first came to this country, it was hard because we don't know anything-where to go or from where to buy. We are always wondering what is this? Because you don't know the language, you can't ask or read the labels. Even if you turn it around and upside down, you still don't know what it is. I use to just buy cans. I didn't know what was going to be in them. I would open it after buying it to see if it was what I thought it was.

...The other obstacle is the language barrier. I don't know how to ask for what I want and most of the time the people working at the grocery store, they can't understand me.

A minor theme that resulted in this discussion involved the unwillingness of many Latinos to try to new foods in this country. Here is how one participant expressed this concern:

Nutrition wise, I have a big concern. As a Latino, I feel that we are closed minded about new foods. We are not open to new things. We think our foods are the best. We have our minds decided before we even try it. I can tell you that Chinese food is garbage to Mexican people. Again, the problem is that we are too closed minded. If we become a little open minded we may find that we like other foods.

Participatory Activity: How do you rate your eating habits?

To determine how Latino farm/industry workers perceive their nutritional status, participants were asked to rank their eating habits. Using the same face visuals used in the activity that assessed perceptions on health status, participants were asked if they felt their eating and nutritional status was poor, fair, good, or very good.

Despite the many eating concerns that emerged by farm workers in the discussion, the majority of farm workers (69%) indicated that their eating and nutritional status was very good. About 31%, including the two female participants, indicated that their eating and nutritional status was good. No farm workers felt their nutritional status was poor or fair. The majority of industry workers (55%) felt that their eating and nutritional status was good and about 8% indicated that it was very good. Unlike the farm workers, a significant percentage of industry workers felt that their eating and nutritional status was poor (11%) or fair (26%). Data is indicated in Table 4.9.

**Table 4.9**  
Results of Latino Farm/Industry Workers Perceptions on Their Eating and Nutritional Status

<b>Nutritional Status</b>	<b>Males n (%)</b>	<b>Females n (%)</b>	<b>Total n (%)</b>
<b>Farm Workers:</b>			
<b>Poor</b>	0	0	0
<b>Fair</b>	0	0	0
<b>Good</b>	2 (15%)	2 (15%)	4 (31%)
<b>Very Good</b>	9 (69%)	0	9 (69%)
<b>Industry Workers:</b>			
<b>Poor</b>	3 (8%)	1 (3%)	4 (11%)
<b>Fair</b>	3 (8%)	7 (18%)	10 (26%)
<b>Good</b>	13 (34%)	8 (21%)	21 (55%)
<b>Very Good</b>	2 (5%)	1 (3%)	3 (8%)

### Focus Group Question: Wish List of Services

This focus group question asked participants to describe health and nutrition services that they would like to have available in their community. A variety of different comments were provided that ranged from very general to more specific. General statements included medical services, more services for their children, and health and nutrition information. The specific type of information they wanted was not mentioned. The more specific services suggested can be categorized into three subthemes: (a) personal counseling, (b) nutrition classes, and (c) more accessible health services.

One participant summarized:

In my case, I would like to see something more individualized. I feel that every individual has their own needs when it comes to diet and vitamins. The physiology of everyone is different so we need individualized approaches.

In one session that consisted of industry workers, participants wanted nutrition classes available. One individual said:

I would like to have a teacher once a month to tell me what to do. If they teach it, we can learn and get the hang of it and learn what to do.

Participants expressed their desire to have more accessible health services. One focus group discussed that health services were only available to them one day a week:

...It would be nice if a service center ran every day of the week. Because for us, services only run on Thursday. So if I get sick on Monday, I have to wait till Thursday to be seen. If I go to a private doctor for an hour and a half it can cost me \$150 because I don't have a health plan.

Research Question 3: What do Hispanic seasonal farm/industry workers in Virginia perceive as benefits and barriers to consuming fruits and vegetables?

Another purpose of this research was to assess fruit and vegetable consumption among this population group. Two focus group questions and two participatory activities intended to create discussions on this topic. The focus group questions included (a) what are some of the fruits and fruit juices that you and your family eat or drink, and (b) what are some of the vegetables or vegetable juices that you and your family eat or drink? These questions generated discussions on the types of fruits and vegetables being consumed, preparation methods, and barriers to obtaining fruits and vegetables.

Focus Group Question: What are some of the fruits or fruit juices that you eat or drink?

The three themes that emerged during this discussion include (a) types of fruits consumed and preparation methods, (b) the importance of fruits, and (c) barriers to fruit consumption. Apples, oranges, and bananas were mentioned as the most common fruits eaten. Some of the participants said that apple and/or orange juice were consumed daily in their households, especially by their children. However, other participants reported not consuming fruit juice for various reasons:

...In my house, we don't drink much fruit juice. We drink soda. I eat fruit, but I don't drink juice.

No, I hardly drink juice, but my kids do. It has too much sugar for me.

Participants reported that fruits were generally eaten raw, blended into a drink, in the form of jelly, or cooked.

The importance of adequate fruit consumption was a prominent theme that emerged throughout the focus groups. General statements were made regarding the importance of fruit for good health:

It is important to eat fruits...because they have lots of vitamins.

Fruits give me more energy to work.

Although all participants agreed that adequate fruit consumption is essential for good health, they reported not eating enough fruits. The major limitation discussed involved the expense of fruits:

Basically, we spend most of our money on foods, not fruits. Fruits are a luxury.

... The price of fruits is very expensive so we can not eat a lot of them.

The fact that they are too expensive and in small proportions. They are too small for the price. A small mango can cost \$1.00.

Strawberries, I like them. But they are \$2.00 for a small container.

Another limitation mentioned involved the freshness of fruits:

When prices are low, the fruits and vegetables are spoiled- not fresh. When this happens, I feel like I am giving away my money. Money that I don't necessarily have in exchange for spoiled food.

One participant expressed that many of the fruits commonly consumed in her home country could not be found in stores in the U.S.

Participatory Activity: Rank the three fruits or fruit juices that you eat the most

To determine the most commonly consumed fruits among this population group, participants were asked to rank the three fruits that they eat the most in the United States. Farm workers ranked apples, bananas, and oranges as their first, second, and third choices, respectively. Industry workers ranked bananas, apples/oranges, and watermelon as their first, second, and third most consumed fruits, respectively. Both males and females had the same results for top three consumed fruits. Table 4.10 displays results from this participatory activity and notes gender differences.

**Table 4.10**  
**Top Fruits Consumed by Latino Farm/Industry Workers**

<b>Fruits</b>	<b>Males n (%)</b>	<b>Females n (%)</b>	<b>Total n (%)</b>
<b>Farm Workers:</b>			
<b>Apple</b>	20 (30%)	2 (17%)	22 (28%)
<b>Banana</b>	18 (27%)	3 (25%)	21 (27%)
<b>Orange</b>	7 (11%)	0	7 (9%)
<b>Cantaloupe</b>	5 (7.5%)	0	5 (6%)
<b>Avocado</b>	4 (6%)	1 (8%)	5 (6%)
<b>Lemon</b>	5 (7.5%)	0	5 (6%)
<b>Mango</b>	1 (1.5%)	3 (25%)	4 (5%)
<b>Strawberries</b>	1 (1.5%)	3 (25%)	4 (5%)
<b>Watermelon</b>	4 (6%)	0	4 (5%)
<b>Coconut</b>	1(1.5%)	0	1 (1%)
<b>Industry Workers:</b>			
<b>Banana</b>	25 (21%)	23 (22%)	48 (21%)
<b>Apple</b>	18 (15%)	20 (19%)	38 (17%)
<b>Orange</b>	22 (18%)	16 (15%)	38 (17%)
<b>Watermelon</b>	19 (16%)	12 (11%)	31 (14%)
<b>Avocado</b>	11 (9%)	8 (8%)	19 (8%)
<b>Cantaloupe</b>	6 (5%)	9 (9%)	15 (7%)
<b>Pear</b>	6 (5%)	1 (1%)	7 (3%)
<b>Mango</b>	1 (1%)	4 (4%)	5 (2%)
<b>Strawberries</b>	5 (4%)	0	5 (2%)
<b>Tangerines</b>	1 (1%)	3 (3%)	4 (2%)
<b>Coconut</b>	0	3 (3%)	3 (1%)
<b>Pineapple</b>	0	3 (3%)	3 (1%)
<b>Papaya</b>	0	2 (2%)	2 (1%)
<b>Blueberries</b>	2 (2%)	0	2 (1%)
<b>Grapes</b>	2 (2%)	0	2 (1%)
<b>Kiwi</b>	0	1 (1%)	1 (0.5%)
<b>Peaches</b>	1 (1%)	0	1 (0.5%)
<b>Cherries</b>	1 (1%)	0	1 (0.5%)

Focus Group Question: What are some vegetables or vegetable juices that you eat or drink?

Similar themes from the previous focus group question on fruits re-emerged, including (a) types of vegetables consumed and preparation methods, (b) the importance of vegetables, and (c) barriers to vegetable consumption. Participants mentioned tomatoes, onions, beans, chili peppers, potatoes, broccoli, squash/pumpkins, carrots, and lettuce as commonly consumed vegetables. Vegetables were typically eaten raw, in soups, with salads, or served with meat:

In my house, I put vegetables in soups. A soup of beef or chicken with vegetables. I put celery, tomatoes, and onions.

I mix tomatoes and onions, and we just eat it with meat.

As with fruits, all participants agreed that vegetables were essential for good health. Many of the statements made regarding the importance of vegetables were similar to the statements made regarding fruit. Several participants expressed their views on the importance of adequate vegetable consumption:

Yes, it is important to eat vegetables because they give us protein and vitamins that we need for our body. When you become a parent, it is more obvious that we want to introduce fruits and vegetables to our kids. If we don't have the budget, we try to feed the kids the fruits and vegetables that they need first.

It's important to eat vegetables because they vitamins A, B, C, and E.

I eat vegetables to have energy.

Despite the awareness of the importance of vegetable consumption, several participants felt that their vegetable intake was inadequate. Several barriers to vegetable consumption, similar to the ones mentioned in the fruit question, were discussed. The primary limitation described was that vegetables were too expensive:

In the U.S. we have all the vegetables, but I just don't have the money. I don't have the money to buy them.

