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PART 1

# Nutrition Basics

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CHAPTER 1

# Introduction and Demographics of Aging

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## CHAPTER OBJECTIVES

Upon completion of this chapter, the reader will be able to:

1. Identify nutrition-related challenges facing the aging population.
2. Identify nutritional recommendations for older adults based on the *Dietary Guidelines for Americans* and Healthy People 2020.
3. Describe the modernization of the Older Americans Act in the area of health promotion for older adults.
4. Describe the factors that affect the nutritional status of various ethnic groups.
5. Discuss the preparation of the healthcare workforce to deliver services to older adults.

## KEY TERMS AND CONCEPTS

Administration on Aging (AoA)
Healthy People 2020
Modified MyPlate for Older Adults
old age

**old age** In many countries, the ages of 60 and 65 years correspond to retirement ages and as such are viewed as the start of old age.[2] In the United States, organizations providing services to older adults define their own age criteria. Some organizations' minimum age requirements are the following:

- The Older Americans Act (OAA): 60 years
- U.S. Department of Agriculture (USDA) programs: 60 years
- Dietary Reference Intakes (DRIs): 51 to 70 years and 70+ years
- Medicare: 65 years
- Social Security: 65 years (for people born before 1938), and gradually increase to 67 years (for people born after 1938)
- AARP: 51 years

Eating in an effort to consume the nutrients the body needs can have different meanings for different people. The philosophy of "Let food be thy medicine and medicine be thy food" was proclaimed approximately 2500 years ago by the father of medicine, Hippocrates. For many, eating and nourishing their bodies is more than an activity to ensure survival; it is truly one of life's greatest pleasures. For healthy adults, eating is never far from their minds. Eating and nutrition are essential to sustain life and promote wellness. Unlike factors such as genetics, gender, and age, diet is a risk factor that can be changed positively (or negatively) to influence the risk of disease. Nutritional health and the aging process have a synergistic relationship throughout the life cycle. Nutrition can influence how a person ages; in turn, the process of aging affects nutrition (**FIGURE 1-1**). Older adults are an extremely heterogeneous group and arrive at **old age** with dramatically different nutritional as well as health and social requirements. The challenges in meeting these requirements are as different as the older adults themselves.

In the United States, older adults are the largest growing segment of the population. Ethnic and racial diversity is one of the characteristics of this shift in population. In 2011, 21% of adults older than age 65 years were members of a racial or ethnic group.[1] This growth trend in minority populations will continue, and these groups will account for 43% of older adults by 2050.[1] For all age groups, the health status of minority group members has lagged behind that of non-Hispanic White persons. Older adults in minority groups historically have experienced the effects of health disparities more than their younger counterparts. Language and communication barriers, limited access to health care, decreased socioeconomic status, and different cultural norms are some of the challenges that need to be overcome in effort to promote the health and well-being of older adults in an increasingly diverse population.[2] It is of utmost importance that older adults of all groups adopt healthy lifestyle practices and dietary habits to reduce the burden of chronic disease and maximize quality of life and healthy aging.

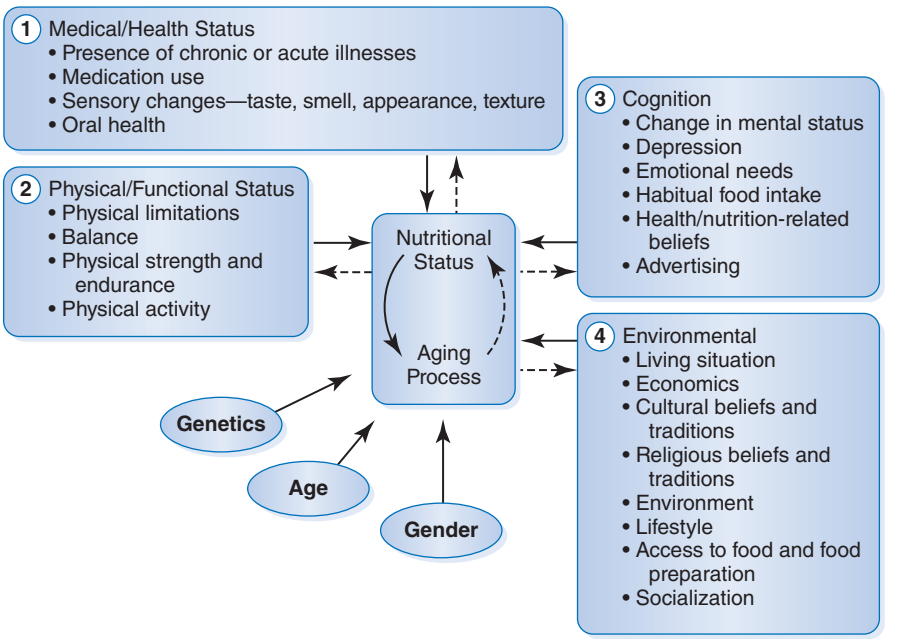



**FIGURE 1-1** Factors That Influence Aging and Quality of Life

*Source:* Adapted from American Dietetic Association. Position paper of the American Dietetic Association: Nutrition across the spectrum of aging. *J Am Diet Assoc*. 2005; 105(4): 616–633.

For the first time in U.S. history, the total number and overall percentage of older adults in the population are unparalleled. By 2050, the number of adults 65 years and older is forecasted to reach 89 million people. This is more than double the number of older adults in the United States in 2010.[2] In 2010, 40 million individuals 65 years and older lived in the United States, representing 13% of the entire population. From 1900 to 2010, the number of older adults in this country increased from 3 million to 40 million. During the same period, the number of adults 85 years old and older (considered the "oldest old") grew from 100,000 to 5.5 million.[2] (See **FIGURE 1-2**.) As the baby boomers (people born between 1946 and 1964) enter the 65-year-old age group, from January 1, 2011, and

every day thereafter for the next 20 years, each day 10,000 U.S. citizens will celebrate their 65th birthday. The older population in 2030 is anticipated to be double the older adult population in 2000, increasing from 35 million to 72 million and thus representing almost 20% of the total U.S. population.[2]

Advances in technology and medical care have contributed to increased life expectancy and the explosion of the older adult population.[1] In 2011, 65-year-old older adults had a mean life expectancy of an additional 19.2 years (20.4 years for females and 17.8 years for males). A child born in 2011 can anticipate living to 78.7 years of age. This is approximately 30 more years than for a child born on 1900.[1]

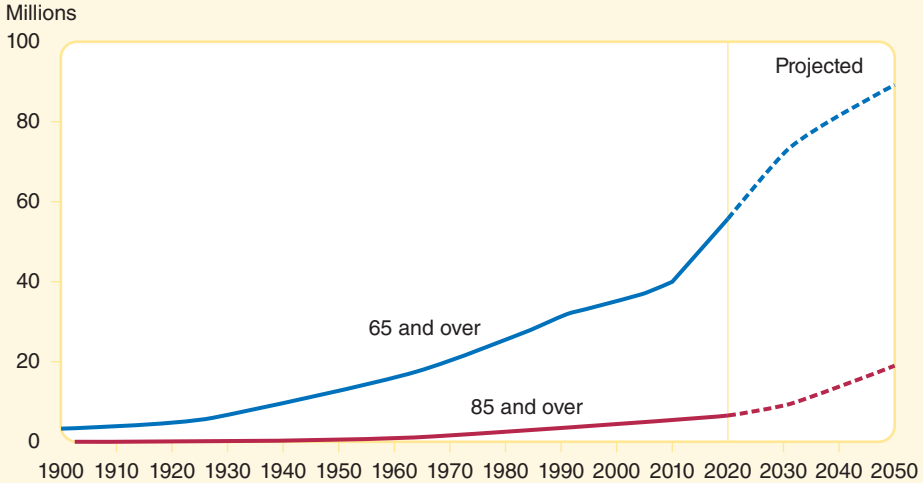
The baby boomer population has touched and changed American society in many ways over the years. The sale of commercial baby food in the 1940s, construction of thousands of schools in the 1950s, and housing construction booms in the 1970s and 1980s were driven by baby boomer needs.[2] This cohort of older adults is better educated, better positioned financially, and more nutrition conscious than previous generations have been. **TABLE 1-1** provides 2010 U.S. Census characteristics of adults aged 65 years and older.


