Chapter Preview

Most people’s perception of late adulthood is much worse than the reality. Ageism, or prejudice against the elderly, fosters harmful stereotypes that work to seriously limit and isolate older adults.

Although many changes are apparent in the skin, hair, body shape, sensory organs, brain, and body systems of older adults, the aging process is not inevitably associated with disease. Nonetheless, the aging process is characterized by an increased incidence of impaired vision and hearing and by declines in the major body systems. These are all changes to which the individual must adjust. In addition, the incidence of life-threatening diseases becomes more common with every decade.

Many theories of aging have been proposed. More plausible than the usual wear-and-tear theories are the genetic and cellular theories of senescence, including those proposing that increases in free radicals, declining immune function, or errors in cellular replication may be instrumental in the aging process. Genetic diseases such as Down syndrome and progeria suggest the existence of a genetic clock that programs aging and determines the maximum life span of each species. Even when cells are cultured under ideal laboratory conditions, replication is finite—that is, constrained at a certain point, called the Hayflick limit.

People who live unusually long lives often share several characteristics. These include a moderate diet, daily exercise and relaxation, and life in rural, mountainous environments that promote fitness and minimize exposure to pollutants.

What Have You Learned?

The “What Have You Learned?” questions at the end of the text chapter are reprinted here for your convenience in checking students’ understanding of the chapter contents.

1. What are the similarities among ageism, racism, and sexism?
2. What are the differences among ageism, racism, and sexism?
3. Is there any harm in being especially kind to people who are old?
4. Why don’t the elderly exercise as much as the young?
5. How is elderspeak similar to baby talk?
6. What is the difference between gerontology and geriatrics?
7. Proportionally, why does Japan have 2½ times as many people over 65 as the world overall does?
8. What would need to happen for the demographic pyramid to become a square?
9. What are the differences among young-old, old-old, and oldest-old?
10. How does heart disease represent both primary and secondary aging?
11. How does diabetes both represent primary and secondary aging?
12. Why don't we know if diseases of the elderly are more common now than earlier?
13. What are the differences in the sleep patterns of the old and the young?
14. How should it be decided whether an elderly person should drive or not?
15. How is compression of morbidity related to mortality?
16. How is compression of morbidity good for society as well as the individual?
17. Why is falling a serious health problem in old age?
18. How can an older person compensate for declines in vision?
19. How can an older person compensate for declines in hearing?
20. How might declining touch, taste, and smell harm an older person?
21. Why is the wear-and-tear theory of aging no longer considered accurate?
22. According to the genetic theory of aging, what is the maximum human life span?
23. Why is the average life span so many decades lower than the maximum?
24. According to evolutionary theory, why are there more diseases of aging than of younger years?
25. What happens that damages cells as they age?
26. If the immune system breaks down, how can this be a cause of all aging?
27. Why would people lie about their age by adding years to it?
28. What do studies of the very old suggest about the attitudes of other people?
29. What attitudes about life are more common in centenarians than younger people?

Chapter Guide

“On Your Own” Activities: Developmental Fact or Myth?; Portfolio Assignment
AV: The Journey Through the Life Span, Program 9: Late Adulthood; Transitions Throughout the Life Span, Program 23: Late Adulthood: Biosocial Development; Ageless America; n The Gift of Aging

I. Prejudice and Predictions

*Instructional Objective:* To increase students' understanding of the effects of ageism on the individual and society, and to describe the population's changing demographics.

“AV: Growing Old: Something to Live For; Aging
Teaching Tips: Students’ Fears of Growing Old; Physical Appearance and Stereotypes (also appropriate for discussion of aging and disease)
Classroom Activity: The Aging Stereotype Game
“On Your Own” Activity: What Will I Be Like When I Am Seventy-Five?
Critical Thinking Activity: Ageism, the Young-Old, and the Old-Old
Observational Activity: Media Images of Aging

1. Broadly defined, **ageism** refers to the categorization of people solely on the basis of chronological age. In the context of this chapter, it is the prejudicial stereotypes many people have about older adults. These stereotypes not only make it difficult for the elderly to be seen as they really are but they also undermine self-confidence, which allows anxiety, morbidity, and mortality to increase. One reflection of such stereotypes is the tendency of younger adults to lapse into **elderspeak** when they talk to older adults. Like babble, elderspeak uses simple and short sentences, exaggerated emphasis, slower talk, higher pitch, and repetition.