Despite the expensive cost, one participant described how in their family a high priority was placed on purchasing produce:

Yes, the vegetables are expensive, but in my family I make an effort to buy them. You make money and you have to spend it on eating well. If you don't eat well, you might as well die.

Another participant described the availability and freshness of vegetables:

... it is the same situation as with the fruits. Sometimes we find them fresh, sometimes they are spoiled, and other times they just don't have them.

Participatory Activity: Rank the three vegetables or vegetable juices that you eat the most.

To assess vegetable consumption among Latino farm/industry workers, participants were asked to rank the three vegetables that they consumed the most in the U.S. About 34% of farm workers indicated that they consumed beans the most, 20% reported potatoes as their second most consumed vegetables, and 14% choose chili peppers as their third choice. Males ranked vegetables in this order. However, females indicated that beans, chili peppers, and tomato/onions were their first, second, and third choices, respectively. No one reported drinking vegetable juice. Latino industry workers ranked tomatoes/onion, beans, and potatoes as the first, second, and third most consumed vegetables, respectively. This ranking order was true for both genders. The results are displayed in Table 4.11.

**Table 4.11**

Top Vegetables Consumed by Latino Farm/Industry Workers

<b>Vegetables</b>	<b>Males n (%)</b>	<b>Females n (%)</b>	<b>Total n (%)</b>
<b>Farm Workers:</b>			
<b>Beans</b>	21 (33%)	4 (40%)	25 (34%)
<b>Potato</b>	14 (22%)	1 (10%)	15 (20%)
<b>Chili Peppers</b>	7 (11%)	3 (30%)	10 (14%)
<b>Tomato/Onion</b>	2 (3%)	2 (20%)	4 (5%)
<b>Green Beans</b>	4 (6%)	0	4 (5%)
<b>Corn</b>	3 (5%)	0	3 (4%)
<b>Green Tomatoes</b>	3 (5%)	0	3 (4%)
<b>Cauliflower</b>	2 (3%)	0	2 (3%)
<b>Prickly Pear</b>	2 (3%)	0	2 (3%)
<b>Squash</b>	2 (3%)	0	2 (3%)
<b>Broccoli</b>	1 (1.5%)	0	1 (1%)
<b>Carrots</b>	1 (1.5%)	0	1 (1%)
<b>Bell Peppers</b>	1 (1.5%)	0	1 (1%)
<b>Radish</b>	1 (1.5%)	0	1 (1%)
<b>Industry Workers:</b>			
<b>Tomato/Onion</b>	22 (19%)	33 (30%)	55 (24%)
<b>Beans</b>	20 (17%)	14 (13%)	34 (15%)
<b>Potato</b>	14 (12%)	16 (15%)	30 (13%)
<b>Chili Peppers</b>	8 (7%)	10 (9%)	18 (8%)
<b>Carrots</b>	10 (9%)	6 (6%)	16 (7%)
<b>Cabbage</b>	11 (9%)	3 (3%)	14 (6%)
<b>Prickly Pear</b>	7 (6%)	4 (4%)	11 (5%)
<b>Corn</b>	7 (6%)	4 (4%)	11 (5%)
<b>Lettuce</b>	0	9 (8%)	9 (4%)
<b>Broccoli</b>	6 (5%)	2 (2%)	8 (4%)
<b>Cauliflower</b>	3 (3%)	2 (2%)	5 (2%)
<b>Radish</b>	3 (3%)	1 (1%)	4 (2%)
<b>Cucumbers</b>	0	3 (3%)	3 (1%)
<b>Squash</b>	3 (3%)	0	3 (1%)
<b>Bell Peppers</b>	0	2 (2%)	2 (1%)
<b>Green Beans</b>	1 (1%)	0	1(0.5%)
<b>Celery</b>	1 (1%)	0	1 (0.5%)

Research Question 4: To what extent are Latino farm/industry workers concerned about hunger and food security?

In order to completely understand the nutrition and health concerns and perceived barriers of Latino farm/industry workers, another objective of this research was to assess food security. The fifth focus group question asked participants about their concerns regarding having enough food to eat.

Focus Group Question: What concerns do you have for you and your family regarding having enough food to eat?

When subjects were asked what their major concerns were regarding having enough food to eat, three predominant themes emerged: (a) lack of money, (b) transportation, and (c) language barriers. Many of these issues were also discussed in the second focus group question regarding eating concerns that participants have for themselves and their families.

Throughout the focus group sessions, affordability of food was a major concern that was brought up in almost all focus group questions, including this one. Expense was the primary limitation to having enough food to eat. Specific comments were as follows:

... There are a lot of problems getting our food.... There are a lot of obstacles towards good health. We have bigger priorities. We have to pay rent- \$500 a month... We also have problems with our cars. Also our utilities are high. These problems have to come before good eating.

One of the main obstacles to getting the food is money. The products are too expensive.

I do not necessarily worry about food, but I normally don't have enough fruits. We never have enough fruits. They are too expensive.

Accessibility of food was another concern discussed. Transportation was reported to be a major obstacle in obtaining foods. Several participants described their concerns:

Another issue that I have is that the supermarkets are too far away and it is a pain to get there.

After the rent, utilities, paying for transportation to go to work, we have to pay for transportation to get groceries. This is another burden.

Basically, because we are Latin, we get discriminated against with

transportation. With a white American, the taxis will stop. Bt they won't stop for us. Sometimes they just ignore us. The fee for transportation is also very expensive.

Participants also indicated that they could only make one trip a week to the grocery stores. As a result, they reported not buying fresh fruits and vegetables to last the entire week because they would spoil.

Language and communication barriers also surfaced as issues that affect getting enough food to eat. One participant explained their situation:

Another issue that I have is language... We don't know how to ask for what we need. We move so much from city to city. By the time we learn what is in the markets and where it is found, we move again and have to learn the new things in the new places. One of the biggest barriers is being new in a place and not being able to find our food.

Two industry workers stated that they did not have difficulties getting enough food to eat:

Here you have everything available. We work hard and we have everything.

It's not a problem buying food.

Research Question 5: What type of educational strategies do Latino farm/industry workers perceive as the most useful for learning about nutrition?

One of the primary objectives of this study was to assess the health and nutrition status of Latino farm/industry workers and develop useful and culturally appropriate nutrition education strategies that will improve dietary habits and overall health. Three focus group questions were posed to determine previous sources of nutrition and health information and education, and to generate discussion on educational preferences. These questions included (a) who talks to you about nutrition, (b) who talks to you about how to stay healthy, and (c) what would be the easiest way for you to learn about food and health? A participatory activity was also conducted to determine participants preferences for learning about nutrition and health.

Focus Group Question: Who talks to you about nutrition?

This focus group question intended to determine previous sources of nutrition information among this population group. Participants reported that they had not received nutrition education:

No one has talked to us about nutrition. No one has given us an orientation about what good nutrition is. Nobody gives us any information about good

nutrition- only you so far.

No one- the farmers just tell us to drink water instead of beer on the fields.

Focus Group Question: Who talks to you about health?

All the participants gave the same answer when asked about sources of previous health information. The only comment given by all groups was that “no one” talked to them about health.

Focus Group Question: What would be the easiest way for you to learn about nutrition?

This focus group question was an effort to determine the easiest and most useful education interventions for this population group. Both farm and industry workers provided interactive and non-interactive learning methods as suggestions. The interactive method that was mentioned by one participant involved classroom lectures and discussions:

The easiest way will be the way you are conducting this session right now. An open discussion with lots of activities.

Cassettes, radios, television, and fliers/brochures were all mentioned as non-interactive ways that participants would like to receive health and nutrition information. Some of the comments included:

You can also use the radio. We listen to the radio and watch TV. I feel that TV or radio would be more effective because we won't have to meet with a teacher in a classroom. We have to work all day and don't have time for a class.

I would like to have a cassette. Something recorded that I could play over and over to learn.

I would like tapes better than the radio show, because if I miss the time on a radio show, I will miss information.

Participatory Activity: Rank the three methods that you would prefer to receive education information about health and nutrition.

Participants were asked to rank the three top methods that they preferred for learning about health and nutrition to determine what types of educational strategies Latino farm/industry workers perceive as useful. Farm workers preferred cassettes, brochures/television, and radio as their first, second, and third choices. Although this

ranking was the same for the males, females preferred different ways of learning. Females ranked classes, cassettes, and brochures/radio as their first, second, and third choices. Industry workers ranked television, cassettes, and classes as their first, second, and third choices. Differences were evident among males and females. Males ranked television, brochures, and cassettes as their first, second, and third choice. Females reported classes, cassettes/television, and brochures as their first, second, and third preferred methods, respectively. Data is shown in Table 4.12.

**Table 4.12**  
Preferred Educational Methods Among Latino Farm/Industry Workers

<b>Method</b>	<b>Males n (%)</b>	<b>Females n (%)</b>	<b>Total n (%)</b>
<b>Farm Workers:</b>			
<b>Cassettes</b>	15 (23%)	3 (25%)	18 (23%)
<b>Brochures</b>	13 (20%)	2 (17%)	15 (19%)
<b>TV</b>	15 (23%)	0	15 (19%)
<b>Radio</b>	12 (18%)	2 (17%)	14 (18%)
<b>Classes</b>	8 (12%)	5 (42%)	13 (17%)
<b>Posters</b>	3 (4.5%)	0	3 (4%)
<b>Industry Workers:</b>			
<b>TV</b>	41 (34%)	24 (23%)	65 (29%)
<b>Cassettes</b>	27 (22%)	24 (23%)	51 (23%)
<b>Classes</b>	13 (11%)	30 (29%)	43 (19%)
<b>Brochures</b>	29 (24%)	12 (12%)	41 (18%)
<b>Posters</b>	10 (8%)	7 (7%)	17 (8%)
<b>Radio</b>	2 (2%)	7 (7%)	9 (4%)

#### General Observations

Overall, industry workers were more engaging in the focus group sessions, whereas farm workers tended to be more reserved during the discussions. Typically, industry workers have been in the United States for a longer period of time. Due to acculturation, they may be more comfortable discussing issues with official channels.

Differences also were noted among genders. Males tended to be more open and comfortable in the discussions than the females. Married females did not appear to be hesitant sharing their concerns and opinions. However, the single females were very reserved and contributed very little to the discussions.