Courtesy of Bill Branson/National Cancer Institute

Successfully managing the state of aging and health in the United States is a challenge. Caring for an aging population puts a strain on the medical community and the healthcare system itself as the healthcare costs rise to meet new healthcare demands. Providing health care for an older adult is three to five times more costly than providing health care for a younger counterpart.[2] The burden of caring for the older population will increase healthcare spending approximately 25% by 2030.[2] Medicare expenses are projected to increase from $555 billion in 2011 to $902 billion in 2020.[2] Preventive care for older adults can help promote a high quality of life and positively affect healthcare costs. Healthy eating and an active lifestyle are key to maintaining a functional quality of life and preventing chronic health problems.

Many older adults can live independently, maintain close relationships with family and friends, and maintain an active lifestyle while successfully managing chronic health issues, medical care, and shopping, cooking, and consuming nutritious meals. Most age-related biologic functions peak before age 30 and progressively degenerate linearly from that point onward. The biologic change that transpires over time has little to no consequence on

**Population age 65 and over and age 85 and over, selected years 1900–2010 and projected 2020–2050**




NOTE: These projection are based on Census 2000 and are not consistent with the 2010 Census results. Projections based on the 2010 Census will be released in late 2012.

Reference population: These data refer to the resident population.

**FIGURE 1-2** The Population 65 Years and Older

*Source:* Reproduced from Federal Interagency Forum on Aging-Related Statistics. Older Americans 2012: Key Indicators of Well-Being. 2012 Washington, DC: Author. http://agingstats.gov/agingstatsdotnet/Main_Site/Data/Data_2012.aspx. Accessed January 4, 2013.

**TABLE 1-1** Characteristics of the Population Aged 65 Years and Older in the United States (2012 American Community Survey 1-Year Estimates)

| Subject | Total Population | 65 Years and Older |
|---|---|---|
| **Total population** | **313,914,040** | **43,140,477** |
| **Sex and Age** | | |
| Male | 49.2% | 43.6% |
| Female | 50.8% | 56.4% |
| Median age (years) | 37.4 | 73.7 |
| **Race and Hispanic or Latino Origin** | | |
| One race | 97.1% | 99.0% |
| White | 73.9% | 84.6% |
| Black or African American | 12.6% | 8.6% |
| American Indian and Alaska Native | 0.8% | 0.5% |
| Asian | 5.0% | 3.7% |
| Native Hawaiian and other Pacific Islander | 0.2% | 0.1% |
| Some other race | 4.6% | 1.5% |
| Two or more races | 2.9% | 1.0% |
| Hispanic or Latino origin (of any race) | 16.9% | 7.3% |
| White alone, not Hispanic or Latino | 62.8% | 79.2% |
| **Marital Status** | | |
| **Population 15 years and older** | **252,745,149** | **43,140,477** |
| Now married, except separated | 48.0 % | 54.7 % |
| Widowed | 5.9 % | 27.0 % |
| Divorced | 11.1 % | 12.2 % |
| Separated | 2.2 % | 1.2% |
| Never married | 32.7 % | 4.9% |
| **Educational Attainment** | | |
| **Population 25 years and older** | **208,731,498** | **43,140,477** |
| Less than high school graduate | 13.6% | 20.0% |
| High school graduate (includes equivalency) | 28.0% | 33.5% |
| Some college or associate's degree | 29.2% | 23.3% |
| Bachelor's degree or higher | 29.1% | 23.2% |
| **Disability Status** | | |
| **Civilian noninstitutionalized population** | **308,896,460** | **41,839,969** |
| With any disability | 12.2% | 35.9% |
| No disability | 87.8% | 64.1% |
| **Place of Birth, Citizenship Status, and Year of Entry** | | |
| **Total population** | **313,914,040** | **43,140,477** |
| Native | 273,089,382 | 37,649,375 |
| Foreign born | 40,824,658 | 5,491,102 |
| Entered 2010 or later | 7.0 | 2.5% |
| Entered 2000 to 2009 | 30.4% | 9.3% |
| Entered before 2000 | 62.7% | 88.2% |
| Naturalized U.S. citizen | 45.8% | 72.6% |
| Not a U.S. citizen | 54.2% | 27.4% |

**TABLE 1-1** Characteristics of the Population Aged 65 Years and Older in the United States (2012 American Community Survey 1-Year Estimates) (Cont)

| Subject | Total Population | 65 Years and Older |
|---|---|---|
| **Civilian population 16 years and older** | **247,575,608** | **43,140,477** |
| In labor force | 63.7% | 16.8% |
| Employed | 57.7% | 15.8% |
| Unemployed | 6.0% | 1.1% |
| Percentage of civilian labor force | 9.4% | 6.4% |
| Not in labor force | 36.3% | 83.2% |
| **Income in the Past 12 Months (in 2012 inflation-adjusted dollars)** | | |
| **Households** | **115,969,540** | **26,527,220** |
| With earnings | 77.7% | 35.2% |
| Mean earnings (dollars) | 73,069 | 48,670 |
| With Social Security income | 29.3% | 90.6% |
| Mean Social Security income (dollars) | 16,977 | 18,499 |
| With Supplemental Security Income | 5.4% | 6.4% |
| Mean Supplemental Security Income (dollars) | 9,058 | 8,660 |
| With cash public assistance income | 2.9% | 1.8% |
| Mean cash public assistance income (dollars) | 3,670 | 3,501 |
| With retirement income | 18% | 48.9% |
| Mean retirement income (dollars) | 23,335 | 23,466 |
| With Food Stamp benefits | 13.6% | 8.9% |
| **Poverty Status in the Past 12 Months** | | |
| **Population for whom poverty status is determined** | **306,086,063** | **41,839,828** |
| Below 100% of the poverty level | 15.9% | 9.5 % |
| 100 to 149% of the poverty level | 9.8% | 11.0 % |
| At or above 150% of the poverty level | 74.3% | 79.5% |

*Source:* Modified from U.S. Census Bureau. American Community Survey. 2012 Washington, DC: U.S. Department of Commerce. http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_1YR_S0103&prodType=table. Accessed April 29, 2014.

activities of daily living. Ailments (sickness) rather than natural aging are the key triggers of functional decline as individuals age. Some of the decline that occurs with aging can be influenced by lifestyle, behavior, diet, and the environment. As such, these factors can be modified to restore wellness. It is important to note that older adults experience physical and cognitive age-related changes. Age-related physical changes could include reduced or impaired hearing and vision, as well as development of chronic diseases such as arthritis, hypertension, heart disease, and diabetes. Cognitive changes, although very different from one individual to the next, can include the speed at which information is processed.[3]

## Demographics

More than 3 million people celebrated their 65th birthday in 2011.[1] Older adults comprised 13.3% of the U.S. population in 2011, meaning that more than 1 in every 8 Americans was older than age 65.[1] Conservative estimates predict that the number of adults 65 years and older will grow from 35 million in 2000 to 54.8 million in 2020, and to 81.2 million in 2040.[4] By 2040, older adults will make up 21% of the population.[1] The number of old-old (85 years and older) will also grow immensely—from 4.2 million in 2000 to 6.6 million in 2020, and to 14.2 million in 2040.[4]

Older women outnumber older men. By 2020, it is projected that there will be 30.5 million women older than age 65 compared to 24.3 million men of the same age.[4] The number of older adults in the population differs significantly by state. In 2011, more than half of the adults 65 years or older lived primarily in nine states: California (4.4 million); Florida (3.4 million); New York (2.7 million); Texas (2.7 million); Pennsylvania (2.0 million); and Ohio, Illinois, Michigan, and North Carolina each with more than 1 million.[1] (See **FIGURE 1-3**.) Eighty-one percent of adults 65 years and older lived in metropolitan areas in 2011.[1] Most of these adults (66%) resided outside main cities, whereas 34% dwelled inside major cities. Only 19% of older adults lived outside of urban regions.[1]

These statistics emphasize the importance of ensuring adequate nutritional intake for all older adults as an essential factor in promoting health and well-being, maintaining functional independence, and preventing malnutrition and related comorbidities such as increased susceptibility to illness and impaired immune function. The cost of providing healthcare services for one person older than 65 years is three times higher than the cost of providing health care for younger counterparts.[2] It is estimated that by 2030, healthcare spending will rise by 25%. This cost will be directly related to the large number of older adults in the U.S. population.[2]

In older adults, the physiologic changes that are associated with the leading chronic diseases and even death are often avoidable or can be delayed. Healthcare providers have many opportunities to develop plans of care that can help older adults to promote and maintain their health. To do so, providers must broadly apply their professional knowledge to reduce the risk and debilitating effects of chronic disease. Death as a terminal outcome is inevitable, but the incidence of chronic illnesses and the decline and disability normally linked with them can be decreased. Research shows that a healthy lifestyle that includes abstaining from tobacco, being physically active, and consuming a healthy diet drastically reduces the chance of developing heart disease, cancer, diabetes, and other chronic illnesses.[5]