2. Elderly people who fear losing their minds because they think old age inevitably leads to dementia may act in ways that undermine their feelings of cognitive competence. This is an example of stereotype threat. Prejudice aimed at aging may also lead to disease because older adults are expected to exercise less. Inactive older adults have poorer circulation, digestion, and brain function.
3. Fortunately, ageism is on the decline, partly because of gerontology, the multidisciplinary study of old age. Gerontology reaches conclusions different from those of geriatrics, because geriatric physicians see patients who are ill, which leads them to consider aging as an illness.

4. As demography changes (the demographic shift) to reflect the increased number of elderly persons (because of falling birth rates and increased longevity), ageism will be challenged.

5. Historically, sorting the population by age resulted in a demographic pyramid, with the youngest and largest group at the bottom and the oldest and smallest at the top.

6. Today, the fastest growing age group is the centenarians, people 100 and over, making the pyramid more like a square.

7. The demographic shift is unlikely to be a problem for two reasons: (a) modern technology means fewer workers are needed to supply what society needs and (b) the idea that people over age 65 are dependent is ageist.

8. Dependency is usual for only a small group of the aged. Gerontologists distinguish among the young-old, the old-old, and the oldest-old, a distinction based not exclusively on age but also on characteristics related to health and well-being.

II. Aging and Disease

**Instructional Objective:** To provide students with a more realistic view of the physical health of the elderly.

- AV: Symptoms of Aging; Chronobiology: The Time of Our Lives; Factors in Healthy Aging; Aging Well: Never Say Die: The Pursuit of Eternal Youth; The Wit and Wisdom of Aging; Growing Older and Better; Age-Related Sensory Losses: An Empathic Approach

1. Developmentalists distinguish between the universal and irreversible changes that occur with time (primary aging) and changes that are caused by particular conditions or illness (secondary aging). However, the distinction between these two categories of aging is not clear-cut.

2. The leading cause of death for both women and men is cardiovascular disease, a disease that is more related to risk factors than to aging. However, most elderly people, do not have any particular disease.

3. During late adulthood, all the major body systems become slower and less efficient. As a result, serious diseases are much more common in late adulthood. In addition, the reduced efficiency of the body’s systems increases the recovery time as well as the likelihood of death.

4. A key factor in how people age is how well they respond with selective optimization with compensation by choosing activities they can do well as they adjust to aging.

5. Insomnia is a frequent complaint, particularly among older adults.

6. Frequent waking during the night becomes more common during late adulthood because the decrease in the brain’s electrical activity with advancing age means sleep is not as deep and dreams are not as long.

7. Driving is an example of how the elderly employ selective optimization with compensation. They drive more slowly, many do not drive at night or when it is raining, and some do not drive at all.

8. A goal of many researchers is a limiting of the time a person spends ill, that is, a compression of morbidity.

9. With age, the bones become more porous, losing calcium and strength; in advanced states this results in osteoporosis. This condition results from both primary aging and secondary aging. Too much smoking and alcohol and too little calcium and weight-bearing exercise contribute to the development of fragile bones.
10. One of the best overall indicators of a person’s physical and psychological health is mobility.

11. Early medical diagnosis can delay or even prevent blindness from one of the three severe vision problems: cataracts, which involve a thickening of the lens that clouds vision; glaucoma, which involves a fluid build-up within the eye; or senile macular degeneration, which involves deterioration of the retina and is the leading cause of legal blindness among the elderly.

12. Medical care is less effective for age-related hearing loss, or presbycusis. People usually wait a long time before visiting an audiologist. The hard-of-hearing are often mistakenly thought to be mentally deficient, and are more subject to depression and demoralization.

13. Many people function well for decades with sensory impairments, for three reasons: technology, specialist care, and personal determination.