From observation, it did not appear that these participants were suffering from any serious health and nutritionally related problems. Even though obesity was brought up as a general health concern, participants were not obese.

Food Security Questionnaire

The Cornell/Radimer Food Security Scale Questionnaire (Appendix C) was administered to 34 participants to determine their status of food security. This questionnaire, which correlated with focus group question 5, was intended to further gather data on the food security status of this population group. A questionnaire was administered to each participant at the end of the sessions if time permitted. The moderator and co-moderators were responsible for reading the questions to the participants. Face visuals were used to represent answer choices. After the question was read aloud in Spanish, the participants pointed to their answer. The moderator or co-moderator marked all questionnaires.

Another 15 questionnaires were completed by female Latino farm workers who were not involved in the sessions. A Migrant Head Start Coordinator completed these questionnaires during home visits. Demographic information also was collected on these individuals.

The Cornell/Radimer Food Security Scale Questionnaire was used to estimate food security among households and individuals. Food security was determined by examining the prevalence of positive responses to each item. Positive responses included “often true,” “sometimes true,” or “yes” responses. Individuals were considered food insecure if they had one or more positive responses. Based on this scale, only 4% of all participants were food secure. Ninety-eight percent of both farm and industry workers were household insecure. These results as well as individual insecurity, and individual hungry are presented in table 4.13.

**Table 4.13**  
Prevalence of Hunger and Food Insecurity Among Latino Farm/Industry Workers

	<b>Farm Workers</b>	<b>Industry Workers</b>
<b>Food Secure</b>	2%	2%
<b>Food Insecure</b>	98%	98%
<b>Individual Insecure</b>	85%	83%
<b>Individual Hungry</b>	73%	77%

Data from the food security questionnaire was analyzed using SPSS. Chi-square analysis were conducted to examine statistical differences between genders and within groups (farm versus industry workers). No statistically significant differences between the two groups were observed for any of the questions. Thus, the statistical significant differences discussed are between males and females within each group and between total male and female participants.

The first question asked participants whether they worried that their food would run out before they got money to buy more. Overall, the largest percentage of farm worker (40.7%) and industry workers (50.0%) reported that this was often true. A larger number of female farm and industry workers indicated that this was often true when compared to the males. However, when comparing males and females within each group, these differences were not statistically significant. In addition, no statistical differences were observed among total male and female participants. About 37.3% of farm workers indicated that this statement was sometimes true and 22.0% indicated this was never true. About 40.9% of industry workers reported that this was sometimes true. A much lower percentage of industry workers indicated this was never true (9.1%). This data is illustrated in Table 4.14.

**Table 4.14**

Farm and Industry Workers Responses to Question 1: “I worry whether my food will run out before I get money to buy more.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	40.7% (11)	37.3% (13)	22.0% (3)
<b>Males, n = 11</b>	9.1% (1)	63.6% (7)	27.2% (3)
<b>Females, n = 16</b>	62.5% (10)	37.5% (6)	0.00%
<b>Industry Workers</b>			
<b>Overall, n = 22</b>	50.0% (10)	40.9% (9)	9.1% (3)
<b>Males, n = 9</b>	11.1% (1)	66.6% (6)	22.2% (2)
<b>Females, n = 13</b>	69.2% (9)	23.1% (3)	7.7% (1)

The second question on the survey asked participants if they worry about whether the food that they can afford to buy for their households will be enough. The largest percentage of farm workers (48.1%) indicated that this was sometimes true. The greatest percentage of industry workers (45.5%) reported that this was often true. Once again, a greater percentage of female farm and industry workers indicated that this statement was “often true” in comparison to the males. Statistical significance was not observed when comparing males and females within each group or when comparing total male participants with total female participants. Gender differences and data for this question can be seen in Table 4.15.

**Table 4.15**

Farm and Industry Workers Responses to Question 2: “I worry about whether the food that I can afford to buy for my household will be enough.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	40.7% (11)	48.1% (10)	11.1% (6)
<b>Males, n = 11</b>	9.1% (1)	54.5% (6)	36.4% (4)
<b>Females, n = 16</b>	62.5% (10)	25.0% (4)	12.5% (2)
<b>Industry Workers</b>			
<b>Overall, n = 22</b>	45.5% (11)	40.9% (9)	13.6% (2)
<b>Males, n = 9</b>	22.2% (2)	66.6% (6)	1.1% (1)
<b>Females, n = 13</b>	69.2% (9)	23.0% (3)	7.7% (1)

Question 3 asked participants to report how often the food they bought didn’t last and they didn’t have money to get more. The largest percentage of both farm (59.3%) and industry (40.9%) workers indicated this was “sometimes true.” A greater number of females reported positive results, which correlates with greater food insecurity. There was a statistically significant difference ( $p= 0.027$ ) when male farm workers were compared to female farm workers. In addition, there was a statistically significant difference when comparing all male and female participants ( $p= 0.017$ ). Data and gender differences are shown in Table 4.16.

**Table 4.16**

Farm and Industry Workers Responses to Question 3: “The food that I bought just didn’t last, and I didn’t have money to get more.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	18.5% (5)	59.3% (16)	22.2% (6)
<b>Males, n = 11</b>	0.0%*	54.5% (6)*	45.5% (5)*
<b>Females, n = 16</b>	31.3% (5)*	62.5% (10)*	6.2% (1)*
<b>Industry Workers</b>			
<b>Overall, n = 22</b>	36.4% (8)	40.9% (9)	22.7% (5)
<b>Males, n= 9</b>	11.1% (1)	55.6% (5)	33.3% (3)
<b>Females, n=13</b>	53.8% (7)	30.8% (4)	15.4% (2)

\* Indicates statistical significance within population groups,  $p < 0.05$

The next survey question asked participants to indicate how often they ran out of foods that they needed to put a meal together and did not have enough money to buy more food. The majority of both farm (77.7%) and industry (50.0%) workers reported this to be “sometimes true.” Almost a quarter of both farm and industry worker females indicated this happened to them often. No statistically significant differences were observed among males and females within each group. A comparison of all male participants and all female participants did indicate statistical significance ( $p= 0.018$ ). Data is illustrated in Table 4.17.

**Table 4.17**

Farm and Industry Workers Responses to Question 4: “I ran out of the foods that I needed to put together a meal and I didn’t have money to get more food.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	14.8% (4)	77.7% (21)	7.4% (2)
<b>Males, n = 11</b>	0.0%	81.8% (9)	18.2% (2)
<b>Females, n = 16</b>	25.0% (4)	75.0% (12)	0.0%
<b>Industry Workers</b>			
<b>Overall, n = 22</b>	18.2% (4)	50.0% (11)	31.8% (7)
<b>Males, n = 9</b>	11.1% (1)	33.3% (3)	55.6% (5)
<b>Females, n = 13</b>	23.1% (3)	61.5% (8)	15.4% (2)

Question 5 on the food security survey asked participants to report how often they ate the same foods because they did not have money to buy a variety of foods. The largest percentage of both farm workers (55.6%) and industry workers (36.4%) indicated that this was “sometimes true.” As with the previous questions, there was a major difference in how females answered this question. No male farm workers indicated that this statement was often true where as 50.0% of female farm workers reported it to be often true. In comparison to males, significantly significant larger percentage of female industry workers indicated that the statements were positive, meaning more food insecurity ( $p < 0.03$ ). Significant differences ( $p=0.018$ ) also were evident when comparing all male participants to all female participants. Data can be observed in Table 4.18.

**Table 4.18**

Farm and Industry Workers Responses to Question 5: “We eat the same thing for several days in a row because we only have a few different kinds of food on hand and don’t have money to buy more.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	29.6% (8)	55.6% (15)	14.8% (4)
<b>Males, n = 11</b>	0.0%*	43.8% (8)*	27.3% (3)*
<b>Females, n = 16</b>	50.0% (8)*	43.8% (7)*	6.25% (1)*
<b>Industry Workers</b>			
<b>Overall, n = 22</b>	31.8% (7)	36.4% (8)	31.8% (7)
<b>Males, n = 9</b>	22.2% (2)	22.2% (2)	55.6% (5)
<b>Females, n = 13</b>	38.5% (5)	46.2% (6)	15.4% (2)

\* Indicates statistical significance within population groups,  $p < 0.05$

This question asked participants how often they were hungry but could not eat due to lack of money to buy food. About 52% of farm workers indicated that this was sometimes true. On the other hand, the largest percentage of industry workers (54.5%) reported this situation to be never true. Significant differences between males and females within each group or total gender were not observed. Results from this question are illustrated in Table 4.19.

**Table 4.19**

Farm and Industry Workers Responses to Question 6: “I am often hungry, but I don’t eat because I can’t afford enough food.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	3.7% (1)	51.9% (14)	44.4% (12)
<b>Males, n = 11</b>	9.1% (1)	54.5% (6)	36.4% (4)
<b>Females, n =16</b>	0.0%	50.0% (8)	50.0% (8)
<b>Industry Workers</b>			
<b>Overall, n = 22</b>	9.1% (2)	36.4% (8)	54.5% (12)
<b>Males, n = 9</b>	11.1% (1)	22.1% (2)	66.7% (6)
<b>Females, n =13</b>	7.7% (1)	46.2% (6)	46.2% (6)

Participants were asked if they ate less than they believed they should due to not having enough money to buy food. Almost 71% of farm workers reported that this was sometimes true. About 32% of industry workers indicated this was often true, 32% said it was sometimes true, and 36% felt it was never true. Gender differences within each group were not statistically significant. However, comparing all male participants to all female participants did indicate statistical differences ( $p=0.018$ ) in answer choices. Data and gender differences are presented in Table 4.20.