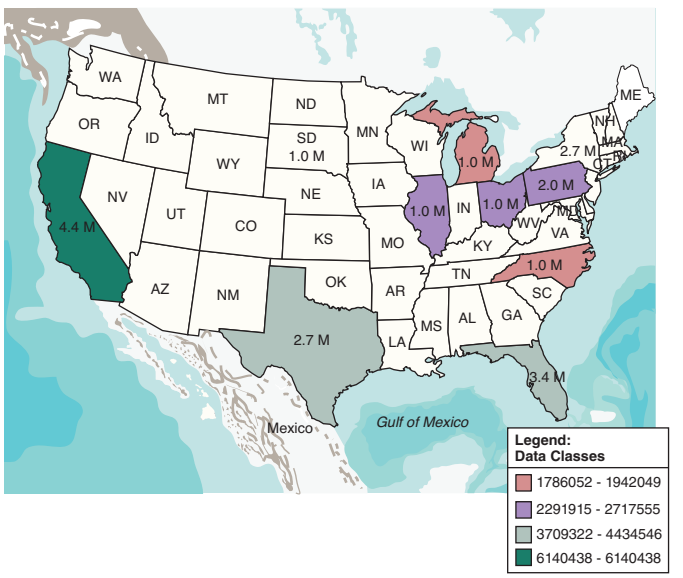



**FIGURE 1-3** States with the Highest Older Adult Populations

Reproduced from Centers for Disease Control and Prevention. Healthy Aging Data Portfolio Web site. Atlanta, GA: CDC. http://nccd.cdc.gov/DPH_Aging/default.aspx. Accessed April 6, 2014.

The National Center for Chronic Disease Prevention and Health Promotion of the Centers for Disease Control and Prevention (CDC) lists eating fruits and vegetables daily as a health status indicator. Diets high in fruits and vegetables decrease the possibility of being diagnosed with some cancers and chronic diseases, such as diabetes and cardiovascular disease.[2] Fruits and vegetables offer necessary vitamins and minerals, fiber, carotenoids, and other phytochemicals known to promote health. The State of Aging in America 2013 reports that a larger number of adults 65 years and older consume five or more fruits and vegetables every day when compared to other age groups.[2]

At times, older adults might find it difficult to meet their nutritional needs because of increased requirements for some nutrients and an overall decreased energy need. Numerous barriers to adequate food intake complicate the task of maximizing nutrition in older adults (**FIGURE 1-4**). Multiple chronic and acute illnesses, changes in absorption and digestion, polypharmacy, low levels of physical activity, lifelong habits and food preferences, social factors, changes in functional status and dependency, impaired mental status, and problems with oral health, chewing, and swallowing have all been shown to influence the eating habits and nutritional status of both institutionalized and noninstitutionalized older adults.[6–10] Age-related complications that could interfere with food intake accentuate the need for multiple food choices to increase variety and maximize nutritional intake.

## Dietary Guidance

Emphasizing a nutritionally adequate and nutrient-dense diet is essential to promoting health and preventing nutrition-related complications that could contribute to increased functional dependency and frailty. Aging and

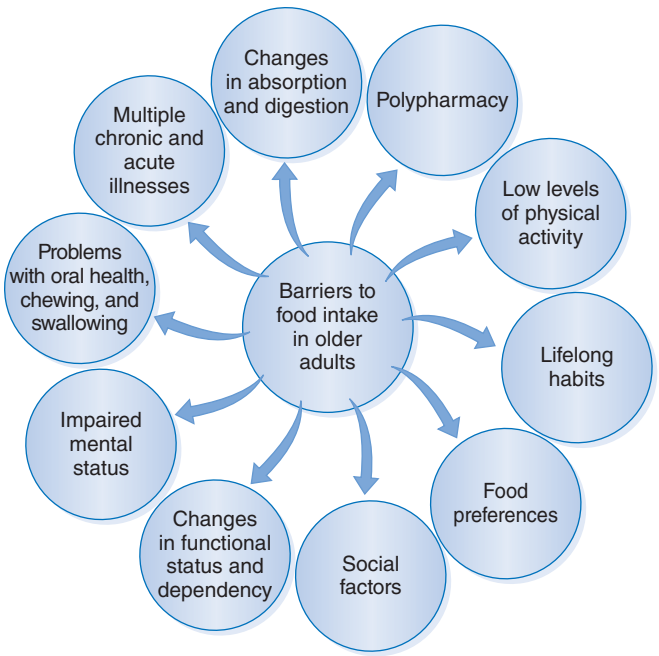



**FIGURE 1-4** Barriers to Food Intake in Older Adults

age-related problems can impose significant barriers to achieving a healthy diet as defined by the *Dietary Guidelines 2010*.[11] With a major focus on health promotion and risk reduction, the *Dietary Guidelines* currently form the basis of federal food, nutrition education, and information programs. Healthy older adults may benefit from the same dietary recommendations as those provided for the general adult population; however, the appropriateness of and the ability to adhere to these recommendations may decrease as an individual becomes increasingly functionally dependent, frail, and ill.

Although the recommendations of the *Dietary Guidelines for Americans* and the U.S. Department of Agriculture (USDA) MyPlate guidelines are designed for all Americans older than age 2 years, some modifications of MyPlate are appropriate for those older than 70 years to optimize nutrient intake, as shown in **FIGURE 1-5**.[12] While maintaining MyPlate's emphasis on vegetables and fruits, the **Modified MyPlate for Older Adults** addresses the unique dietary needs of adults older than 70 years by emphasizing nutrient-dense food choices and the importance of fluid balance (**FIGURE 1-6**).[12] The Modified MyPlate for Older Adults also provides additional guidance about forms of foods that could best meet the unique needs of older adults and stresses the importance of regular physical activity.

**Modified MyPlate for Older Adults** A modification of the MyPlate educational tool that translates the principles of the 2005 *Dietary Guidelines for Americans* and other nutritional standards to help consumers age 70 years and older in making healthier food and physical activity choices.

The Modified MyPlate for Older Adults emphasizes the importance of choosing adequate amounts of fiber-rich foods, focusing on whole grain products and whole fruits and vegetables rather than their highly refined and processed forms. Food choices that are easier to prepare, have

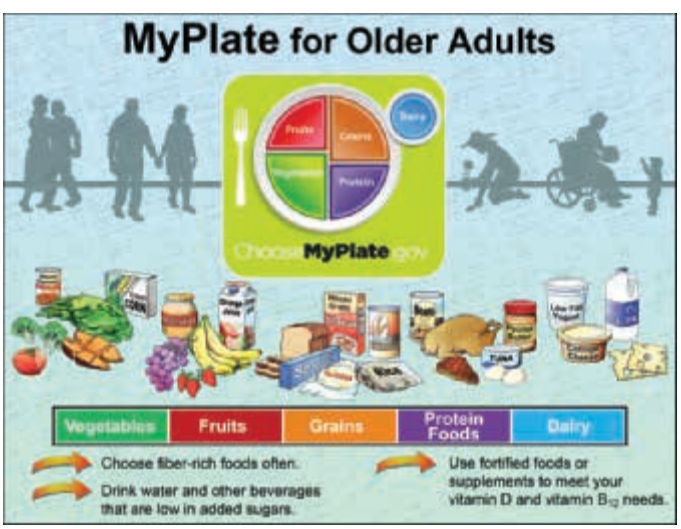



**FIGURE 1-5** MyPlate for the Older Adult

© Family, Youth and Community Sciences at the University of Florida. Gainesville, FL: Elder Nutrition and Food Safety, Institute of Food and Agricultural Sciences. Available at: http://fycs.ifas.ufl.edu/Extension/HNFS/ENAFS/MyPlate.php.

