

# **Fruit and Vegetable Intake Among Deaf Adults And Risk of Heart Disease**

Huong “Jane” Trinh

Undergraduate Nursing Student, The University of Arizona College of Nursing

Elaine G. Jones, PhD, RN

Associate Professor, The University of Arizona College of Nursing

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## **Abstract**

Cardiovascular disease (CVD) is the main cause of death among men and women in the United States. Therefore, the American Heart Association recommends an increased consumption of fruits and vegetables (5 or more servings per day). Many studies have shown an inverse relationship between the consumption of fruits and vegetables and the risk of cardiovascular disease. However, certain populations are unaware of the benefits that fruits and vegetables provide. Culturally Deaf adults who use American Sign Language (ASL) often have limited English literacy (Gallaudet Research Institute, 1996; Holt, Traxler, & Allen, 1997) and have difficulty communicating with hearing health providers (Barnett, 2002). Consequently, Deaf adults miss a great deal of significant health information, leading to greater risk for CVD disease and other chronic diseases. The research question for this study was “What is the average intake of fruits and vegetables among Deaf adults?” Three-day food diaries were collected from 57 Deaf adults. The mean number of servings for fruit, vegetables and combined fruit plus vegetables fell below recommended number of servings for optimal health. Results support nutrition education for Deaf adults to minimize their risk for heart disease and other chronic diseases. Classes must be specifically tailored for Deaf adults because they often have lower educational levels than the general public and their preferred communication mode is sign language. Unless the nurse is fluent in sign language, arrangements should be made for a professional sign language interpreter to assist during health teaching.

## **Introduction**

The American Heart Association (AHA) reports that the leading cause of death among men and women is cardiovascular disease (CVD). AHA recommendations to decrease risk for CVD include a healthy diet, especially adequate intakes of fruits and vegetables. The AHA dietary recommendations may reduce the risk of CVD by decreasing other risk factors such as hypertension, high cholesterol and excess body weight. There is considerable evidence that Deaf adults may have limited access to important health information. However, there is little information to guide nurses in developing health content and choosing teaching strategies appropriate for Deaf adults whose preferred language is often American sign language.

## **Background**

Deaf culture is commonly misconceived as a group of hearing-disabled people (Padden & Humphries, 1993). Capitalization of “Deaf” is done to acknowledge the cultural dimensions of individuals who became hearing impaired at a young age, use ASL, and feel a connection with

others with similar backgrounds and life ways (Stebnicki & Coeling, 1999). . Members of Deaf culture often view themselves as average, normal persons. They may not view a hearing loss as an affliction or disability as they have learned to cope with the situation through other means of communication. Primarily through the use of American Sign Language, Deaf adults are able to express their opinions. Despite a physical difference, Deaf adults maintain jobs, receive an education, and care for themselves (Padden & Humphries). Nevertheless, they do face considerable barriers to obtaining health-related information in understandable forms.

In the United States, the National Institute on Deafness and Other Communication Disorders reports about 28 million people have hearing loss (Centers for Disease Control and Prevention, 2004). These people account for the largest group with a “chronic disabilities” (Wheeler-Scruggs, 2003). About 2 million of those with hearing loss are part of Deaf culture and their primary communication mode is in sign language. Late-deafened people typically do not learn sign language, but rather rely on assistive devices (such as hearing aids) and speechreading.

There has been a great deal written about deficits in life skills for some Deaf adults, including basic money management skills, time management, transitional ability, hygiene, health and nutrition, parenting skills, and personal medical management. Wheeler-Scruggs (2003) found that Deaf adults may have an increased risk of being underserved, undertrained, underemployed, and undereducated. In fact, many Deaf adults are unable to read above the 3<sup>rd</sup>-4<sup>th</sup> grade level (Gallaudet Research Institute, 1996; Holt, Traxler, & Allen, 1997). Service providers for this population are often unable to help because they lack the knowledge, skills and abilities to communicate appropriately or have little understanding of Deaf culture (Wheeler-Scruggs).

The communication and cultural barriers between Deaf adults and hearing health professionals may results in Deaf adults missing important health-related information. These knowledge deficits may result in Deaf adults being at greater risk for chronic health problems such as cardiovascular disease (CVD) and diabetes than most hearing people.

## **Theoretical Framework**

Bandura’s Social Cognitive Theory (SCT) provided the theoretical foundations for the Deaf Heart Health Intervention (DHHI) (Jones, 2004). According to SCT, there are a set of core determinants to health behaviors: knowledge, perceived self-efficacy, outcome expectations, goals, perceived facilitators, and impediments (Bandura, 2004). For example, the knowledge of a health risk is a necessary prerequisite to change in a health behavior. How the person perceives him/herself will show how successful he/she is able to change. The success of the change in health behavior is determined by the outcome expectations and goals. The DHHI was an eight-week program, with weekly two-hour classes covering risk of heart disease, heart healthy eating, exercise, stress management and smoking cessation. The classes were taught entirely in sign language by a trained Deaf teacher with teaching strategies consistent with SCT.

