Handbooks in Health, Work, and Disability

Robert J. Gatchel
Izabela Z. Schultz
Christopher T. Ray *Editors*

Handbook of Rehabilitation in Older Adults

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Handbooks in Health, Work, and Disability

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We would like to dedicate this Handbook to our loving parents, who instilled in us a great motivation to be honest, to be kind, and to always continue to learn and grow as educated human beings.

Preface

Currently, in the United States, approximately 35 million Americans are age 65 years or older, representing 12.4% of the total population (US Census Bureau, 2001). The US Census Bureau (2000) projects that 20% (72 million) of the population will be 65 years of age or older by 2030. These "gray tsunami"-related population trends contribute to increased concerns about healthcare among older adults, including chronic illnesses, disease and disability prevention, and rehabilitation needs. Indeed, the United States is in the process of what is known as the "longevity revolution" and, as the population of those living longer increases, so will their healthcare needs. As individuals age, they also become more susceptible to injuries, especially falls. About one-third of adults will fall annually, and most will require medical attention as a result. Moreover, falls and fall-related injuries (such as chronic low back pain) are one of the chief origins of morbidity in older adults and are a precursor to functional impairment, disability, fractures, pain, and reduced quality of life. In more severe cases, falls are a significant cause of injury-related death in the older adult population. In addition, other significant chronic illnesses and disabilities associated with aging include musculoskeletal disorders, cardiovascular disease, mental health disorders, neuromuscular and neurological disorders, dementia, and osteoarthritis. Not surprisingly, this situation increases the burden on healthcare providers as more costly invasive interventions are performed and more medications are prescribed to the elderly which, in turn, can also lead to associated protracted recovery, side effects, pain, and disability. This vicious cycle can also strain financial resources, with the monetary burden associated with fall injuries (especially low back pain) projected to reach $32.4 billion by the year 2020. Challenges in meeting the demands of an aging population are not isolated to the United States. Similar statistics about the scope of the sociodemographic and healthcare challenges of an aging population are evident in all Western countries and in Japan.

Addressing the healthcare needs of the aging population is paramount, and yet a paucity of research exists on rehabilitation approaches to reduce the degree of disability in this population and on the maintenance of independence in activities of daily living (ADLs), autonomy in decision-making, and enhancement of quality of life. The present *Handbook* was developed to provide a single, comprehensive, and unique source for a better understanding of these chronic illnesses and disabilities and the associated rehabilitation methods for our aging population. It also provides evidence-informed guidance on

how best to assess and manage them. Moreover, implications for future research, policy, and best practices are discussed at the end of each chapter.

In order to accomplish the above, the Handbook is broken down into four separate parts. *Part I*, "Introduction and Overview," provides information on the epidemiology of chronic illnesses in older adults, the modifiability of longevity and quality-of-life predictors, biopsychosocial rehabilitation approaches for older adults, productive aging and work, and the measurement of gait and postural control in aging. *Part II*, "Major Illnesses and Disabilities in the Aging Population," will delineate the most common diseases, illnesses, and disabilities in the aging population (musculoskeletal pain and disability, spinal cord injury, Parkinson's disease, cardiovascular disease, cancer, brain injuries, mental health disorders, and multiple medication issues). *Part III* will expose readers to important clinical, occupational, and functional rehabilitation approaches developed specifically for older adults. Finally, *Part IV* is dedicated to providing future research and practice directions that will be important to know going forward.