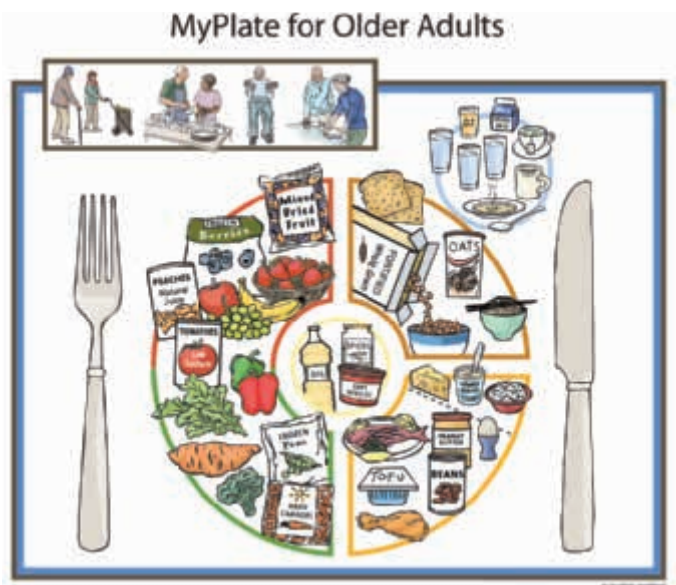



**FIGURE 1-6** Modified MyPlate for Older Adults

Copyright 2011 Tufts University. For details about the MyPlate for Older Adults, please see http://nutrition.tufts.edu/research/myplate-older-adults.

a longer shelf life, and minimize waste are important when a person has limited income, lives alone, is functionally limited, or has health problems. Therefore, the Modified MyPlate for Older Adults includes icons depicting packaged fruits and vegetables in addition to fresh examples. Fresh, frozen, canned, and dried fruits and vegetables are excellent sources of many nutrients as well as fiber. Examples include bags of frozen precut vegetables that can be resealed or single servings of canned fruit. In addition, by showing numerous sources of liquids, the Modified MyPlate for Older Adults emphasizes the importance of fluid consumption for older adults.[13] This food guidance system also reinforces the need for regular physical activity with icons that reflect common activities such as daily errands and household routines.

Current food guidelines continue to emphasize that the majority if not all of the nutrients an older adult consumes should come from food rather than supplements.[11,14] It is important to remember, however, that some older adults find it difficult to get adequate amounts of some nutrients from food alone, especially when calorie needs are reduced (**TABLE 1-2**). Therefore, older adults may need certain supplemental nutrients, such as calcium, vitamin D, and vitamin $B_{12}$, the needs for which increase with age.[11]

**TABLE 1-2** Changes in Aging That Affect Nutrient Needs

| Change in Body Composition or Physiologic Function | Impact on Nutrient Requirements |
|---|---|
| Decreased muscle mass | Decreased need for energy |
| Decreased bone density | Increased need for calcium and vitamin D |
| Decreased immune function | Increased need for vitamin $B_6$, vitamin E, and zinc |
| Increased gastric pH | Increased need for vitamin $B_6$, folic acid, calcium, iron, and zinc |
| Decreased skin capacity for cholecalciferol synthesis | Increased need for vitamin D |
| Increased wintertime parathyroid hormone production | Increased need for vitamin D |
| Decreased calcium bioavailability | Increased need for calcium and vitamin D |
| Decreased efficiency in metabolic use of vitamin $B_6$ | Increased need for vitamin $B_6$ |
| Increased oxidative stress | Increased need for beta-carotene, vitamin C, and vitamin E |
| Increased levels of homocysteine | Increased need for folate, vitamin $B_{12}$, and vitamin $B_6$ |
| Decreased vitamin absorption | Increased need for food choices with high nutrient density |
| Decreased gastric motility | Increased need for fiber and water |

*Source:* Data from: Blumberg J. Nutritional needs of seniors. *J Am Coll Nutr.* 1997;16(6):517–523.

## Healthy People 2020

The Healthy People initiative (Healthy People 1990, 2000, 2010, and now 2020) began in 1979 in the U.S. Department of Health and Human Services. Over the years, the initiative's goals and objectives have changed to serve as the basis for development of state and community planning.[15]

**Healthy People 2020** A nationwide health promotion and disease prevention program that includes a set of health objectives for the United States to achieve over the second decade of the twenty-first century.

**Healthy People 2020** has 42 topic areas with goals and objectives for each topic that serve as mechanisms for monitoring national progress. In efforts to support a healthier nation, Healthy People 2020 has 15 strategies that deal with *prevention*. These strategies include tobacco control, multiple chronic condition management, a "Let's Move" campaign, food safety, and health literacy, among others. The topic area Older Adults is new for 2020 and was developed in response to the rapidly aging population. The aim of the Older Adults initiative is to "improve the health, function, and quality of life of older adults."[15] The Older Adults topic area has 12 objectives that include increasing the number of older adults who receive Medicare benefits, increasing the number of older adults who receive diabetes self-management benefits, and increasing the proportion of healthcare workers with geriatric certification (including dietitians).

By 2030, approximately 37 million older adults will be managing more than one chronic condition.[15] This number accounts for 60% of that segment of the population. One of the Healthy People 2020 goals is to *improve access to comprehensive, quality healthcare services*. The ability to access comprehensive, quality healthcare services is vital as the nation strives to achieve health equality and improve the quality of life for everyone. The ability to access comprehensive, quality health care includes obtaining

access to the healthcare system, accessing a location that provides the desired services, and finding a healthcare provider with whom the patient can communicate and trust. Obstacles to securing healthcare services such as limited availability, high cost, and being uninsured create a healthcare disparity that affects people's ability to obtain their full health potential and quality of life.[15] (See **BOX 1-1**.)

Other Healthy People 2020 topic areas topic areas include mental health, injury and violence, environmental health, immunization, and access to health services (**BOX 1-2**). Many older people die from influenza and pneumonia because of lack of immunization. The final category, access to health services, is an important problem in older adults. In 2011, fewer than 2% of older adults did not have health insurance coverage of some kind and yet were less likely to receive regular or quality health care, especially minority older adults.[1]

## Administration on Aging

In an effort to promote health and wellness as well as to eliminate health disparities among older adults and, in particular, older minority adults, the **Administration on Aging (AoA)** plays a significant role in the Healthy People 2020 initiative. As a participant on the Federal Interagency subcommittee that heads the Older Adult group, the AoA supports health prevention and wellness programs in the areas of Alzheimer's

**Administration on Aging (AoA)** The Administration on Aging is one of the nation's largest providers of home- and community-based care for older adults and their caregivers. It awards annual grants to state governments to support programs mandated by Congress in the Older Americans Act. The six core services funded by the AoA are supportive services, nutrition services, preventive health services, the National Family Caregiver Support Program, services that protect the rights of vulnerable older adults, and services for Native Americans.

### BOX 1-1 Healthy People 2020 Topics

Healthy People offers evidence-based, 10-year national objectives with the goal of improving the health of all Americans. For the past 30 years, Healthy People has defined benchmarks and monitored progress over time in order to accomplish the following:

- Promote collaborations across communities and sectors.
- Empower individuals toward making informed health decisions.
- Measure the impact of prevention activities.

New topics included in this initiative include the following:

- Adolescent Health
- Blood Disorders and Blood Safety
- Dementias, including Alzheimer's Disease
- Early and Middle Childhood
- Genomics
- Global Health
- Health-Related Quality of Life and Well-Being
- Healthcare-Associated Infections
- Lesbian, Gay, Bisexual, and Transgender Health
- Older Adults
- Preparedness
- Sleep Health
- Social Determinants of Health

*Source:* Data from U.S. Department of Health and Human Services. *Healthy People 2020: Understanding and Improving Health.* 3rd ed. Washington, DC: U.S. Government Printing Office; December 2010.