## **Literature Review**

The AHA has an eating plan for adults that could possibly decrease the risk of CVD. The first recommendation is to eat 5 or more servings of (combined) fruits and vegetables daily. There is

extensive support for an inverse relationship between fruits and vegetables and CVD and other health problems. Bazzano et al. (2002) found an intake of fruits and vegetables was inversely associated with stroke incidence and mortality, ischemic heart disease mortality, and CVD mortality (p. 99). The dietary nutrients found in fruits and vegetables may be the underlying cause of decrease in CVD risk. Fruits and vegetables contain potassium, antioxidants, and folic acid that may decrease the incidence of CVD (Bazzano et al., 2002; Joshipura et al., 2001; Liu et al., 2000). The studies also recognized that women were more likely than men to eat more fruits and vegetables, and people who do eat fruits and vegetables are more likely to have other healthy habits such as no smoking, exercising regularly, and having low salt and fat intake.

## **Research Question**

The research question addressed in this paper is: What is the average intake of fruits and vegetables among Deaf adults?

## **Methods**

Sample: Fifty-seven participants submitted usable 3-day food diaries: nineteen (19) men and thirty-eight (38) women with a mean age of 56 years (range 18-67, sd 19). The majority (n=52) identified themselves as white/non-Hispanic with 5 others from ethnic minorities (1 Hispanic, 1 Asian-American, 3 African-American). Educational background ranged from 4-18 years, with a mean of 12 years (high school). About one third were married or lived with a partner while the majority indicated that they were divorced, widowed, or single. We did not gather data about the hearing status of the partners or spouses of our participants. However, due to difficulty communicating with most hearing people, Deaf adults most intimate relationships, including spouses, are with other culturally Deaf adults who are fluent in sign (Jones, 1995).

The DHHI study was a quasi-experimental design to compare pre- and post- test scores of an intervention group and a comparison group. The study was explained to all potential participants in sign language with a videotape of the written English consent form.

One of the pre-test measures for heart-healthy eating patterns was a three-day food diary. Participants were instructed to “write down everything that goes in your mouth from the time you wake up to the time you go to bed. Do this for three days”. An example of a completed 3-day diary was supplied to enhance understanding of the task. The participants were also provided with addressed and stamped envelopes to send their 3-day food diaries back to the principal investigator. Ms. Trinh (the lead author) coded all diaries, entered and analyzed data. Fifty-seven participants (54% of the total sample of 105) returned food diaries. These were analyzed using the Food Processor SQL, a nutrition analysis program created by ESHA research. The program analyzed each food and drink consumed and provided information as to how many servings of each food group was eaten. Data regarding fruit and vegetable consumption was the main focus of the analyses.

## Results

The mean numbers of servings over the 3 days was calculated for fruit servings, vegetable servings and combined fruit plus vegetables. Results showed most of the participants were not eating the recommended number of servings for fruits and vegetables. The mean number of servings of fruits per day was less than 1/day (0.64) (range 0-4.7, sd=.79). The mean number of vegetables was 1.14/day (range 0-9, sd 1.4). The mean for combined servings of fruits plus vegetables was 1.78/day (range 0-10, sd 1.73). The numbers show that participants consumed more vegetables than fruit each day, however, consumption of both fruits and vegetables were well below AHA recommendations.

## Discussion

Because the participants are not meeting the recommendation standards, they are at an increased risk for CVD and other chronic health problems. These findings support the need for nutrition education and interventions to improve eating patterns among Deaf adults.

## Nursing Implications

Implications for nursing practice must focus on the importance of culturally and linguistically appropriate nutrition education for Deaf adults. Very few opportunities arise for nurses to teach Deaf patients, and so nurses are likely to be inexperienced in using effective communication strategies with Deaf patients. Unless the nurse is fluent in sign language, it is essential to arrange for the assistance of a professional sign language interpreter during meeting to discuss nutrition. Other strategies for communication with Deaf persons include getting his or her attention by touching an arm, before beginning, facing the person so that he or she can see nonverbal cues, speaking slowly (so the interpreter has time to translate). Even though an interpreter is used successfully and the patient understands the teaching, printed materials must be provided for the patient in his/her reading level along with illustrations. However, Wheeler-Scruggs (2003) mentioned that most Deaf people have limited English literacy, and so the nurse must remember to use simple words and short sentences; medical terminology and long sentences can confuse and overwhelm the patient.