We invite our readers for exploration of emerging clinical, occupational, medicolegal, and research issues in rehabilitation of older adults, together with a discussion and dialogue on these issues. Understanding of evidence-informed advances in assessment, as well as clinical and occupational rehabilitation, of older adults will benefit readers from many healthcare and occupational science disciplines. The best rehabilitation practices will be of interest to those healthcare professionals and clinical programs that serve older adults and geriatric patients and inform academic curricula in medicine, physical therapy, occupational therapy, vocational rehabilitation, kinesiology, nursing, gerontology, psychology, and social work. Also, the following professionals will develop enhanced and relevant knowledge in the new rapidly consolidating field of research and practice covered by the contents of our Handbook: human resource professionals, employee and family assistance counselors, union representatives, disability case managers, supervisors/employers, company executives, lawyers, insurers, licensing bodies for safety-sensitive professionals, health policy-makers, and advocacy groups. Furthermore, we encourage clinical researchers and academics to consider future directions for scientific inquiry within the transdisciplinary biopsychosocial model of rehabilitation of older adults.

Finally, we would like to acknowledge all of the authors for their valuable state-of-the-art contributions and for making this *Handbook* come to fruition in a timely manner. We again especially thank Janice Stern of Springer (now retired) who provided us with encouragement and support during our journey. In addition, we thank Pedro Cortes at the University of Texas at Arlington for all his tireless and technical contributions to the development of this *Handbook*.

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Part I

Introduction and Overview

1 Epidemiology of Chronic Illnesses: Associations with the Aging Population and Future Socioeconomic Implications

Robert J. Gatchel, Jin Y. Choi, and Marena Hanna

Overview

At the outset, as noted by Melhorn (2014), "Epidemiology is the study of the distribution and determinants of diseases and injuries in human populations…Disease does not develop randomly, and all individuals are not equally likely to develop a specific disease at a given time…it is a function of his or her personal characteristics (inheritance) and his/her surroundings (environment)" (p. 175). With that in mind, this present chapter will emphasize that, in the United States today, we are in the midst of the "graying of America revolution," with a steady increase in the number of aging adults 60 years or older. Indeed, the "baby boomers" are now in the 51–69 age range and will continue to add to the increasing number of 60+ adults. This is similarly true in many other countries around the world. In the United States, approximately one-half billion people are now over 60 years of age, and it is estimated that, by the year 2050, this number is expected to triple! Unfortunately, one of the inevitable consequences of aging is the increased probability of developing chronic illnesses (due to factors such as the deterioration of organs and the musculoskeletal system). This present chapter will highlight these increasing rates that will have to be frequently managed in the near future, and the prevalence and incidence of these chronic illnesses in aging adults will be reviewed. These rates will also be compared to those in the population as a whole. Other related issues will also be discussed, such as potential methods to help "slow down" the development of these chronic illness problems; how to potentially better manage them when they occur; and how/who will pay for this large chronic illness management crisis?

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Prevalence of Major Chronic Illnesses

An important distinction between *prevalence* and *incidence* needs to be made. *Prevalence* refers to the actual number of people who currently have a known illness (including those just diagnosed in the recent year). It reflects the burden of the illness, taking into account old cases plus new cases. In contrast, *incidence* refers to the number/percentage of new cases reported in a single year.

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Thus, *prevalence* tells us how widespread an illness is in a population, whereas *incidence* tells us the number of new cases of an illness in the population within a specific year. It should also be noted that, although the prevalence among deaths is important in demonstrating a broader picture of all the cases of illnesses for a period of time, the incidence rate of mortality reflects the number of deaths for each illness within a specific 100,000 of the population that arose in that same year. This specified population size makes it easier to compare how fatal each illness is, on the average level, compared to the overall prevalence rate. For example, an illness might be more prevalent in the Hispanic population in a certain region because of some virus which may be a huge "outlier" in the prevalence rate calculated based on the whole population. However, because the incidence rate is strictly based out of (in this case) 100,000 random residents, it reveals a more stable number of cases per illness and thus is more difficult for "outliers" to significantly alter the overall data.

Table 1.1 breaks down the prevalence of chronic illnesses by the "population as a whole" and for those who are "60 years of age and older." As can be seen from the health statistics of the Chronic Disease Center in 2014, the comparative rates are relatively similar, especially in light of two important factors: the absolute number of people in the "population as a whole" is much greater than that of those "60 years of age and older," and there are fewer members in the "60 years of age and older" sample, relative to the "whole population" (National Center for Health Statistics, 2016). Thus, overall, these data document the growing prevalence of chronic illnesses in our aging population.