### BOX 1-2 Twelve Leading Health Indicators for Healthy People 2020

1. **Access to Health Services.** In 2010, nearly one out of four people in the United States did not have a primary care provider (PCP) or health center that could provide consistent medical attention. One out of five U.S. children and adults younger than 65 years of age did not have access to medical insurance. Inability to secure routine medical care increases the risk for critical and incapacitating health conditions.
2. **Clinical Preventive Services.** Clinical preventive services, such as regular illness screening and planned immunizations, are important to decrease death and disability while improving the population's health. These services help to prevent and detect diseases in early stages, thus increasing the possibility of successful treatment and considerably decreasing the risk of illness, disability, early death, and cost of care.
3. **Environmental Quality.** Approximately 25% of preventable illness worldwide is attributable to toxins in air, water, and soil. African Americans and Hispanics make up 25% of the population but constitute 40% of those who live near dangerous toxic sites. This puts them at greater risk for asthma, lead poisoning, and other illnesses.
4. **Injury and violence.** Vehicle crashes, suicides, and homicides are serious public health problems. They are often associated with substance abuse.
5. **Maternal, Infant, and Child Health.** In 2011, the infant death rate in the United States remained higher than the infant death rate in 46 other countries. Promoting well-being of mothers, infants, and children influences the health of the next generation.
6. **Mental Health.** Knowledge and understanding of mental health have evolved significantly over the past 25 years. One in four Americans suffers from a mental disorder each year. Mental health issues are one of the most common causes of disability.
7. **Nutrition, Physical Activity, and Obesity.** Optimum nutritional status, physical activity, and weight are important components of an individual's overall well-being. Management of these health indicators can help to reduce the risk of developing conditions such as hypertension, high cholesterol, diabetes, heart disease, and other ailments. In the United States today, 34% of adults and 16.2% of children and adolescents are obese. Most adults and adolescents, 81.6% and 81.8%, respectively, do not get sufficient physical activity. Many Americans do not consume a healthy diet.
8. **Oral Health.** Oral conditions such as dental caries and mouth cancers contribute to pain and disability for millions of people. Research has established a connection between oral health, specifically periodontal disease, and numerous chronic diseases such as diabetes, heart disease, and stroke.
9. **Reproductive and Sexual Health.** In the United States, 19 million cases of sexually transmitted diseases are diagnosed every year. Fifty percent of newly diagnosed cases occur among teenagers and older adults between the ages of 15 and 24 years.
10. **Social Determinants.** A variety of personal, social, economic, and environmental factors influence individual and population health. Social factors are accountable for differences in health conditions within and between neighborhoods. The selection of Social Determinants as a Leading Health Topic identifies the important role of home, school, workplace, neighborhood, and community in promoting health.
11. **Substance Abuse.** In 2005, approximately 22 million people wrestled with a drug or alcohol condition.
12. **Tobacco.** Tobacco use is a preventable cause of disease, disability, and death in the United States. Every year, the use of tobacco contributes to more deaths than all the deaths from HIV, illegal drug use, alcohol use, motor vehicle injuries, suicides, and murders collectively.

*Source:* Data from U.S. Department of Health and Human Services. *Healthy People 2020: topics and objectives: older adults*. Washington, DC: U.S. Government Printing Office. http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=31. Accessed January 8, 2014.

disease, behavioral health, chronic disease self-management, diabetes self-management, older adults, and oral health, among others.[16]

The main purpose of AoA programs, which are designed to support community-based services, is to ensure that services are provided to economically and socially vulnerable older adults. The programs focus on the following benchmarks:[17]

- Improving efficiency
- Measures efficiency of all program activities
- Improving client outcomes
- Looks at indicators such as nursing home predictors, the success of caregiver programs, and protection of vulnerable older adults
- Effectively targeting services to vulnerable elder populations
- Ensures that states and communities focus on providing services to the most vulnerable elders

In 2011, the AoA was successful in showing that the services provided helped older adults to remain in their communities and homes. A tool used by the AoA to measure success is the nursing home predictor score. This score, which is based on scientific literature and the AoA Performance Measure Project, is a predictor of nursing home placement. The nursing home predictor score measures the older adult needs for transportation and congregate meals. The higher the score, the greater the need for services. In 2003, the nursing home predictor score was 46.57 and increased to 60.62 in 2011. Even with budget constraints and the expanding number of older adults in the United States, the AoA was effective in serving home-delivered meals to 467,387 clients.[17]

The AoA programs are efficient in providing services to needy older adults in an effective manner. In 2011, the AoA served 8881 people per each million dollars of Older Americans Act (OAA) Title III funding.

## Older Minority Groups

The older adult minority population is projected to increase from 8 million in 2010 (20.1%) to 12.9 million in 2020 (23.6%).[1]

### HISPANIC AMERICANS

In 2011, the percentage of minority older adults reached 21%.[1] Currently, older adults of Hispanic origin represent 7% of minorities, but this is expected to increase to more than 20% by 2050.[1] By 2030, Hispanic older adults are projected to be the largest racial/ethnic minority group of older Americans. Most Hispanic Americans (70%) live in four states: California (27%), Florida (16%), New York (9%), and Texas (19%).[18]

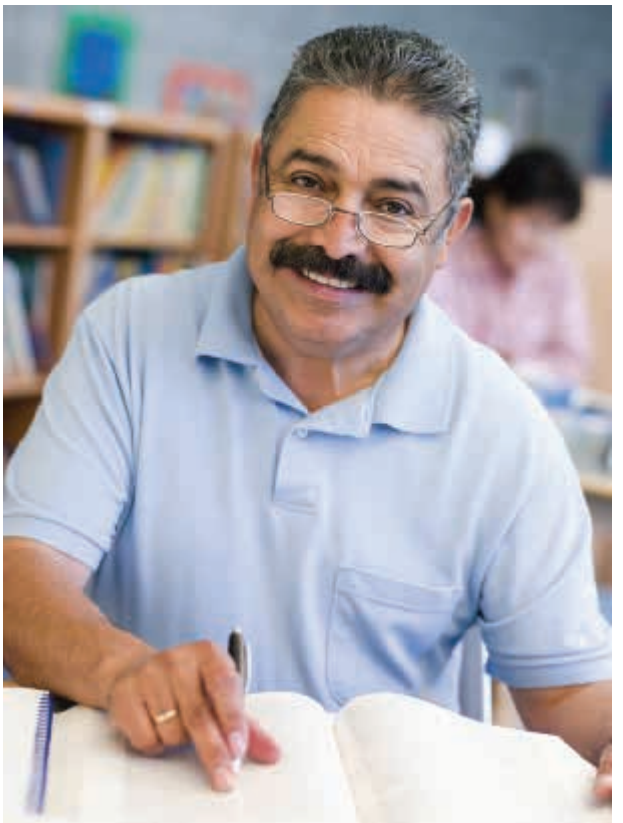
Hispanic Americans as a group are less educated than other groups of older Americans: 47% have completed high school compared to 80% of the total population of older Americans. Further, only 10% of Hispanic older adults have completed college compared to 23% of all older Americans. Poverty is a significant problem for Hispanic older adults: the poverty rate is 21%, more than twice that of the total older American population (9%).[1]

Data from the Behavioral Risk Factor Surveillance System (BRFS) on self-rating of health status offers a collective marker of health for population groups. In 2012, 63% of Hispanic Americans rated their health as excellent or good. In comparison, older non-Hispanic White persons perceived their health as excellent or good in higher numbers (78%).[19]

Life expectancy for older Hispanic Americans surpasses that of non-Hispanic White and African American older adults. On average older Hispanic Americans live an additional 20.6 years after reaching the age of 65. Older Hispanic Americans who reach the age of 75 years have an average additional life expectancy of 13.2 years.[20] Additionally, older Hispanic Americans seem to be healthier than their counterparts from other ethnic groups.[21] Chronic ailments such as cardiovascular disease, cancer, lung disease, and stroke are less prevalent in this group.[22] Diabetes as well as influenza and pneumonia are more common among older Hispanic Americans than among other ethnic groups.[2]

In 2011, 35% of older men and 38% of older women reported some type of disability, such as difficulty with hearing, vision, ambulation, or self-care.[1] A high percentage of Hispanic older adults required assistance with personal care (9.2%) compared to 5.7% of non-Hispanic Whites and 10.3% of non-Hispanic Blacks.[18]

Older Hispanics report that they have access to medical care. In 2007, 7.5% said that they did not have access to medical care.[18] In 2000, 6.5% of Hispanic older adults reported delays in access to care because of the cost of care; furthermore, 20.7% reported that they were dissatisfied with the quality of health care received. This is not very different from the reports of the total older adult population.[18]



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## AFRICAN AMERICANS

Older African Americans comprise 8.3% of the minority older adult population.[23] **TABLE 1-3** shows the history of population growth in this racial/ethnic group. By 2050, 11% of older Americans will be African American. African Americans live predominantly in eight U.S. states: New York (9.1%), California (6.5), Florida (7.1%), Texas (6.4%), Georgia (6.1%), Illinois (5.4%), North Carolina (5.5%), and Virginia (4.4%).[23]

**TABLE 1-3** History of Growth of the Older African American Population

| Year | Number (in millions) |
|---|---|
| 1980 | 2.1 |
| 2000 | 2.8 |
| 2020 | 4.9 |
| 2040 | 8.5 |

*Source:* Data from Administration on Aging. A statistical profile of black older Americans aged 65+. http://www.aoa.gov/Aging_Statistics/minority_aging/Facts-on-Black-Elderly-plain_format.aspx. Washington, DC: U.S. Department of Health & Human Services. Accessed January 19, 2014.