There is no written information to guide nurses in appropriate strategies for providing nutritional counseling to the Deaf patient. As mentioned above, an interpreter must be used whenever necessary. The nurse must discuss with the patient his/her knowledge of the basic food groups. Afterwards, the nurse can provide information about the patient's health need for diet modification. If the patient is having difficulty finding a way to modify his/her diet, the nurse can teach the patient to keep a food diary, how to read labels and select appropriate foods for his/her diet, and provide written meal plans with illustrations as needed. The nurse may evaluate his/her teaching by assessing nutritional habits at each visit to identify areas for additional discussion.

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Table 1: Fruit and Vegetable Intake

<i>Food Intake</i>	<i>Number of Participants</i>	<i>Percent</i>
	<i>n = 54</i>	
2-4 Servings of Fruits	19	35.19%
< 2 Servings of Fruits	35	64.81%
3-5 Servings of Vegetables	18	33.33%
< 5 Servings of Vegetables	36	66.67%
5 < Servings of Fruits and Vegetables	21	38.89%
< 5 Servings of Fruits and Vegetables	33	61.11%

Figure 1

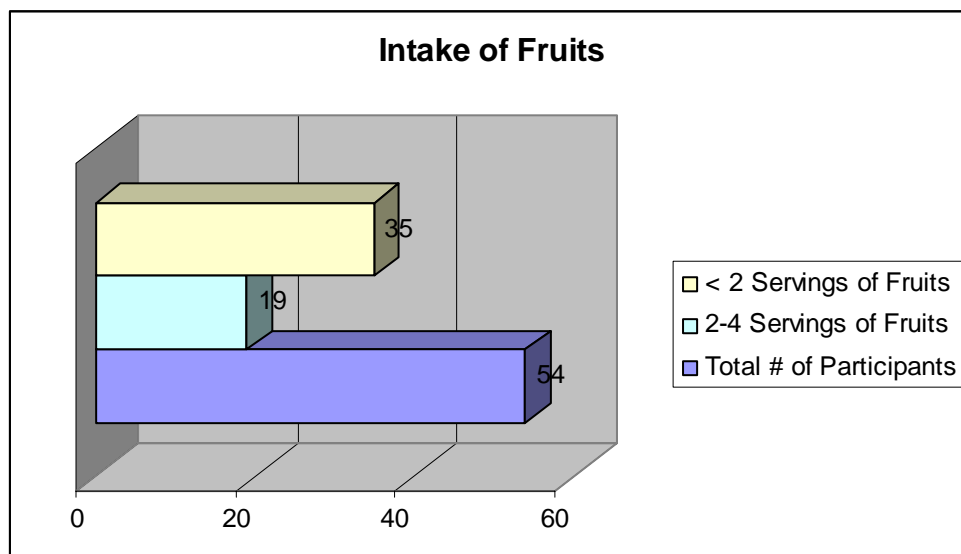


Figure 2

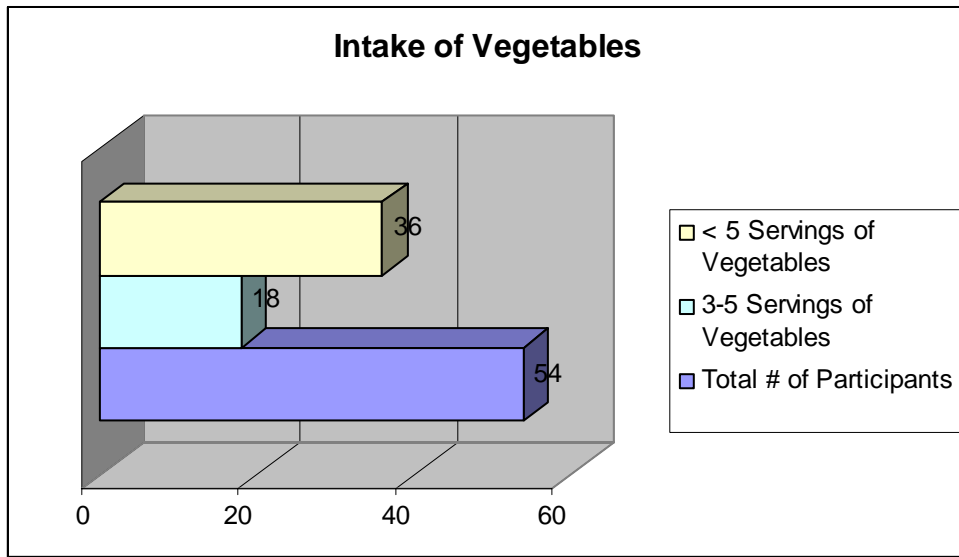


Figure 3