Table 1.1 Prevalence of chronic illnesses

Population as a whole[a]	60 years and older[b]
Heart disease: 614,348/23.4%	Heart disease: 489,722/22.5%
Malignant neoplasm (cancer): 591,699/22.5%	Malignant neoplasm (cancer): 413,885/21.5%
Chronic lower respiratory disease: 147,101/5.6%	Chronic lower respiratory disease: 124,693/6.5%
Cerebrovascular disease (stroke): 133,103/5.1%	Cerebrovascular disease (stroke): 113,308/5.9%
Alzheimer's disease: 93,541/3.6%	Alzheimer's disease: 92,604/4.8%
Others: 39.8%	Others: 35.8%

[a]Period prevalence in 2014 out of 2,626,418 deaths (CDC, 2016) numbers/percentage
[b]Period prevalence in 2014 out of 1,922,271 deaths (CDC, 2016) numbers/percentage

Incidence of Major Chronic Illnesses

Similar to Table 1.1, Table 1.2 breaks down the incidence of chronic illnesses. As can readily be seen, the incidence rates of chronic illnesses in older adults are, as would be expected, higher in older adults. Other patterns that should be noted are as follows:

- Heart disease and cancer are the number 1 and number 2 illnesses.
- Period prevalence and incidence of death rates are in the same order for the "population as a whole," but not among older adults.
- Surprisingly, Alzheimer's disease is not seen in the top five of incidence rates for older adults.

Review of More Specific Types of Chronic Illnesses

In this section, we will review in greater detail even more specific types of chronic illnesses, as well as brief descriptions of them. It should also be noted, though, that many will be discussed in even much greater detail in subsequent chapters of this handbook.

Table 1.2 Incidence of chronic illnesses

Population as a whole[a]	60 years and older[b]
Heart disease: 167.0	Heart disease: 5,376.3
Malignant neoplasm (cancer): 161.2	Malignant neoplasm (cancer): 3,361.9
Chronic lower respiratory disease: 40.5	Cerebrovascular: 1,269.9
Cerebrovascular disease (stroke): 36.5	COPD: 822.3
Alzheimer's disease: 25.4	HIV: 3.5

[a]Incidence of death rates per 100,000 in 2014 (CDC, 2016)
[b]Incidence of death rates per 100,000 in 2014 (CDC, 2016)

Hypertension

What Is Hypertension (High Blood Pressure)?

High blood pressure causes an increased force exerted by the blood in a "bush/bounce pattern" against the walls of the arteries, which can eventually lead to damage to the heart (MacGill, 2017). Hypertension is known as the "silent killer," because it happens without warning signs. It is most often seen in adults (18+ years; MacGill, 2017). There are two types of hypertension:

- *Primary hypertension* is not due to a specific factor, but, rather, it is caused by multiple variables, such as an imbalance of the hormonal regulation of blood pressure and volume. It is also influenced by environmental factors that include unhealthy lifestyle habits (MacGill, 2017).
- *Secondary hypertension* has a cause leading to it. For example, a hormone disorder may cause an imbalance between sodium and potassium levels, resulting in the elevation of blood pressure (MacGill, 2017).

Prevalence of Hypertension

One-third of adults in the United States (about 75 million people) have hypertension, and only about 54% of the patients have their condition under control (MacGill, 2017). Hypertension also increases the risk for stroke and heart disease – two of the main causes of death in the United States. The prevalence of adults over 60 years is 60–70%. Table 1.3 breaks down this illness by age (MacGill, 2017).