Educational attainment among African Americans has increased significantly over the past 40 years. Approximately 65% of older African Americans have finished high school; in 1970, only 9% had attained this level of education. Today, 15% of older African Americans have a bachelor's degree or higher.[1] The poverty rate for African American older adults is 20%. This is more than twice the percentage for the total U.S. older population, which is 9%.[23]

When asked to rate their health from excellent to poor, in 2008–2010, 76% of older adults rated their health as good, very good, and excellent.[1] Among African Americans, 63% were likely to report good to excellent health compared to 78% of older Whites.[1]

African Americans are living longer than in the past. Since 1960, life expectancy for African American men has increased 2.6 years, and it has increased 3.6 years for African American women.[23] At age 65, African American men have a life expectancy of an additional 15.3 years (to 80.3 years of age); women have 18.7 more years (to 83.7 years of age). These data are similar to those for all older American men and women.[23]

The most common chronic illness affecting older African Americans is hypertension (84%), followed by arthritis (53%), diabetes (29%), heart disease of all types (27%), sinusitis (14%), and cancer (13%).[23] These rates are similar for all older Americans, with the exception of hypertension, which is lower in the general population at 71%. Diabetes is 18% lower in the general population of older adults, whereas heart disease (31%) and cancer (22%) are both higher in other racial/ethnic groups than in African American older adults.[23]

A large majority of older African American adults state that they have access to health care (96%). However, 16% report that they or their family members have been unable to obtain care or were delayed in receiving necessary medical care.[23] Sixty-six percent of older African American adults do not have supplemental private health insurance and they rely solely on Medicare. 54% of all U.S. older adults lack private health insurance.[23]

## NATIVE AMERICANS

There is little information on American Indians and Alaska Natives (AIAN), especially on the older population and those living in rural-frontier/urban areas.[24] This is thought to be because of the expense of accessing small populations located in isolated areas or because the number of people is often too small for statistical analysis in

national studies. However, Native Americans are projected to increase to approximately 918,000 by 2050, representing approximately 2% of the total U.S. population.[25,26]

The U.S. government recognizes 569 American Indian/Alaska Native tribes.[27] The Indian Health Service (IHS) budget provides funds for health care. Care is provided through more than 500 hospitals and clinics on or near reservations and through specialty services off the reservations.[26]

In 2010, 41% of AIAN had private health insurance coverage.[28] IHS is a provider of last resort and many Native Americans and Alaska Natives may be eligible for Medicare.

When compared to other racial groups, AIAN populations deal with many health challenges such as increased mortality rates from conditions such as tuberculosis, chronic liver disease and cirrhosis, accidents, diabetes, pneumonia, suicide, and homicide.[29] In 2005, chronic liver disease and cirrhosis was the sixth leading cause of death for this group, and accidents contributed to 11.7% of total deaths.[30]

For this segment of the population, substantial health disparities exist for many conditions, including heart disease, tuberculosis, sexually transmitted diseases, and injuries.[27] When compared to other racial groups in the United States, the AIAN population has a greater prevalence of diabetes (16.5%) and the incidence has been increasing. Cultural, genetic, socioeconomic, and behavioral factors have been reported as possible contributing factors to the health disparities in this population.[27]

Older women in this group have a significantly higher prevalence of diabetes, hypertension, cancers (not including breast, colorectal, and lung), cataracts, asthma, and arthritis and have moderately severe to severe functional limitations. As these women age, the prevalence of arthritis, heart failure, hypertension, stroke, colorectal cancer, and cataracts increases. Men have an increased prevalence of prostate cancer with increasing age.[27]

Stroke is a common cause of death in Native Americans. This is related to hypertension, diabetes, and heart disease. Native American women are more likely to be obese and are less likely to exercise, which contribute to these diseases.[27]

As Native Americans age, certain chronic problems, such as asthma and diabetes, diminish in prevalence. People in the younger-old age groups are more likely to have asthma (171%) and diabetes (154%) compared with those 85 years and older. Among older Native Americans, there is increasing prevalence of diabetes (38.8%), stroke (11.7%), and arthritis 60%.[31] Life expectancy for American Indians is 78.5 years—lower than that for the U.S. population (84.1 years as of 2010).[32,33] However, this varies by regional area. For example, the life expectancy in the California Indian Health Service Area is 76.3 years.

Native Americans face barriers to primary, secondary, and tertiary health care. In rural and frontier communities, this lack of access causes problems. Geographical separation, economic factors, and the overall lack of trust that their traditional spiritual beliefs promote are factors contributing to the health disparities among AIANs compared to other population groups.[26] Fifty-one percent of Native American older adults live in frontier areas, 28% live in rural areas, and 21% live in urban areas. Increasing access to health care is a critical step toward eliminating racial and ethnic health disparities. Further, lower health status correlates with lower socioeconomic status. Poverty is a vulnerability of Native American older adults.

Targeted interventions are being developed and implemented to improve the health of American Indian and Alaska Native older adults. **TABLE 1-4** lists primary prevention focus areas currently being addressed by the Indian Health Service.

## ASIAN AMERICANS AND PACIFIC ISLANDERS

Approximately 5.8% (18.2 million) of Americans are Asian Americans or Pacific Islanders (AAPIs).[1,34] These groups are frequently categorized as Asian Americans and as Hawaiian and other Pacific Islanders. Asian Americans may

**TABLE 1-4** Health Promotion Focus Areas for Native Americans

| |
|---|
| Access to health care |
| Diabetes |
| Immunization |
| Mental health |
| Nutrition |
| Obesity |
| Oral health |
| Physical activity and exercise |
| Substance abuse |
| Tobacco cessation |

*Source:* Data from Indian Health Service. Health promotion. Rockville, MD: IHS. http://www.ihs.gov/communityhealth/hpdp/. Accessed February 2, 2014.

be from the Philippines, Korea, Vietnam, China, Pakistan, India, Cambodia, Laos, Thailand, or Japan. The Asian American, Hawaiian, and Pacific Islander older population was more than 1.3 million in 2008 (3.4% of the older population) and is projected to grow to more than 7.6 million by 2050. By 2050, the percentage of the older population that is Asian American, Hawaiian, and Pacific Islander is projected to account for 8.6% of the older population.[35] Most Asian Americans live in Hawaii, where 42% of all people in Hawaii are Asian.[36] Other areas with high proportions of the elderly Asian American population are California (home to 40.5% of the elderly Asian American population), New York (9.2%), Texas (4.3%), New Jersey (3.9%), Washington, DC (3.3%), and Florida (3%).[35]

AAPIs comprise 32 different ethnic groups and speak 500 distinct languages and dialects. Most AAPIs have large families.[37] The population growth of AAPIs exceeds any other racial/ethnic group; thus, the average age of the U.S. population will decrease in the future.

In 1998, AAPIs had the highest median household income of any racial group; their current median income is slightly less than (sometimes quoted as more than) that of non-Hispanic Whites. However, their income is bipolar: this group has both the highest incomes of any racial/ethnic group and the lowest incomes, especially among new immigrants. A high proportion of AAPIs own their own homes and complete college.[34]

AAPIs have the longest life expectancy (88.5 years) among the different racial groups in the United States.[34] Some of the common diseases of this group include cancer, heart disease, stroke, unintentional injuries, and diabetes.[34] Other health disorders and risk factors that are predominant among Native Hawaiians and Pacific Islanders are hepatitis B, HIV/AIDS, and tuberculosis. Difficulty with language is a barrier to healthcare access, especially for the poor and newly immigrated. Further, there is a lack of culturally competent healthcare professionals in the U.S. healthcare system. Given the unmet needs for health care, AAPIs may use traditional medicine, including acupuncture, herbal medicine, and massage. Lead poisoning is occasionally reported as occurring from folk remedies.[34]

The population of Native Hawaiian and other Pacific Islanders (NHPIs) rose by 9.7%, or 27,323,632 people, between 2000 and 2010.[34] In 2010, the median age of this group was 30 to 34 years.[38] Adults aged 65 to 74 years constitute 8% of the population, and those aged 75 years and older, about 4.3%. Most NHPIs live in Hawaii; only 1% live in all other states.[36] The 2010 U.S. Census reports that of the total NHPI population, 43% were Native Hawaiian, 15% Samoan, and 12% Guamanian/Chamorro.[39] NHPIs originate from any of 22 islands and speak one of as many as 1000 different languages.[40] Most NHPIs live above the poverty level.[41] Approximately 17.4% are uninsured, and 17% live at the poverty level.[34,38]

The cuisine of NHPIs varies from culture to culture and is a blend of native foods and Japanese, Asian, American, and European foods.[42] Food plays a central role in the cultures. Starchy foods are the foundation of the traditional diet. The traditional diet of NHPIs has become Americanized. Many NHPIs now eat fast foods and highly processed items such as white flour, white sugar, canned meat and fish, butter, margarine, mayonnaise, candy, cookies, carbonated drinks, and sweetened cereals. Rice has become a staple, displacing yams and taro.