**Table 4.20**

Farm and Industry Workers Responses to Question 7: “I eat less that I think I should because I don’t have enough money for food.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	11.1% (3)	70.4% (19)	18.5% (5)
<b>Males, n = 11</b>	0.0%	63.6% (7)	36.4% (4)
<b>Females, n =13</b>	18.8% (3)	75.0% (12)	6.2% (1)
<b>Industry Workers</b>			
<b>Overall, n = 22</b>	31.8% (7)	31.8% (7)	36.4% (8)
<b>Males, n = 9</b>	11.1% (1)	33.3% (3)	55.6% (5)
<b>Females, n = 13</b>	46.2% (6)	30.8% (4)	23.1% (3)

The largest percentage of both farm workers (59.3%) and industry workers (40.9%) reported that they often could not afford to eat properly. About 88% of female farm workers in comparison to 18.3% of male farm workers indicated that they often could not afford to eat properly. The same was evident with the industry workers; 53.8% of females reported that this situation was often true in comparison to 22.2% of the males. Among farm workers, females were statistically significant when compared to males ( $p= 0.027$ ). However, no significance was observed between male and female industry workers ( $p= 0.155$ ). In addition, statistical differences were not observed when comparing total male participants to total female participants. Results from this question are illustrated in Table 4.21.

**Table 4.21**  
Farm and Industry Workers Responses to Question 8: “I can’t afford to eat properly.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	59.3% (16)	18.5% (5)	22.2% (6)
<b>Males, n = 11</b>	18.2% (2)*	36.4% (4)*	45.5% (5)*
<b>Females, n = 16</b>	87.5% (14)*	6.3% (1)*	6.3% (1)*
<b>Industry Workers</b>			
<b>Overall, n = 22</b>	40.9% (9)	31.8% (7)	27.3% (6)
<b>Males, n = 9</b>	22.2% (2)	33.3% (3)	44.4% (4)
<b>Females, n = 13</b>	53.8% (7)	30.8% (4)	15.4% (2)

\* Indicates statistical significance within population groups,  $p < 0.05$

This question asked participants to indicate if they felt their children were not eating enough due to inadequate funds to purchase food. The largest percentage of farm workers (44.4%) and industry workers (36.4%) indicated that this was sometimes true. Gender differences within groups were not significant; however, statistical significance was evident when comparing all male participants to all female participants ( $p= 0.002$ ). Results from question 9 are presented in Table 4.22.

**Table 4.22**

Farm and Industry Workers Responses to Question 9: “My child(ren ) is (are) not eating enough because I just can’t afford enough food.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>	<b>Does Not Apply % (n)</b>
<b>Farm Workers</b>				
<b>Overall, n = 27</b>	11.1% (3)	44.4% (12)	11.1% (3)	33.3% (9)
<b>Males, n = 11</b>	9.1% (1)	18.2% (2)	9.1% (1)	63.6% (7)
<b>Females, n = 16</b>	12.5% (2)	62.5% (10)	12.5% (2)	12.5% (2)
<b>Industry Workers</b>				
<b>Overall, n = 22</b>	31.8% (7)	36.4% (8)	18.2% (4)	13.6% (3)
<b>Males, n = 9</b>	11.1% (1)	33.3% (3)	44.4% (4)	11.1% (1)
<b>Females, n = 13</b>	46.2% (6)	38.5% (5)	0.0%	15.4% (2)

Participants were asked how often their children experienced hunger due to inadequate funds to purchase food. The largest percentage of farm workers (48.2%) reported indicated this was sometimes true. The largest percentage of industry workers (50.0%) reported that this was never true. When comparing genders within each group, statistically significant differences were observed between male and female farm workers ( $p = 0.041$ ). However, no significance was found between total male participants when compared to total female participants. Data from question 10 is shown in Table 4.23.

**Table 4.23**

Farm and Industry Workers Responses to Question 10: “I know my child(ren) is (are) hungry sometimes, I just can’t afford more food.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>	<b>Does Not Apply % (n)</b>
<b>Farm Workers</b>				
<b>Overall, n = 27</b>	3.7% (1)	48.2% (13)	14.8% (4)	33.3% (9)
<b>Males, n = 11</b>	0.0%*	27.3% (3)*	9.1% (1)*	63.6% (7)
<b>Females, n = 16</b>	6.3% (1)*	62.5% (10)*	18.8% (3)*	12.5% (2)
<b>Industry Workers</b>				
<b>Overall, n = 22</b>	9.1% (2)	27.2% (6)	50.0% (11)	13.6% (3)
<b>Males, n = 9</b>	11.1% (1)	22.2% (2)	55.6% (5)	11.1% (1)
<b>Females, n = 13</b>	7.7% (1)	30.8% (4)	46.2% (6)	15.4% (2)

\* Indicates statistical significance within population groups,  $p < 0.05$

Question 11 inquired how often participants could not afford to feed their children a balanced meal. The largest percentage of both farm workers (44.4%) and industry workers (33.3%) indicated that this was often true. When comparing genders within each group, a statistically significant difference was found between male and female farm workers ( $p= 0.002$ ). However, a comparison of all males to all females did not indicate statistical significance. Results are presented in Table 4.24.

**Table 4.24**

Farm and Industry Workers Responses to Question 11: “I cannot afford to feed my child(ren) a balanced meal because I can’t afford that.”

	<b>Often True % (n)</b>	<b>Sometimes True % (n)</b>	<b>Never True % (n)</b>	<b>Does Not Apply % (n)</b>
<b>Farm Workers</b>				
<b>Overall, n = 27</b>	44.4% (12)	18.5% (5)	3.7% (1)	33.3% (9)
<b>Males, n = 11</b>	0.0%*	27.3% (3)*	9.1% (1)*	63.6% (7)
<b>Females, n = 16</b>	75.0% (12)*	12.5% (2)*	0.0%*	12.5% (2)
<b>Industry Workers</b>				
<b>Overall, n = 21</b>	33.3% (7)	28.6% (6)	23.8% (5)	14.3% (3)
<b>Males, n = 9</b>	22.2% (2)	22.2% (2)	44.4% (4)	11.1% (1)
<b>Females, n = 12</b>	41.7% (5)	33.3% (4)	8.3% (1)	16.7% (2)

\* Indicates statistical significance,  $p < 0.05$

Participants were asked if they had experienced weight loss in the past year due to inadequate food available. About 44% of farm workers indicated that they had lost weight and 48.1% reported that they had not. Among industry workers, 28.6% had lost weight and 66.7% had not. Gender differences within each group and overall gender differences of total participants were not statistically significant. Results can be seen in Table 4.25.

**Table 4.25**

Farm and Industry Workers Responses to Question 12: “In the past year, did you lose weight because there wasn’t enough food?”

	<b>Yes % (n)</b>	<b>No % (n)</b>	<b>Do Not Know % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	44.4% (12)	48.1% (13)	7.4% (2)
<b>Males, n = 11</b>	45.5% (5)	54.5% (6)	0.0%
<b>Females, n = 16</b>	43.8% (7)	43.8% (7)	12.5% (2)
<b>Industry Workers</b>			
<b>Overall, n = 21</b>	28.6% (6)	66.7% (14)	4.7% (1)
<b>Males, n = 9</b>	44.4% (4)	55.5% (5)	0.0%
<b>Females, n = 12</b>	16.7% (2)	75.0% (9)	8.3% (1)

The purpose of the final question was to determine if participants had experience hunger pangs in the past year because they could not afford food. About 22% of farm workers and 48% of industry workers reported hunger pangs. A larger percentage of male farm and industry workers experienced hunger pangs when compared to females. However, these differences were not statistically significant. In addition, no statistical significance was observed when total male participants were compared to total female participants. Results from this question are illustrated in Table 4.26.

**Table 4.26**

Farm and Industry Workers Responses to Question 13: “In the past year, have you had hunger pangs but couldn’t eat because you couldn’t afford food?”

	<b>Yes % (n)</b>	<b>No % (n)</b>	<b>Do Not Know % (n)</b>
<b>Farm Workers</b>			
<b>Overall, n = 27</b>	22.2% (6)	48.2% (13)	29.6% (8)
<b>Males, n = 11</b>	36.4% (4)	63.6% (7)	0.0%
<b>Females, n = 16</b>	12.5% (2)	37.5% (6)	50.0% (8)
<b>Industry Workers</b>			
<b>Overall, n = 21</b>	47.6% (10)	52.4% (11)	0.0%
<b>Males, n = 9</b>	55.6% (5)	44.4% (4)	0.0%
<b>Females, n = 12</b>	41.7% (5)	58.3% (7)	0.0%

## CHAPTER V: SUMMARY AND CONCLUSIONS

The purpose of this research was to assess the nutrition, health, and food security practices, concerns and perceived barriers of Latino farm/industry workers in Virginia. Triangulation of focus group discussions, visual participatory activities, and a food security questionnaire were utilized to collect data. This chapter summarizes the results and presents the conclusions of this study related to the triangulation of methodologies, the five research questions, the study's limitations, and future recommendations.

### Triangulation of Methodologies

Triangulation of qualitative and quantitative methodologies was used to gather data about the nutrition, health, and food security concerns and perceived barriers of Latino farm/industry workers. Triangulation techniques worked well this particular population group due to linguistic and cultural differences. Each session consisted of a few participants who comfortably verbalized their concerns and others who provided limited responses, which contributed little to the discussions. Several of the focus group questions, including the health concerns and food security questions, were very sensitive in nature and discussions that arose were very general and limited. Participants were hesitant to verbalize specific information with the group because they did not want to reveal personal issues in front of their co-workers, family, or friends.

Incorporating the visual participatory activities into the focus group session allowed all participants to “give voice” to their concerns. These activities were well accepted by all the participants. The visual participatory activities enabled non-vocal participants reveal their personal perceptions. Because all of the participants conducted the activities either at the same time or individually in private, there was less of a concern about others observing what was ranked as their choices. In addition, this Latino population had low English and Spanish literacy skills. Visual aids were welcomed and effective in eliciting information from these participants who had limited writing, reading, and language skills. Also, this target population group was not very talkative. Discussion with the focus group questions was often limited and having the visual aids available helped expand the participants choices and initiate discussion on issues that they would not have considered.

Incorporating the food security questionnaire further allowed participants to present their concerns. The focus group question on food security presented a very sensitive issue. This population did not want to reveal to the group that they were vulnerable and may have felt uncomfortable sharing such private issues with the group. They may have been embarrassed to admit not having enough food to eat because it may appear to others in the group that they were not working hard enough. Administering the questionnaire on an individual basis relieved the stress of discussing personal issues, such as hunger and food security, in front of their co-workers or friends.