Symptoms and Treatments

Generally speaking, hypertension is asymptomatic (no direct symptoms are directly experienced), but a 180 mmHg (millimeters of mercury) or higher systolic reading and a 110 mmHg or higher diastolic reading are warning signs of hypertension (MacGill, 2017). Normal blood pressure is below 120 systolic and 80 diastolic. Treatments can include medications prescribed by a physician if necessary, such as diuretics (MacGill, 2017). Otherwise, self-care helps lower hypertension (MacGill, 2017). Indeed, hypertension can be stimulated by acute stress, anxiety, excitement, or overly exerting physical activities. Table 1.4 provides a brief summary of some methods that individuals can employ to prevent the sudden development of hypertension (MacGill, 2017).

Table 1.3 Prevalence of hypertension by age

About 6.8% ages 18–39 have hypertension
About 30.4% ages 40–59 have hypertension
About 66.7% ages 60 and older have hypertension

High Blood Cholesterol

What is *hypercholesterolemia* (high blood cholesterol)? Cholesterol is a waxy fat-like substance that the body needs to produce certain hormones, Vitamin D, and other substances for digestion (National Heart, 2013). High blood cholesterol (*hypercholesterolemia*) is the excessive amount of cholesterol in the blood that can build up on the artery walls, which puts one at increased risk for heart disease and stroke, two of the main leading causes of death in the United States (National Heart, 2013). The prevalence of it in older adults ages 55–64 is about 47.8%, and for ages 65–74, it is about 37.2% (National Heart, 2013). There are two types of cholesterol:

- *Low-density lipoprotein (LDL)* or "bad" cholesterol. This type of cholesterol makes up the majority of the cholesterol in the body and is known as "bad" cholesterol because the

Table 1.4 Some methods to prevent the sudden onset of hypertension

Check your blood pressure regularly
Engage in healthy lifestyle habits (e.g., appropriate sleep, exercise, etc.)
Limited/no smoking or drinking
Healthy diet (low in sodium [salt] and saturated fat but high in fibers, vegetables, and fruits)
Exercise (at least three times a week), and remain active

excessive amount of LDL produces the plaque buildup of cholesterol on the artery wall, which then may lead to stroke and heart disease (coronary heart disease). The ideal level of LDL is less than 100 milligrams of cholesterol per deciliter of blood (mg/dl) (National Heart, 2013).
- *High-density lipoprotein (HDL)* or "good" cholesterol. This type is responsible for the absorption of cholesterol and delivers it to the liver, where the cholesterol gets "flushed out" of the body. HDL is known as "good" cholesterol because having an excessive amount of HDL can lower the risk of a person for a stroke and heart disease. The ideal level of HDL is less than 40 mg/dl (National Heart, 2013).

Two other measures relating to LDL and HDL are frequently evaluated when a blood test (lipoprotein panel) is performed:

- *Triglycerides*. This is a type of fat that is used for energy and is found in the blood. The combination of high triglycerides, low HDL, and high LDL increases the risk of heart attack and stroke. A high level of triglycerides is >200 mg/dl (National Heart, 2013).
- *Total cholesterol*. This is the total amount of cholesterol in the whole body, which is composed of the LDL, HDL, and triglycerides levels. The ideal level of total cholesterol is less than 200 mg/dl (National Heart, 2013).

Prevalence of Hypercholesterolemia

Approximately 31.7% (about 73.5 million adults) have high blood cholesterol in the United States. Patients with hypercholesterolemia have twice the risk of developing cardiovascular diseases, relative to people without hypercholesterolemia (National Heart, 2013). Unfortunately, less than one-third of adults (about 29.5%) have their condition under control (National Heart, 2013). Moreover, less than one-half of adults (about 48.1%) who have high low-density lipoprotein (LDL), or "bad" cholesterol, receive treatment for it. Finally, about 31 million adults have a total cholesterol level greater than 240 mg/dl (National Heart, 2013). The prevalence by age is as follows:

- About 88.8% of ages 45–64 have hypercholesterolemia (National Heart, 2013).
- About 94.7% of ages 65 and older have hypercholesterolemia (National Heart, 2013).