The prevalence of chronic health problems among NHPIs is somewhat different from other ethnic groups. This segment of the population has higher rates of smoking, alcohol consumption, and obesity. It is estimated that 23.6% of Hawaii's adult population is categorized as overweight or obese based on body mass index.[43] Nearly 58.3% of older adults are overweight or obese in the 65- to 74-year age category. Forty-eight percent of those 75 years and older are overweight or obese.[43] Data from 2012 show that when compared to the U.S. older adult population data, NHPIs engage in less leisure or exercise time, 47.8% versus 58.4% respectively.

## CAUCASIAN AMERICANS (NON-HISPANIC WHITES)

Compared to other racial/ethnic groups, the non-Hispanic White population has the highest median age (38.3 years).[45] For Hispanics, it is 27 years; for Alaska Natives, 31.3 years; Asians, 36 years; and African Americans, 31.7 years.[45]

The United States is considered a young country compared to other developed countries. The proportion of total population for the 65 years and older group is approximately 13% of the total population. Japan has the highest percentage of older adults, approximately 23%, when compared to countries with a population of at least 1 million people.[1] These older adults can expect to live longer than ever before. Although life expectancy varies

by race, the difference decreases with age. In 2010, the life expectancy at birth was 3.6 years greater for Whites than for African Americans.[43] At age 65, a White adult can expect to live an average of nearly 1.3 years longer than an African American adult.[1] Interestingly, among those who survive to age 85, the life expectancy gap closes to about 6 months between older adults in both race groups.[43]

Over time, the scholastic level of older adults is increasing. From 1970 to 2012, the percentage of older adults who had finished high school increased from 28% to 81%. In 2012, approximately 24% of older adults had a bachelor's degree and 86% of non-Hispanic Whites had finished high school.

## Health and Well-Being

When asked to rate their health as excellent, very good, good, fair, or poor, 76% of people 65 years and older rated their health as very good or excellent.[1] However, as people age, the self-reported health score diminishes: 67% of older adults aged 85 and older report very good or excellent health. Data on self-health rating vary by race. Seventy-eight percent of Whites aged 65 years and older report very good or excellent health, whereas only 62.5% of African Americans report the same.[1]

Chronic diseases are very common among older adults of all races. Actual prevalence of chronic conditions supports racial differences in self-reported health. White Americans have a lower incidence of hypertension (54%) compared to African Americans (69%).[1] Diabetes is another chronic illness that occurs less commonly in White Americans: only 18% of White older adults have diabetes compared to 33% of older Hispanic Americans and 32% of older African Americans. The prevalence of some of these chronic conditions also varies by sex. For instance, arthritis is more common in women (56%) than in men (45%), and men have higher instances of heart disease (37%) than do women (26%).[1]

Overall, health and well-being are influenced by numerous interrelated factors accumulated over a lifetime. Nutrition is proving to be a major determinant in successful aging. Eighty-five percent of non-institutionalized older adults have one or more chronic health conditions that could be improved with proper nutrition, and up to half may have clinical evidence of various forms of malnutrition.[46] Many of these illnesses limit activity and diminish functional independence and quality of life. **FIGURE 1-7** highlights the dietary and nondietary risk factors for common diseases in older adults.

Food choice and dietary intake are multifactorial and are influenced by physiologic, behavioral, social, environmental, and psychological factors. These factors are compounded in older adults by functional and health factors that also contribute to food intake (**FIGURE 1-8**).

Consumption of a poor-quality diet can result in inadequate intake of energy and essential nutrients, resulting in malnutrition and worsening of health status (**FIGURE 1-9**). Malnourished older adults are more prone to infections and diseases, their injuries take longer to heal, surgery is riskier, and their hospital stays are longer and more expensive.

**BOX 1-3 Chronic Diseases That Are the Leading Causes of Death among U.S. Adults Aged 65 and Older (2007–2009)**

| |
|---|
| Heart disease |
| Cancer |
| Stroke |
| Chronic lower respiratory diseases |
| Influenza and pneumonia |
| Alzheimer's disease |
| Diabetes |

*Source:* Data from Centers for Disease Control and Prevention. *The State of Aging and Health in America 2013.* Atlanta, GA: CDC. http://www.cdc.gov/features/agingandhealth/state_of_aging_and_health_in_america_2013.pdf. Accessed January 19, 2014.

## The Healthcare Workforce

Is the healthcare workforce ready for the graying of America? It is widely believed that universities and schools are not well prepared to meet the upcoming need for health professionals qualified to manage the numbers of older adults who will be entering the healthcare system. As the baby boomers continue to enter into the older segment of the population, the number of older adults eligible for Medicare will double to 70 million by 2030.[2] The number of people aged 85 years and older will increase *five times*, to nearly 19 million, by midcentury. **FIGURE 1-10** illustrates the geographic

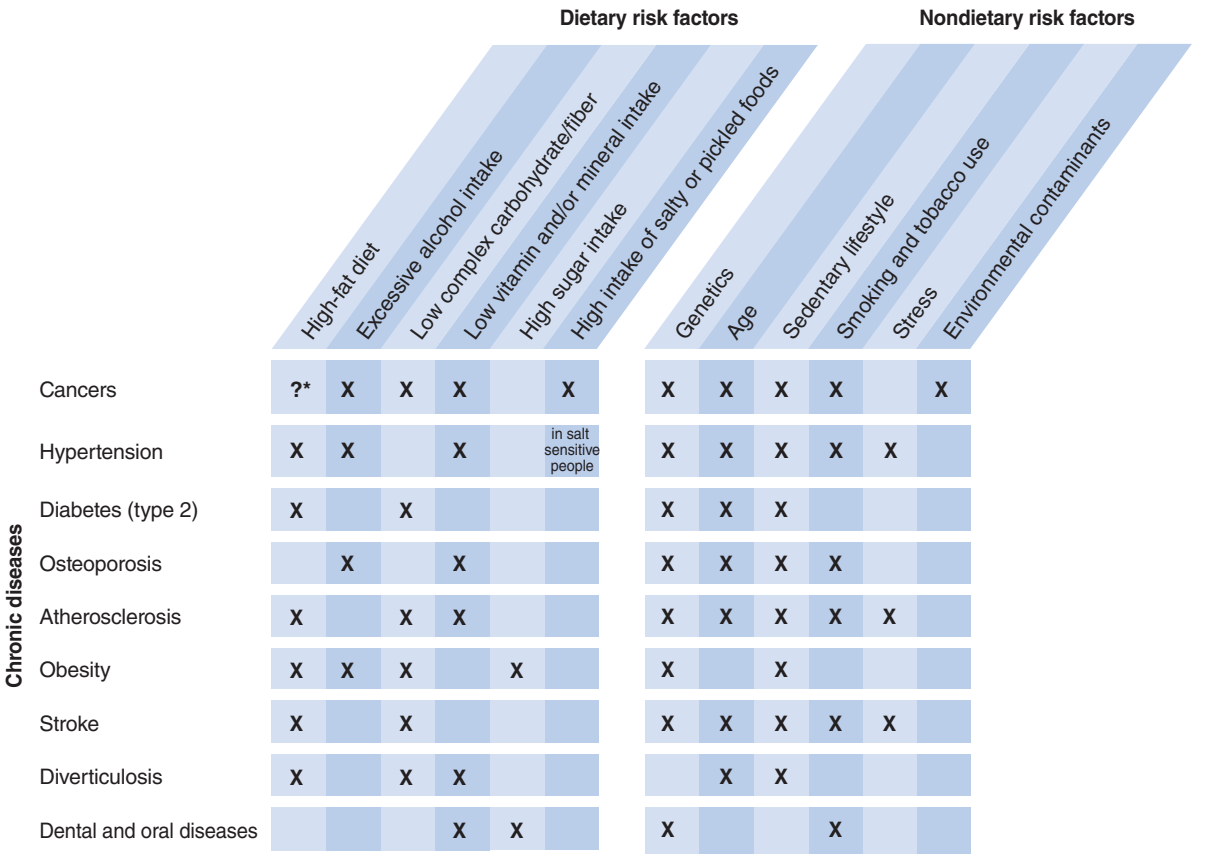


**FIGURE 1-7** Risk Factors for Disease in Older Adults

distribution and percentages of the total population who are 65 years and older and 85 years and older, respectively.