### III. Theories of Aging

**Instructional Objective:** To examine several theories of aging.

- AV: The Aging Process; Aging: The Methuselah Syndrome; Man Immortal: The Human Cell and Eternal Life
- Classroom Activity: Eat Less, Live Longer?

1. According to the **wear-and-tear** theory of aging, body parts simply wear out with normal use and exposure to poor diet, drugs, environmental hazards, and other stresses.

2. Because many systems of the body function more efficiently with regular use, the wear-and-tear theory is of limited value as an explanation of the aging process.

3. Humans might have a **genetic clock**, a mechanism in the DNA of cells that regulates the aging process.

4. Some theorists propose that aging is incorporated into the genetic plans of all species. **Maximum life span**, the maximum number of years that a particular species is genetically programmed to live, is approximately 122 years for humans.

5. **Average life expectancy**, the number of years that the average newborn in a particular population group is likely to live, varies according to historical, cultural, and socioeconomic factors.

6. In the United States today, average life expectancy is about 76 years for men and 81 years for women.

7. Evolutionary theory provides an explanation for the genetic diseases of aging. This theory is based on the idea that society needs young adults to survive, but infants and old people are less needed.

8. Cellular theories of aging propose that aging is the result of the accumulation of cellular accidents that occur during cell reproduction. Cellular imperfections in combination with the body's declining ability to detect and correct them can result in senescence as well as in various cancers.

9. Another aspect of the theory of cellular accidents focuses on **free radicals**, which are atoms with unpaired electrons that are capable of reacting violently with other molecules in the cell, splitting them or tearing them apart. The most damage occurs when **oxygen free radicals** scramble DNA or mitochondria. These oxygen free radicals produce errors in cell maintenance and repair that, over time, may cause many diseases of aging. The gradual accumulation of damage as the individual ages may be a cause of senescence.

10. In theory, **antioxidants** such as vitamins A, C, and E, and the mineral selenium nullify the effects of oxygen free radicals by bonding with their unattached oxygen electrons. However, most research does not support this as a way to slow aging. Indeed, the theory that oxygen free radicals cause aging is widely criticized by scientists.

11. A variant of the cellular theory suggests that the body's immune system becomes weaker as we age. The immune system defends the body against foreign substances...
that may invade the body from without (such as viruses) or from within (such as cancer cells).

12. Manufactured in the bone marrow, B cells create antibodies that attack bacteria and viruses. Manufactured in the thymus gland, T cells produce specific substances that attack infected cells.

13. With age, the immune system weakens and becomes less effective.

14. Because of the reduced efficiency of the immune system, cancers grow and shingles emerge.

15. Immune functioning also helps explain sex differences in morbidity and mortality. Throughout life, females tend to have stronger and more efficient immune systems than males. Females also tend to have larger thymus glands than males. As a result, women are more vulnerable to autoimmune diseases such as lupus.

16. Biologist Leonard Hayflick found that when human cells are cultured under ideal conditions outside the body, the cells reproduce a finite number of times and then stop, with each species having a particular number of cell divisions. The Hayflick limit is the point at which cell replication stops. At the Hayflick limit, aged cells differ from young cells in many ways. One crucial difference is that the telomeres are much shorter in older cells. To slow the aging process, according to some experts, the enzyme telomerase (which increases the length of telomeres) should be added to the organism.

17. (Thinking Critically) Researchers have found that calorie restriction dramatically increased the life span of mammals closely related to humans.

IV. The Centenarians

Instructional Objective: To identify the common features of geographical regions famous for long-lived people and to discuss the nutritional needs of the elderly.

AV: How to Live Longer . . . Better; How to Live Past 100
Internet Activity: Living to 100

1. Characteristics of long-lived people in parts of the Republic of Georgia, Pakistan, and Ecuador include the following:
   • moderate diet, consisting mostly of fresh vegetables and little meat and fat
   • hard work that continues throughout life
   • strong ties to family and community
   • daily exercise and relaxation

2. Since both birth and marriage records in these regions are generally unavailable, the validity of the claims of those living unusually long lives has been questioned.