Symptoms and Treatments

Hypercholesterolemia is often asymptomatic (i.e., the patient experiences no symptoms). The ideal level of blood cholesterol is less than 200 mg/dl (National Heart, 2013). Treatments may include medications, such as statins, exercise, and a healthy diet (National Heart, 2013). Table 1.5 provides a brief summary of methods that individuals can employ to prevent hypercholesterolemia.

Upper Respiratory Conditions (Allergies)

Upper respiratory conditions include different pathological conditions that affect other organs, as well as the upper respiratory tract (Langtree, 2015). Their prevalence in older adults is about 13.5%. These respiratory disorders can be classified into four categories: obstructive conditions, such as emphysema, bronchitis, and asthma attacks; restrictive conditions, such as fibrosis, sarcoidosis, alveolar damage, and pleural effusion; vascular diseases, such as pulmonary edema, pulmonary embolism, and pulmonary hypertension; and infectious, environmental, and other diseases, such as pneumonia, tuberculosis, asbestosis, and particular pollutants (Langtree, 2015). Some of the most common respiratory disorders are:

- *Chronic obstructive pulmonary disease (COPD)*. This condition causes irritation to the lungs. COPD also leads to other

Table 1.5 Summary of methods to prevent hypercholesterolemia

Regularly check blood cholesterol level through the lipoprotein panel blood test
Engage in healthy lifestyle habits (e.g., low-fat diet)
Exercise and remain active
Quit or at least limit smoking or drinking

respiratory disorders, such as asthma and emphysema (Langtree, 2015).

- *Chronic bronchitis***.** When the bronchi and bronchioles are irritated, they will cause an increase in the secretion of mucus (Langtree, 2015).
- *Emphysema.* This condition occurs when the soft/fine walls of the alveoli break down, which causes a reduction in the gas exchange (Langtree, 2015).
- *Asthma*. This condition involves episodes of chest tightness and breathlessness (Langtree, 2015).
- *Pneumonia.* This condition occurs when the alveoli get infected, which then causes problems in breathing, and the patients might need to be put on oxygen (Langtree, 2015).

Prevalence of Upper Respiratory Conditions

About one billion cases of common colds occur each year in the United States (COPD Foundation, 2017). Some other statistics to consider are:

- About 6.8 million emergency department visits for respiratory conditions by individuals under the age of 18 years old occur in the United States (COPD Foundation, 2017).
- Respiratory disorders are most common among children (COPD Foundation, 2017).
- About 24 million Americans suffer from COPD, and it is the fourth leading cause of death in the United States (COPD Foundation, 2017).
- About 5–10% of adults, ages 60 and older, suffer from upper respiratory conditions (allergies) (COPD Foundation, 2017).
- Respiratory disorders can often be inherited (COPD Foundation, 2017).

Symptoms and Treatments

The causes of these conditions vary from one person to the next. However, the most common causes include allergies and other environmental factors (Langtree, 2015). Symptoms can also vary from one condition to another, but most of the common symptoms include coughing with mucus and fever (Langtree, 2015). Finally, below is a brief summary of prevention methods.

- Take medication as prescribed and on time (Langtree, 2015).
- Reduce or eliminate smoking (Langtree, 2015).
- Exercise and remain active (Langtree, 2015).

Arthritis

Arthritis literally means joint inflammation: "joint (arthro) inflammation (itis)." Arthritis is a medical term used to describe 200 rheumatic diseases (Nichols, 2015). Its prevalence in older adults is about 13.0%. The most common form of arthritis is *osteoarthritis* (the degeneration of joint cartilage and the bone underneath) (Nichols, 2015). Other types of arthritis include rheumatoid arthritis, gout, and fibromyalgia. Arthritis is more common in woman than in men, and the risk is increased by age of the person (Nichols, 2015).