Older adults use more healthcare services than does any other age group.[1] Although this group currently comprises only 13% of the population, approximately 50% of total physician visits and hospital stays are by older adults and the average length of stay is longer than that of their younger counterparts, approximately 5.4 days for an older Source: adult who is 65–74 years old and 4.8 days for those in other age groups.[1] The average adult age 75 years has three chronic health problems and uses five prescription drugs. These issues and the changes of aging constitute a challenge for those who are unprepared to care for adults of this age group.

The number of healthcare professionals educated in geriatrics is small.[47] As of 2013, approximately 7500 allopathic and osteopathic geriatricians are certified in the United States.[48,49] With the steady increase in number of older Americans, it is estimated that approximately 30,000 geriatricians will be needed by 2030.[47] Meeting this need would require training approximately 1200 geriatricians per year over the next 20 years. Very few graduates of medical schools in the United States, however, are pursuing advanced training in geriatrics. In

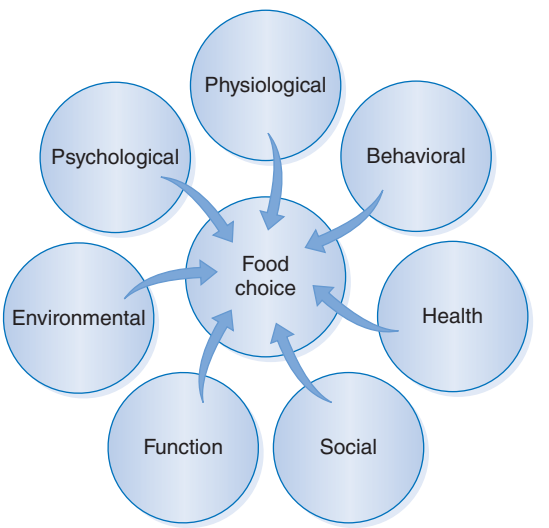


**FIGURE 1-8** Classification of Factors That Affect Food Choice in Older Adults

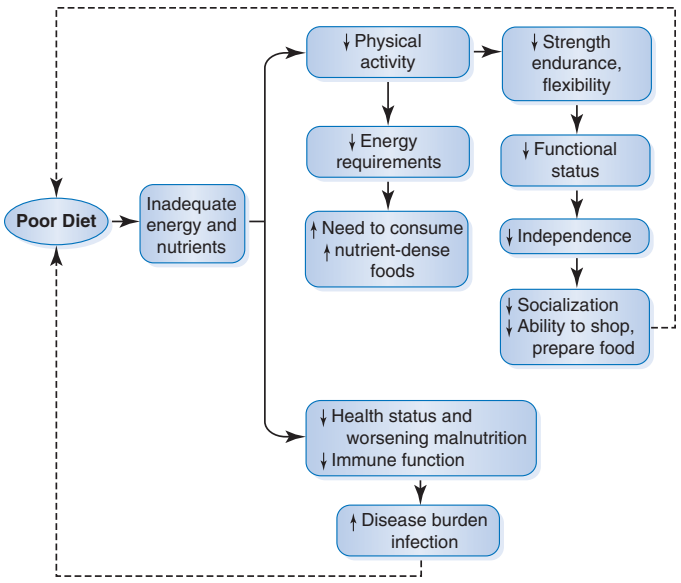


**FIGURE 1-9** Poor Diet Affects the Older Adult

2010, only 75 residents in internal medicine or family medicine entered geriatric fellowship programs. This number is down from 112 residents in 2005.[47] Fewer than 1% of RNs, physician assistants, and pharmacists and approximately 2.6% of advanced practice RNs are certified in geriatrics.[50] Only 3% of psychologists and 4% of social workers devote the majority of their practice to older adults.[50]

Nutritionists and dietitians have long practiced in long-term care settings and hospitals in which the management of older adults is common. One objective of the Healthy People 2020 initiatives is to increase the proportion of healthcare workers with geriatric certification by 10%.[15] This includes increasing the number of registered dietitians with a certification in geriatrics by 10%.

The largest training gap in any medical education field is in geriatrics.[51] Sixty percent of nursing schools have no geriatrics faculty at all. Medical schools are beginning to establish departments or divisions of geriatric medicine within internal medicine or family medicine divisions.


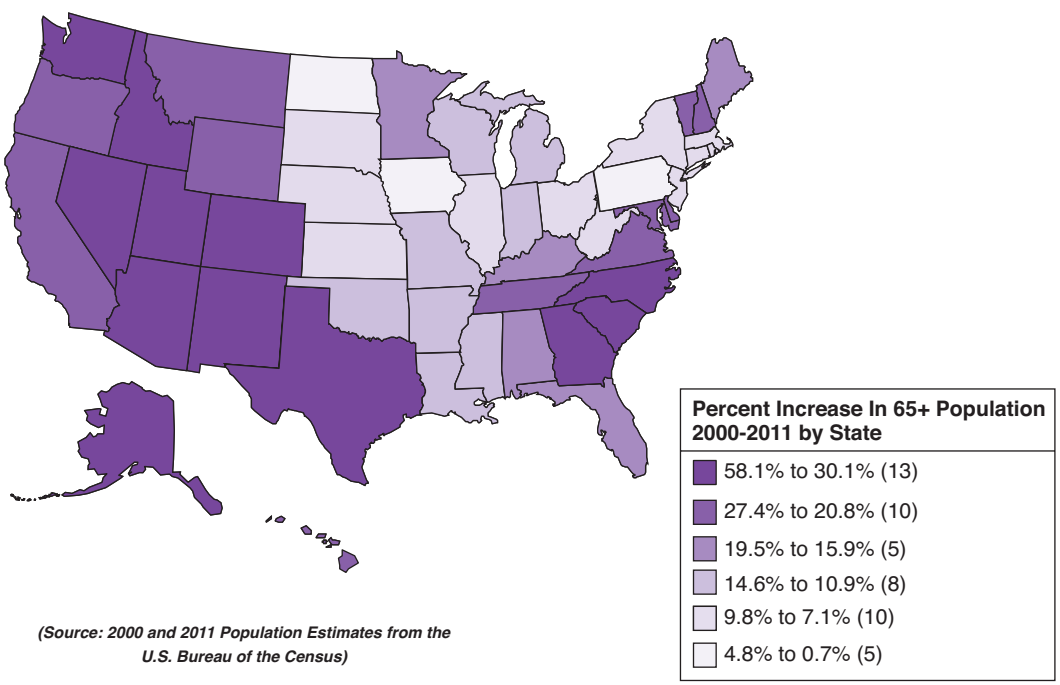


**FIGURE 1-10** Percent Increase in the Total Population Who Are 65 Years and Over by State, 2000 to 2011

*Source:* Reproduced from U.S. Census Bureau, 2010 American Community Survey. Washington, CD: U.S. Department of Commerce.

## Conclusion

Older adults are particularly vulnerable to compromised nutritional status and poor health because of declines in food intake and the decreasing energy needs that accompany aging. Therefore, consumption of a high-quality, nutritionally dense diet becomes critical. However, multiple chronic and acute illnesses, numerous medications, impaired health, low levels of physical activity, poor dentition, impaired mental status, depression, an inability to self-feed, and anorexia have all been shown to influence the eating habits and nutritional status of older adults.[52] As shown in Figure 1-1, these factors alone or in combination may contribute to dietary inadequacies and lead to the consumption of a low-quality diet, thus influencing the health and well-being of older adults.

Poor nutritional status can interfere with older adults' ability to remain independent and can lead to other complications such as increased medical burden, polypharmacy, and reduced socialization and physical activity. Maintenance of health, independence, and functional status is related to an individual's ability to shop, cook, and eat independently, which is directly related to food intake and nutritional status.

Ultimately, the goal for nutrition in the older population is to aid in maintaining health and specific attention should be given to address the individuality of each older adult, including cultural and ethnic considerations with regard to nutritional requirements, food preferences, and disease prevalence to promote overall healthy aging.

## Activities Related to This Chapter

1. List nutrition-related challenges facing the aging population based on the classifications of factors that affect food choices for older adults. List two to three specific examples for each group. As you go through the text, you can add to each list.

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