Triangulating different research methodologies with this particular population may be the most effective way to gather data from all individuals within this population group. When dealing with personal issues, such as health concerns, hunger, and food insecurity, many individuals in this Latino population were hesitant to reveal private concerns with the group. Thus, incorporating verbal techniques with visuals allowed all individuals the opportunity to “give voice” to their concerns.

Research Question 1: What are the major sociodemographic and other characteristics of Latino farm/industry workers that might affect their health, nutrition, food security, and preferences for learning?

Sociodemographic and lifestyle characteristics affect Latino farm/industry workers health, nutrition, food security, and preference for learning. Low incomes, linguistic and cultural barriers, long work hours, and mobile lifestyles significantly impact the health and nutrition status of this population group.

Approximately 70% of all participants were originally from Mexico. The majority of the migrant farm workers that work in Virginia during the fall, spring, and summer months, return to their permanent homes in Florida, Texas, or Mexico for the winter months. Other farm workers remain in Virginia during the fall and winter months (until December), then return to their homes in Mexico (Trupo et al., 1998).

Farm and industry workers typically earn minimum wage incomes. Inadequate funds inhibit individuals from receiving adequate health care and other services. In addition, lack of money significantly affects nutritional status and food security. Farm and industry workers reported not having enough money to purchase nutritionally adequate foods, cooking utensils, and other necessary items. For example, this

participant's comment captured the essence of what many people were saying: "We don't always have everything we need to cook. Sometimes, I am missing something and it is usually because I don't have the money to buy it." Also, many of these workers send remittance back to help their families in their home country, leaving them with even less money for their own health and nutrition needs. Expense and availability of transportation also is a factor that affects health and nutrition status. Participants indicated that due to the expense of transportation, they could only go the grocery stores once a week. This made purchasing foods that spoil easily, such as fresh fruits and vegetables, difficult.

The majority of this population is not fluent in English and has low Spanish literacy skills. This makes basic activities, such as shopping for groceries, communicating with store clerks, or inquiring about various health and services, extremely difficult. In addition, because the majority of this population has a low literacy level, not all educational methods would be appropriate. Educational strategies must be tailored to fit this population's needs. Bilingual programs and low literacy educational materials would be greatly beneficial.

Due to long hour workdays, many of the health and nutrition services available for this population group may be at inconvenient or at limited times during the week. Thus, this affects their health because they are unable to receive services. In addition, after working long hours individuals are tired and do not have the energy to prepare healthy meals. As a result, they often rely on fast, convenience foods, which tend to be high in fat and calories.

As mentioned earlier, Latino farm/industry workers tend to be a very migratory population group. Their lifestyle characteristics make it difficult to develop and implement standardized health and nutrition programs that may work for other population groups. Demographic and lifestyle characteristics of this population group influence their preferences for learning. Due to migratory lifestyles and long work hours, this population group recommended cassette tapes as a preferred method for learning, which is very different from typical learning styles of mainstream population. Although services targeted towards this population group exist, most Latino farm and industry workers are not aware of these programs. This mobile lifestyle, coupled with cultural

and linguistic barriers, makes it even more difficult for Latino farm and industry workers to learn about available services when they move to new areas.

Low incomes, linguistic barriers, long hour workdays, and migratory lifestyles are all factors that affect the health, nutrition, food security, and preferences for learning of Latino farm/industry workers. Nutritionists and health educators need to be sensitive to the different sociodemographic and lifestyle characteristics of this population group when developing programs and interventions.

Research Question 2: What do Latino farm/industry workers in Virginia perceive as their major health and nutrition concerns, barriers, and solutions?

A primary purpose of this research was to determine the health and nutrition concerns and barriers of Latino farm/industry workers. As previously stated, participatory activities were correlated with focus group questions to generate discussion and data on this matter.

Health Concerns

The first focus group question intended to develop a discussion about the major health concerns of this population group. During the discussion, participants indicated that their predominant health concerns were chronic diseases, including cancer and diabetes, sexually transmitted diseases, bacteria/infections, and obesity/overweight. However, participants identified limited health concerns during the discussion. Several of the health problems that were ranked as predominant concerns during the participatory activity, were not even mentioned during the discussion. Listing various health problems during the participatory activity helped participants consider a broader base of health concerns. Many participants were hesitant to openly discuss private issues in front of their co-workers, family, or friends. The participatory activity conducted that correlated with this question allowed participants to anonymously rank their health concerns.

Thematic comparisons revealed more differences than similarities in health concerns among farm and industry workers. Farm workers perceived osteoporosis, anemia, AIDS/STDs, and urinary tract infections as their top health concerns where as industry workers ranked gastritis, arthritis, and cancer as their three top health concerns. Male farm workers in comparison to industry workers were more concerned with AIDS/STDs. Most of the male farm workers live away from their wives, girlfriends, or

partners. Prostitutes are available in migrant communities. This prostitution and promiscuous behavior among male farm workers increases the risk of contracting sexually transmitted diseases.

Females reported different health concerns than males. The women were more concerned about hypertension, back pain, and osteoporosis. Although Latinos in the U.S. are at a greater risk for developing serious health problems, such as tuberculosis, cancer, diabetes mellitus, and hypertension, than the general population (HHANES, 1990), overall chronic diseases, such as cancer, diabetes, and hypertension, were not ranked as major concerns among this population group. It is common that many Latino individuals possess an external locus of control (Burk, Wieser, Keegan, 1995). Thus, they feel that development of chronic diseases is beyond their control and in the hands of God. As a result, this may be a reason why chronic diseases, such as diabetes and cancer, were not ranked as a major health concern.

It is evident that this both farm and industry workers are more concerned with health issues that would immediately affect their ability to work long, strenuous hours, such as osteoporosis and anemia, than with chronic diseases. However, industry workers were more concerned than farm workers about chronic diseases.

Both farm and industry workers similarly were more concerned about health problems that would directly affect their working ability. This data correlates with previous studies that have been conducted with Latino farm workers. Lantz et al. (1994) also found that migrant farm workers and others with socioeconomic hardships were more concerned with day-to-day survival than chronic diseases. In addition, the participatory activity revealed that the majority of both farm and industry worker's personal perception of their health status was "good."

#### Eating/Nutritional Concerns

A correlating focus group question and participatory activity were used to gather data about this Latino population's eating and nutritional concerns. The focus group question about eating/nutritional concerns generated more discussion than the question on health concerns. Latino farm workers are reported to be at a high risk for developing nutrition-related health problems as a result of their low socioeconomic status and migratory lifestyles (Runyan and Morgan, 1987). Predominant themes that emerged

from the focus group discussion included concerns about (a) lack of money, (b) fruit and vegetable consumption, (c) balanced diets, (d) lack of time to prepare meals, (e) communication and language barriers, and (f) unwillingness to try new foods.

The top theme that emerged during this question and throughout the sessions involved the lack of money. Participants agreed that the primary limitation to “eating right” was not having enough money. In the United States, food is relatively cheap when available in comparison to many of the participant’s home countries. However, the food that is cheap and convenient may be high in fat and calories. Many individuals commented on having to strictly follow a budget, and felt that this greatly affected their nutritional status. A couple of industry workers expressed their pride in their hard work and indicated that in the U.S. they worked hard and were able to purchase what they needed.

The second most significant eating and nutrition concern was inadequate fruit and vegetable intake, primarily due to inadequate funds to purchase the produce. Participants clearly recognized the importance of eating fruits and vegetables, but no one offered details on specific health benefits.

Another concern discussed by participants involved the need for a balanced diet. While most participants referenced having “balanced meals/diets,” again individuals did not provide detailed comments. The media often uses general terms, such as “balanced diet,” and even though participants made comments such as this, it cannot be assumed that they possess accurate nutrition knowledge. A few participants recognized the importance of having a balanced diet, however, were not sure exactly what a balanced diet encompassed. This participant articulated what many said: “I think that none of us really understands the meaning of what it means to have a balanced diet. We all eat some fruits and vegetables and meats, but what do you really mean to have a balanced diet. We don’t know. We eat milk, cheese, vegetables, meats, and fish. Is fish a meat? I don’t know.” Adding a focus group question or participatory activity that asks participants to describe their idea of a balanced diet would be beneficial for future research.

Lack of time to prepare healthy foods was another theme that emerged relating to eating concerns. Several participants commented that they were aware that many of the

foods that they consumed were unhealthy. After working long hour days, participants agreed that they were too tired to prepare healthy meals for themselves and their families. They chose fast, convenience foods over healthier options that took longer to prepare.

Linguistic and communication barriers were another reoccurring theme that affected eating and nutritional status. The majority of the participants were not able to read or speak English. Both Hispanic farm and industry workers stressed that this was a serious problem when it came to purchasing foods, especially when they were new in the area. Linguistic barriers made it difficult to find where markets were located and the location of specific foods in the supermarkets. In many cases, participants had to rely on looking at pictures on food labels of cans and packages to determine the type of food they were buying.

A minor theme that emerged involved the idea that Latino individuals are hesitant about trying new foods. A few individuals agreed that they refused to eat or prepare various ethnic foods, such as Chinese food. One participant revealed his concern: “As a Latino, I feel that we are closed-minded about new foods. We are not open to new things. We think our foods are the best. We have our minds decided before we even try it.” Another individual felt that he needed starches in his diet, which Chinese food would supply, and agreed that he should be more open to new foods.

Despite the many eating and nutrition concerns discussed during this focus group question, when asked to rank their nutritional status in the participatory activity, the majority of farm workers ranked their status as “very good” and the majority of industry workers felt that their nutritional status was “good.” They may have been influenced by other individuals in their group and not have truthfully ranked their nutritional status in fear of looking bad in front of the other members or they may truly perceive their nutritional status as good. Participants may believe that since they are getting adequate amounts of food, their nutritional status is good. However, the types of foods that they are eating may not be meeting their nutritional requirements.

### Solutions

Participants were asked about health and nutrition services that they would like available. Responses varied from very general to specific. Individuals reported wanting more medical services available for themselves and their children. Several participants

indicated that they would like more health and nutrition information. However, they did not specify the type of information that they wanted. Participants agreed that there was a need for more accessible free medical services. For example, one particular group mentioned that free services were only available to them one day each week. Individuals indicated that it would be very beneficial if free services were offered at least twice a week. Inconvenience of the hours of operation of health care services has been reported in previous studies as one of the primary barriers to health care (Perilla et al., 1998). Participants indicated the need for personal nutrition counseling services. They expressed that one-on-one interaction for nutrition problems, including weight loss, would be very beneficial. More on educational needs and services is discussed later in this chapter.