Prevalence of Arthritis

About 54.4 million adults in the United States (27.2% annually) have arthritis. An estimated 78 million, which is about 26% of adults (>18) in the United States, will be diagnosed with arthritis by 2040 (Nichols, 2015). A total of 26% of women, and 19.1% of men, have been diagnosed with arthritis, putting women at a higher risk for arthritis than men. Table 1.6 breaks down the prevalence of arthritis by age (Nichols, 2015).

Symptoms and Treatments

The causes of arthritis vary according to the type. Potential causes include injury, abnormal metabolism, genetic makeup, infections, and/or immune

Table 1.6 Prevalence of arthritis by age

From ages 18–44, about 7.1% were diagnosed with arthritis
From ages 45–64, about 29.3% were diagnosed with arthritis
From ages 65 and older, about 49.6% were diagnosed with arthritis

system dysfunction (Nichols, 2015). Symptoms also vary depending on the type of arthritis and may include pain, swelling, stiffness, and difficulty moving the joints. Potential tests conducted also depend on the type of arthritis. Tests that can detect arthritis include joint X-ray, rheumatoid factor, and complete blood count (CBC) (Nichols, 2015). Treatments include medications, such as nonsteroidal anti-inflammatory drugs (NSAIDs), surgery, and physical therapy (Nichols, 2015). Some methods to better manage arthritis include:

- Appropriate physical activities can reduce arthritis pain (Nichols, 2015).
- Maintain a healthy weight (Nichols, 2015).
- Patient education and support (Nichols, 2015).

Asthma

Asthma is a disease that affects the lungs, which causes episodes of chest tightness and breathlessness. The test used to diagnose asthma is called *spirometry*, and this test detects the amount of air and the speed a person can blow it out of the lungs (Rettner, 2014). Symptoms of asthma may include a wheezing sound, coughing, and fast breathing. The main cause of asthma is not completely known, although factors such as genetics, as well as environmental factors (which include air pollution, tobacco smoke, cold air, and food allergies) have been implicated (Rettner, 2014).

Prevalence of Asthma

The prevalence of asthma in older adults is approximately 7.8%. Also, the following statistics should be noted:

- 6.8 million children (about 8.4% of children) have asthma in the United States (Rettner, 2014).
- 18.4 million adults (about 7.6% of adults) have asthma in the United States (Rettner, 2014).
- 7 million out of the 25 million Americans who have asthma are children (Rettner, 2014).
- Greater than 10% of adults, ages 60 and older, suffer from asthma (Rettner, 2014).

Symptoms and Treatments

Treatments for asthma depend on its progression. There are two types of treatments prescribed by physicians, which can be administered by an inhaler with a holding chamber device (Rettner, 2014):

- *Quick relief*. This is an inhaler that should always be carried with the individual in order to treat asthma when it first starts, especially the "noisy part," such as coughing and wheezing.
- *Long-term control*. This type of medicine treats the major part of asthma, such as the inflammation of the airway (it can prevent asthma attacks).

Allergy shots (immunotherapy) can also be used to treat asthma if the trigger of the symptoms is an allergy such as pollen. Table 1.7 provides a summary of ways to prevent asthmatic attacks from occurring (Rettner, 2014).

Vision Problems/Blindness

Vision loss is a condition in which the vision of the eye cannot be corrected with glasses or contact lenses. Vision problems, if left untreated, can lead to blindness (Fries, 2005). Indeed, it should also be noted that, in a recent Lancet Global Health report, it was estimated that there has been a 17.6% increase in blindness (30.6 million in 1990–36.0 million in 2015) due to population growth and the increase in aging adults (Bourne et al., 2017). Approximately 1.4% of older adults now have such a condition. Common conditions that lead to vision problems/blindness (vision loss) include (Fries, 2005):

Table 1.7 Methods to potentially prevent asthmatic attacks

Get influenza and pneumonia vaccines
Know and avoid the triggers of asthma
Take the prescribed medications on time
Observe your breathing as an early sign of an attack