Research Question 3: What do Hispanic seasonal farm/industry workers in Virginia perceive as benefits and barriers to consuming fruits and vegetables?

In order to develop intervention strategies for this population group, it is necessary to learn about their current fruit and vegetable consumption patterns. Two focus group questions were asked to determine the types of fruits and vegetables consumed, preparation methods, buying habits, and barriers to consumption of fruits and vegetables. Two participatory activities were conducted to determine the fruits and vegetables most commonly consumed in the U.S.

All participants recognized that fruits and vegetables were necessary for good health. However, participants did not discuss adequate fruit and vegetable consumption in relation to disease protection. The only specific information provided about the benefits of fruits and vegetables was that they provided energy, vitamins, and minerals. Despite the fact that participants were aware of the importance of adequate fruit and vegetable consumption, most individuals reported that their intake was sub-optimal.

Both farm and industry workers agreed that the primary barrier to fruit consumption was cost. One participant mentioned that fruits in their household were a luxury. Apples, oranges, and bananas were ranked by both farm and industry workers as the most common fruits eaten. Comparing the triangulated methodologies indicated that the three fruits mentioned during the focus group discussion were the top three ranked fruits in the participatory activity. Although some preference was given to other fruits,

such as papaya, mango, or melons, the most common fruits consumed were those that are the least expensive. Some participants reported that apple and/or orange juice was consumed on a regular basis, especially among children. However, others expressed that they did not consume juice because it was too high in sugar or that they preferred the taste of soda. Also, freshness and availability were mentioned as barriers to fruit consumption. In terms of preparation, raw fruits were a popular choice.

Beans, tomatoes/onions, potatoes, and chili peppers were reported as the most common consumed vegetables by both farm and industry workers. Intake of vegetable juices was not mentioned by any of the participants. Once again, the major barrier to vegetable consumption was cost. As with fruits, freshness was another limitation in terms of buying vegetables. The most prominent preparation techniques included soups, salsas, and salads. Many individuals described mixing tomatoes, onions, and peppers and eating them as a side with meat.

Grocery stores and Wal-Mart were popular places for purchasing fruits and vegetables. Participants expressed their concern about the expense and availability of transportation to these large supermarkets. Individuals were only able to make one weekly visit to the supermarkets. They did not purchase fresh fruits and vegetables to last the entire week since they would spoil before being used. Only a few individuals mentioned having time to grow fruits and vegetables in their own gardens.

Research Question 4: To what extent are Hispanic farm/industry workers concerned about hunger and food security?

Another primary purpose of this study was to determine the status of food insecurity among Latino farm/industry workers. To generate discussion on hunger and food security, participants were asked to indicate any concerns they had regarding having enough food for themselves and their family. Money, transportation, and language barriers were the predominant themes discussed.

The cost of food was a major limitation to having enough food, especially fruits and vegetables. Most participants agreed that money was the primary obstacle that they faced to getting enough food for their family. Two industry workers, however, stated that they worked hard and buying food was not a problem.

Accessibility of food was another concern discussed. Transportation was reported to be a major obstacle in obtaining reasonably priced foods from a larger store. Participants emphasized the expense and availability of transportation to the stores. In addition, many felt discriminated against when it came to transportation. Individuals reported that they could only make one weekly trip to the grocery stores. This affected the type of foods they purchased; they avoided buying fresh fruits and vegetables to last the entire week because they would spoil before being used.

Language barriers also were a concern that participants said affected getting enough food to eat. Many individuals expressed that they did not know how to ask for certain foods that they needed at the stores. Participants reported that store clerks were not willing to help them when they could not speak in English. In addition, several individuals indicated that they could not read food labels and containers, making it difficult to know exactly what they were purchasing.

Research Question 5: What type of educational strategies do Hispanic farm/industry workers perceive as the most useful for learning about nutrition?

A final purpose for this research was to determine what types of educational strategies Latino farm/industry workers perceive as most useful. Participants were asked about sources of previous nutrition and health education, and types of educational methods they prefer.

To determine previous educational interventions that have successfully reached this population, participants were asked to discuss previous sources of nutrition and health education. However, both farm and industry workers indicated that they had not been exposed to any education about nutrition and health in the United States. One participant indicated that back in Mexico, schoolteachers talked to them about these issues. However, participants agreed that in the U.S., we were the first group to talk to them about nutrition and health education.

In the final focus group question, participants were asked to suggest educational methods that they preferred to learn about nutrition and health. Answers were classified into both interactive and non-interactive educational techniques. Interactive educational methods involved material being presented in a class type setting where a teacher was present. Non-interactive educational methods involved information being presented

through techniques that do not involve human interaction. Although both interactive and non-interactive sources of information were mentioned as desirable ways to receive health and nutrition information, both farm and industry workers preferred non-interactive methods. These results were consistent with previous research studies that revealed that Hispanic participants preferred written and audio/visual media (including videos, radio, and audio cassettes), especially pamphlets with many visuals containing nutrition information directly targeted at them (Silva-Barbeau, 1997).

Cassettes, brochures, and televisions were among the preferred methods of learning for both farm and industry workers. Due to time constraints and migratory lifestyle, more participants, especially farm workers, indicated that these non-interactive methods of learning would be more convenient than classes. Many participants expressed that after working 12-hour days, they would be too tired to attend classes after work. Several farm workers suggested cassettes that contained nutrition and health information that they could repeatedly listen to while working in the fields. Participants were interested in having educational programs and materials available in Spanish. Interestingly, brochures was ranked as the second most preferred method of receiving nutrition and health information by farm workers despite the fact that this population group has low Spanish literacy skills. When developing brochures for this group, it is necessary that visuals be used as the primary method of presenting information and any written language must be very simple.

Overall, industry workers did rank classes as their third preferred method of learning. However, the majority of industry workers who were interested in classes were females. Females within this population group are typically the ones who perform most of the cooking in the households and even on the farms. As a result, females were more interested in attending cooking demonstrations and classes to learn healthier cooking techniques and recipes than males. Females felt it would be beneficial if bilingual individuals taught these classes. This would provide the opportunity to learn English words and phrases that they could use in the future to communicate with others, such as store clerks.

Participants did show interest in learning more about health and nutrition. Most individuals were interested in becoming actively engaged in improving their dietary habits and overall health.

#### Food Security Questionnaire

The 13-item Cornell/Radimer Food Security Scale Questionnaire, which correlated with focus group question 5, was intended to further gather data on the food security status of this population group. Thirty-four participants that were involved in the focus group discussions completed this survey. An additional 15 female farm workers, not involved in the sessions, completed the questionnaire. A total of 27 farm workers and 22 industry workers completed the questionnaire.

The majority of the male farm workers were in Virginia without their families. They sent remittance back to their families back home. Most of the female farm workers that completed the survey were single and had children living with them in Virginia. They were responsible for feeding not only themselves, but also their children.

The Cornell/Radimer Food Security Scale Questionnaire was used to assess the two levels of food insecurity, household and individual. Responses to the 13 items are considered positive if they are “often true,” “sometimes true,” or “yes.” A household or individual was considered to be food insecure if they had one or more positive answers. Based on this scale, approximately 98% of Latino farm and industry workers surveyed suffer from food insecurity. In addition, 85% of farm workers and 83% of industry workers were individual insecure.

Results from the questionnaire indicate that female farm and industry workers were more food insecure than males. Females had more positive statements indicating food insecurity. Statistically significant differences ( $p < 0.05$ ) between male and female farm workers were observed in five of the 13 questions. In addition, statistical significance was observed in five of the 13 questions when comparing total male participants to total female participants.

The participant’s discussions during the focus group strongly correlated with the high prevalence of food insecurity found with the Cornell/Radimer Food Security Questionnaire. During the focus group discussions, the most predominant theme that emerged relating to food and nutritional concerns was lack of money. Affordability is a

major factor that contributes to food security. Many of the participants indicated that money was the primary barrier to obtaining adequate amounts of food.

The socioeconomic and lifestyle characteristics of Latino farm/industry workers make them more vulnerable to food insecurity. The majority of the participants in this study have low incomes, which is a major barrier to obtaining adequate food. They may not be able to afford to purchase adequate and socially acceptable foods. In addition, lack of transportation to the stores affects the accessibility of food. Many participants reported that they could only make one weekly trip to the grocery store. If their food supply for the week does not last, they may have no way to get to the store to buy more food.

This study's results parallel with previous research that has been conducted with Latino farm workers. A study conducted by Shotland (1989) that examined a group of Florida migrant farm workers revealed that 30.6% of the participants experienced periods in which they did not have enough food to eat. The participants of this study reported a much higher prevalence of food insecurity. Food security was a serious problem with approximately 98% of both farm and industry workers experiencing household food insecurity. Household food insecurity involves food depletion, unsuitable food, food anxiety, and food acquisition in socially unacceptable ways (Olson, Frongillo, & Kendall, 1994). The majority of all participants indicated that it was often or sometimes true that they did not have enough food for themselves and their families due to inadequate money to purchase foods. Individual food insecurity also was a problem among this group. About 85% of farm workers and 83% of industry workers experienced this level of food insecurity which involves insufficient intake, nutritional inadequacy, lack of choice and feelings of deprivation, and disrupted eating patterns (Olson et al., 1994).

#### Research Limitations

Several limitations were evident during the focus group sessions. One of the primary limitations involved the difficulty in recruiting participants for this study. Other limitations of the focus groups included time, administration of the Cornell/Radimer Food Security Questionnaire, factors affecting the focus group dynamics, and factors potentially affecting analysis of focus group sessions and food security questionnaire.

### Obtaining Participants

The biggest challenge of this research study was obtaining individuals to participate in the sessions. This is a very difficult population group to reach and engage. In order to recruit participants, it was necessary to work with a community leader that the people respected and trusted. The community's migrant minister recruited farm workers and the industry's Human Resource manager recruited industry workers. Even after getting the groups together, it was difficult to convince the individuals to participate. The purpose of the research study had to be thoroughly explained so they would not feel threatened. Individuals were usually hesitant at first, and they had to be made comfortable in order to agree to participate. Some participants, such as the second session at Perdue, remained very hesitant even after the moderator explained the research.

### Time Available

Another limitation to this research was inadequate time available to conduct two of the sessions. This research involved incorporating visual participatory activities into a focus group discussion. For optimal completion of the entire session, about an hour was needed. However, the two focus group sessions that were conducted at Perdue Poultry Plant only allowed the workers to be off the manufacturing line for 35 to 40 minutes. This affected the amount of time that the moderator had for explaining the purpose of the research and making the participants feel more comfortable. There was not enough time to complete both the focus group discussions and the participatory activities. As a result, some of the focus group questions were not conducted in order to complete all the visual participatory activities. Since time did not allow, food security questionnaires could not be completed for any of the workers at Perdue.

### Administration of the Food Security Questionnaire

Due to limited time available, the moderator, co-moderators, and the Migrant Head Start Coordinator all administered the Cornell/Radimer Food Security Questionnaire to participants. Although the co-moderators and Migrant Head Start Coordinator were trained on how to correctly administer the questionnaire, inconsistencies may still have occurred in questioning style. Thus, this may affect data analysis.

### Factors Affecting Focus Group Dynamics

The first focus group session held with farm workers in Accomack County had 13 total participants, 11 males and 2 females. Selection of participants is a factor that needs to be considered when discussing this focus group's dynamics. When recruiting for individuals to volunteer to participate in this study, participants could not be denied the opportunity to participate. The moderator could not turn away any individuals that wanted to participate, even if the group's maximum size was already reached. This affects the moderator's ability to control focus group size. Kreuger (1994) indicates that data quality is affected with groups larger than 12 individuals. Although this group was slightly larger than what was originally intended, the session ran smoothly. A few participants mainly contributed during the discussion. However, all participants were eager and willing to complete the visual participatory activities. The two single females in this group were very shy and extremely hesitant to add to the discussion.

The second and third focus group sessions were held at Perdue Processing Plant in Accomack County. The first group consisted of 5 individuals, 4 males and 1 female. This group was the most difficult of all sessions. Participants did not want to be there and it took nearly 15 minutes to convince individuals to participate. Even after participants agreed to be involved, they remained hesitant and the conversation was very limited. The participants did not agree to audio recording the session.

This third focus group at Perdue consisted of 7 individuals, 5 males and 2 females. This group was much more willing to participate than the previous session held at Perdue. Most participants contributed during the discussions. However, due to time restraints, all focus group questions were not completed.

The group of 4 females and 2 males at Rocco Poultry in Rockingham County was the best focus group session that was conducted. All participants were very glad and willing to participate. Discussions ran very smoothly and most participants contributed equally to the discussion. Shyness was not a problem with this group, and individuals talked freely and tended to joke.

The fifth focus group was also held at Rocco Poultry and consisted of 6 males and 4 females. This group was also willing to participate. Most individuals contributed to the discussion. However, since this group was slightly larger than the previous Rocco

session, there were times were participants tended to talk simultaneously. At times, the conversation began to drift away from the topic of concern.

The final focus group was held in Winchester County at a local Hispanic church. The group consisted of 10 participants, 6 females and 4 females. These participants also were willing to participate. However, some participants contributed much more to the discussion than others. The participants all knew each other from church and seemed comfortable discussing issues in front of other members of the group. However, familiarity with other individuals within the focus group may affect responses and discussions.

#### Factors Influencing Data Analysis

During the first group, though two tape recorders were placed at opposite ends of the room, a few of the participant's spoke in low voices. Thus, their comments were not completely picked up by the tape recorders.

The second focus group did not agree to audio taping the sessions. As a result, no direct quotes were obtained from this session. However, since only the participatory activities were conducted with this group, this did not serve as a problem and did not really affect the data.

The third session conducted at Perdue went fairly well. Once again, due to time constrictions, overall discussion was limited. Only focus group questions five and six were asked. Thus, direct quotes were not obtained for the other focus group questions.

Participation during the fourth session was excellent. No problems arose that would affect data analysis.

Although participation for the fifth group was also very good, several times participants spoke simultaneously making voices difficult to understand on the recorded tapes.

The final focus group also ran smoothly. However, one participant had to leave for a short period during the discussion to take care of her crying baby. As a result, she was not included in part of the discussion, but did complete all of the participatory activities.

The same Spanish moderator led all six sessions, allowing for consistency in the way all sessions were conducted. All sessions were conducted in Spanish and thus the

audio recordings were also in Spanish. The author is not fluent in Spanish and could not do her own transcriptions. Two individuals fluent in Spanish and also of Hispanic origin translated the tapes from Spanish to English. Two individuals of Hispanic origin then examined each transcribed session to verify accuracy and consistency.

#### Recommendations for Future Research and Educational Programs

Several factors should be considered for improving future research efforts conducted with this population group. It is important for researchers to choose methodologies that are sensitive to the population. Utilizing triangulation techniques with this Latino population was an effective way to conduct research because it allows opportunity for all participants to voice their concerns. Also, nutritionists and health educators are encouraged to integrate both verbal and visual participatory teaching methods when developing interventions and programs for this population group.

The focus group sessions conducted were comprised of both males and females. During the focus group discussions, it appeared that single females were very hesitant to express their concerns in front of the males. In this culture, males are viewed as the dominant gender and many females, especially single women, were not comfortable expressing their own concerns or disagreeing with a male participant. It did not appear to be a problem for married women or women who were in a group with their husband or boyfriend. The single females, however, refused to express their own concerns. More discussion may have resulted if groups were homogeneous in terms of gender.

Although worksites are an effective area to conduct research, they provide an environment where the participants are more likely to know each other. The farm workers all worked on the same farm and lived in the same community. Most participants were familiar with one another and this may have influenced the participants' responses to various questions. If possible, better data collection may occur if participants were randomly recruited from different farms or industries to participate in the focus group sessions.

In addition to focus group sessions, conducting 24-hour dietary recalls would provide beneficial data on the specific nutrient intakes of this population. Collecting anthropometric and biochemical measures would provide important information about the rate of anemia among this group, their cholesterol levels, and rates of obesity. Future

research should perform an analysis on how this population group spends their money. This would provide information on the percentage of money that this group has available to spend on food.

Future researchers are encouraged to allow one hour for each session in order to be able to sufficiently complete the methodologies. If there is not enough time available, participatory activities should be completed first because they provide specific data about the health and nutrition problems of this population.

The same Spanish moderator led all of the sessions in this study. This allowed for consistency throughout the different sessions and eliminated differences in questioning style that would result if each session had a different moderator. As in this study, future research should have the same moderator lead all the sessions.

#### Applied Nutrition Interventions

Latino farm and industry workers are a growing population in the United States. In order to help improve the nutrition, health, and food security status of this population group, there is a need for nutrition education intervention. Cultural and linguistic barriers, coupled with migratory lifestyles, make this population group difficult to reach and engage. Cooperative Extension needs to examine the sociodemographic and lifestyle characteristics of this group in order to develop programs and interventions that are culturally sensitive and useful. For example, creative multidimensional programs need to take into consideration language, cultural practices, income levels, time, and resources of this population group. Classes that demonstrate how to make fast, easy, inexpensive recipes would be beneficial. Many of the male farm workers are usually living away from their families. Typically in this culture, women do most of the food preparation. Thus, many of these males are unfamiliar with cooking. A weekly shopping and “buddy” cooking class taught by a bilingual individual would provide suggestions on how to prepare easy, low cost, and nutritious meals, and also serve as a tool for learning different English words. Also, classes on money management techniques could help farm/industry workers learn how to buy more nutritious food within their total budget. It is extremely important that any programs and services offered be advertised throughout the community in places commonly visited by this population. Often times, services for farm/industry workers exist; however, the Latino farm/industry population is unaware of

the services offered. To encourage participation, coupons, food, or raffle prizes could be given out to those who attend the classes.

Creative, multifaceted programs that incorporate several different educational methods, including cassettes, classes, and brochures/fliers, may provide more options and flexibility. This would provide farm/industry workers with more opportunities to become involved in the nutrition education method that best suits their needs.

There is a need to train paraprofessionals and particularly bilingual individuals to implement programs that are developed. Cooperative Extension could also train some Latino farm/industry workers who could then help implement programs within the community. Virginia Cooperative Extension agents focus the majority of programming efforts to the mainstream population, which is very different from this population. Thus, it is important that Cooperative Extension secure additional funds to train staff on how to implement education strategies that are culturally appropriate for a Latino population.

Because funding is limited, nutritionists need to look for alternative funding sources that might be available to develop interventions for this group. Also, network linkages need to be made with churches, organizations, migrant councils, and other agencies to successfully develop and implement nutrition and health education programs. An important linkage for nutritionists is working with Extension agriculture agents and farmers when developing these programs.

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**APPENDIX A**  
**INTERVIEW GUIDE FOR FOCUS GROUPS AND PARTICIPATORY**  
**ACTIVITIES**

Hello everyone. Welcome to our session. Thank you so much for taking time to participate in our discussion regarding your health, nutrition, and food security concerns, practices, and perceived barriers. My name is Rodrego Armijos and I will serve as the moderator for this session. This is Jumanah Essa and Kathleen Stadler. They represent the department of Human Nutrition, Foods, and Exercise and Virginia Cooperative Extension from Virginia Tech in Blacksburg. Also with me is Nivea Pratt/Lineth Brown. They will be taking notes and also helping with the Spanish translations.

There is a need to understand the health and nutrition concerns and practices of seasonal farm/ industry workers. Also, we need to understand preferences that you might have about obtaining health and nutrition information and education about issues that concern you. You have been invited to participate in this meeting because you are a person whom we felt could help us gain valuable insight into how we might accomplish these goals.

We believe that every one of you has opinions and beliefs that are important for us as educators to understand. Therefore, we encourage each one of you to feel free to express yourself. There are no right or wrong answers to any of the questions we will be talking about. Today, we just need to know your concerns about health, nutrition, and food insecurity. In addition, we would like to learn about the issues you feel are most important and different ways you would like to learn more about these issues. Your feelings and beliefs may differ from other participants around you. No one person is right or wrong. Everyone's ideas and perceptions are very important. So please share your feeling even if they are different that someone else's. We are just as interested in hearing negative comments as we are in hearing positive ones.

We will be on a first name basis. In any of our later written reports, you can be assured that your name will not be attached to your comments. Anything that you say in this

session is confidential. We will only be using the tape recordings and notes to prepare the summary of all the sessions that will be conducted.

My role here is to ask you questions and listen. I won't be participating in the discussion, but I want you to feel free to talk with one another. In these discussions, there is a tendency for some people to talk a lot and others to not say much. However, it is very important that we hear from all of you because everyone has different ideas, beliefs, and experiences. If one of you is sharing a lot, I may ask you to let others talk. And if you are not saying much, I may ask you for your opinion on a certain issue.

If at any time you have any questions or need a break, please feel free to tell any one of us. Also, if at any point you would like to have something said or explained in Spanish, please let us know. Are there any questions? Does everyone agree to participate in this session?

Let's get started.

Let's begin by going around the group so we can get to know one another. I would like everyone to tell us their first name, and what your favorite food is.

Today, we will be talking about your health, nutrition, and food security concerns and practices. We encourage everyone to honestly share their concerns and opinions with us. There are no right or wrong answers. Everyone has something important to contribute to our discussion. As part of our discussion, you will be taking part in participatory activities (PA). Visual pictures or food models will be used for all the participatory activities. These participatory activities will be incorporated into the discussion. The first two participatory activities that we will be doing will involve answering a few questions about ourselves, such as age and country of origin. The participatory activities will involve you placing a note card in an envelope attached to the visual to indicate your choices for the question asked. Let's get started.

**PA # 1:**

**How old are you?** (have participants place a card in the envelope that indicates their age)

- 1= under 21
- 2= 21-30
- 3= 31-40
- 4= 41-50
- 5= 51-60
- 6= 61-70
- 7= over 70

**PA # 2:**

**What country are you originally from?**

- 1= Mexico (map of Mexico)
- 2= Cuba (map of Cuba)
- 3= El Salvador (map of El Salvador)
- 4= Guatemala (map of Guatemala)
- 5= Honduras (map of Honduras)
- 6= Nicaragua (map of Nicaragua)
- 7= Puerto Rico (map picture of Puerto Rico)
- 8= Other country (Be specific) \_\_\_\_\_
- 9= United States

As I have explained, our discussion today will focus on health, nutrition, and food security concerns and practices that you have. Let us start by talking a little bit about health.

**FGQ # 1. What do you feel are health concerns for you and your family?**

PROBES:

- Related to high blood pressure?
- Related to cancer?
- Related to diabetes?

Now let's see how you rate your own health.

**PA # 3:**

**Do you think that you are healthy?**

- 1= poor health (face picture with a big frown)
- 2= fair health (face picture with a little frown)
- 3= good health (face picture with a little smile)
- 4= very good health (face picture with a big smile)

**PA # 4:**

We are interested to know what you feel are your three most important health problems. Choose the three top health concerns that you have and rank them as #1, #2, and

#3 with #1 being your health concern of most importance to you or your family.

Participants will place colored cards into the envelope under a picture that depicts their top concerns or issues. Different colors indicate the top, second, and third choice or concern.

- Anemia (low blood)
- AIDS/HIV
- Back Problems/Pain
- Cancer
- Diabetes (High Blood Sugar)
- Diarrhea
- Hypertension (High Blood Pressure)
- Heart Disease
- Obesity
- Osteoporosis (Thinning bones- problems with sore bones)
- Respiratory Infections
- Tuberculosis
- Urinary Tract Infections
- Other (mentioned in discussion)

**FGQ # 2. What do you feel are eating/feeding concerns for you and your family?**

**PA #5:**

**How do you rate your eating habits?**

- 1= poor (face picture with a big frown)
- 2= fair (face picture with a little frown)
- 3= good (face picture with a little smile)
- 4= very good (face picture with a big smile)

Let's talk more about eating fruits and vegetables.

**FGQ # 3. What are some of the fruits or fruit juices that you eat or drink?**

PROBES:

- How do you serve or prepare fruits?
- Where do you buy or get your fruits?
- Why do you think it is important to eat fruits?

**PA # 6:**

Using these pictures and food models of various fruits, rank the three fruits or fruit juices that you eat most as #1, #2, and #3 with #1 being the fruit that you eat most. Are there any fruits that you commonly eat that are not displayed as choices?

**FGQ # 4. What are some of the vegetables or vegetable juices that you eat or drink?**

PROBES:

- How do you serve or prepare vegetables?
- Where do you buy or get your vegetables?
- Why do you think it is important to eat vegetables?

**PA # 7:**

Using these pictures and food models of various vegetables, rank the three vegetables or juices that you eat most as #1, #2, and #3 with #1 being the vegetable that you eat most. Are there any vegetables that you commonly eat that are not displayed as choices?

Let's talk a little bit about food security. Food security means having access to enough nutritious and safe food at all times to keep you healthy.

**FGQ # 5. What concerns do you have for you and your family regarding having enough food to eat?**

**PROBES:**

- What prevents you from getting enough food or the right foods to eat?
- What prevents you from getting enough fruits and vegetables?
- Availability of food?
- Affordability of food?
- How do you take care of food so it does not become contaminated?
- How do you make ends meet?

Now that we have talked about your nutrition and health concerns, let's talk about some solutions that you may have to improve your health and nutrition concerns.

**FGQ # 6. If you had a wish list of services related to food and health that could be available to you, what would this list include?**

One of our goals for this project is to learn about the ways you prefer to learn about nutrition and health.

**FGQ # 7. Who talks to you about nutrition?**

**FGQ # 8. Who talks to you about how to stay healthy?**

**FGQ # 9. What would be the easiest way for you to learn about nutrition and health?**

**PA # 8:**

We are interested in knowing how you prefer to receive educational information about health and nutrition. Please choose the top three methods you would prefer and rank your preferences as either #1, #2, and #3 with #1 being your most preferred method.

- Brochures (visual will be an actual brochure)
- Cooking Classes (picture of individuals in classroom)
- Posters (picture of posters)

- Radio (picture of radio)
- Television/Videos (picture of an individual watching television)

We greatly appreciate everyone's participation in our discussion. Your feedback and opinions are very important and will help us in developing programs that are best for you. Thank you for your help and cooperation.

## APPENDIX B

### DEMOGRAPHICS QUESTIONNAIRE

Please select one response per question.

1. What is your age?
  - a) \_\_\_\_\_ years
  - b) Choose not to respond
  
2. What country are you originally from?
  - a) Mexico
  - c) Cuba
  - d) El Salvador
  - e) Guatemala
  - f) Honduras
  - g) Nicaragua
  - c) Puerto Rico
  - d) United States
  - e) Other country (Be specific) \_\_\_\_\_
  - f) Choose not to respond
  
6. How many years have you been in the state of Virginia?
  - a) \_\_\_\_\_ years
  - b) Choose not to respond
  
4. What is your occupation? (circle one)
  - a) Migrant farm worker (you work in Virginia for part of the year, but do not live in the state year round)
  - b) Seasonal farm worker (you work and live in Virginia year round)
  - c) Industry
  - d) Choose not to respond
  
5. What is your marital status? (circle one)
  - a) Single, never married
  - b) Divorced/ separated
  - c) Married or living with significant other
  - d) Widowed
  - e) Choose not to respond
  
6. Do you have children? If so, how many.
  - a) Yes How many? \_\_\_\_\_ How many live with you here in the U.S? \_\_\_\_\_
  - b) No

**APPENDIX C**  
**CORNELL/RADIMER FOOD SECURITY SCALE QUESTIONNAIRE**

Now, I'm going to read you a series of statements that people have made about their food situation. For the next eleven statements, tell me whether the statement is often true, sometimes true, or never true for your household or individuals in your household.

1. I worry whether my food will run out before I get more.  Often true  
 Sometimes true  
 Never true
  
2. I worry about whether the food that I can afford to buy for my household will be enough.  Often true  
 Sometimes true  
 Never true
  
3. The food that I bought just didn't last, and I didn't have money to get more.  Often true  
 Sometimes true  
 Never true
  
4. I ran out of the foods that I needed to put together a meal and I didn't have money to get more.  Often true  
 Sometimes true  
 Never true
  
5. We eat the same thing for several days in a row because we only have a few different kinds of foods on hand and don't have money to buy more.  Often true  
 Sometimes true  
 Sometimes true  
 Never true
  
8. I can't afford to eat properly.  Often true  
 Sometimes true  
 Never true
  
9. My child(ren) is (are) not eating enough because I just can't afford enough food.  Often true  
 Sometimes true  
 Never true
  
10. I know my child(ren) is (are) hungry sometimes, but I just can't afford more food.  Often true  
 Sometimes true  
 Never true
  
11. I cannot afford to feed my child(ren) a balanced meal because I can't afford that.  Often true  
 Sometimes true  
 Never true

For the next two questions, please answer yes or no.

12. Sometimes people lose weight because they don't have enough food to eat. In the past year, did you lose weight because there wasn't enough food?  Yes  
 No  
 Don't know
  
13. In the past year, have you had hunger pangs but couldn't eat because you couldn't afford that?  Yes  
 No  
 Don't know

## VITA

Jumanah Souheil Essa, daughter of Souheil and Nahida Essa, was born on August 2, 1977 in Birmingham, Alabama. Jumanah received her Bachelor of Science degree in Health and Exercise Science from Furman University, Greenville, SC in May, 1999. Jumanah came to Virginia Polytechnic Institute and State University in August 1999 to pursue a Masters degree in Human Nutrition, Foods and Exercise. During her time at Virginia Tech, she has been funded through a departmental Graduate Research Assistantship. Jumanah was the recipient of the Wentworth Service Award, and served as a delegate to the Graduate Student Assembly. She is a member of the honor society Phi Kappa Phi, and Kappa Omicron Nu, the honor society in Family and Consumer Sciences. Her future plans include pursuing a career as a registered dietician with special emphasis on community nutrition.