- *Amblyopia*. This condition is known as the "lazy eye," and it is the leading cause of vision loss in children. Amblyopia causes the impairment of vision due to the unusual development of the neural signals between the brain and the eye during childhood.
- *Strabismus*. Strabismus is a misalignment of the eyes, and this condition is the leading cause of amblyopia. The eyes are oriented in a different way, which causes the brain to receive a different visual input, which interferes with depth perception and binocular vision.
- *Refractive Errors*. This condition is one of the most common vision disorders in children. It causes blurred vision due to the unfocused light on the retina. Refractive errors include the following types (Fries, 2005):
  - *Myopia*. This condition is known as "nearsightedness," which enables the eye to see a clear image only for near objects. Therefore, faraway objects appear blurry.
  - *Hyperopia*. This condition is known as "farsightedness," which enables the eye to see a clear image only for faraway objects; therefore, nearby objects appear blurry.
  - *Astigmatism*. This condition is when the cornea or lens that causes the blurred vision is not corrected. Children who have amblyopia or hyperopia usually have astigmatism.

The prevalence of vision problems/blindness is included in Table 1.8.

Table 1.8 Prevalence of vision problems/blindness

About 3% of children, ages under 18 years, are blind or visually impaired
About 2% of children, ages 6–72 months, have *Amblyopia*, which is the leading cause of vision problems in children
About 2–4% of children, ages under 6 years, have strabismus
About 4% of children, ages 6–72 months, and about 9% of children, ages 5–17 years, have *myopia*
About 21% of children, ages 6–72 months, and about 13% of children, ages 5–17 years, have *hyperopia*
About 15–28% of children, ages 5–17 years, have *astigmatism*
About 30% of adults, ages 60 and older, have vision problems

Symptoms and Treatments

The causes of vision problems in children involve factors such as watching TV very closely, squinting the eyes too much, and rubbing the eyes. Vision problems usually cannot be detected by the naked eye of another person (Fries, 2005). Thus, vision screenings can help in detecting vision problems that can potentially lead to blindness. Visible symptoms could include swelling, redness, and white material in the pupil (Fries, 2005). Treatments may include surgery, eye patches, or eye drops, as well as prescription lenses. In terms of prevention, one should get vision tests for the child immediately once you notice any symptoms of vision problems as untreated vision problems can lead to vision loss/blindness. Therefore, seek medical attention immediately (Fries, 2005).

Comorbidity of Physical and Mental Health Illnesses

In the elderly, one major problem in successfully managing chronic illnesses is the fact that there are frequently many comorbid illnesses concurrently present. Moreover, in addition, there are usually comorbid mental health problems that need to be simultaneously managed. This may become a "management nightmare" if not effectively coordinated among healthcare providers. For example, in a recent review by Polatin, Bevers, and Gatchel (2017), these authors highlighted that one type of common comorbidity (chronic pain and depression in adults, which is approximately 50–65% of the population) results in physical and cognitive declines; concurrent multiple health conditions; and complex medication regimens that all add to the unique and complex challenges of effectively treating pain and depression, particularly in geriatric populations. Interdisciplinary physical/mental health interventions and monitoring for psychiatric sequelae (such as depression, cognitive change, and synergistic physical side effects) are necessary. Such interdisciplinary programs are now available for such complex comorbid pain and

depression problems (e.g., Gatchel, McGeary, McGeary, & Lippe, 2014).

Mood Disorders

Mood disorders are conditions that affect a person's quality of daily life, especially emotionally. These disorders include depression, mania, bipolar disorder, and depression (MedlinePlus, 2017). Anyone can experience a mood disorder, but they are more prevalent in those with a chronic illness. In older-age adults, the prevalence is about 10.6%. The most common types of mood disorders include (MedlinePlus, 2017):

- *Major depression*. This condition is when one feels sad, cries a lot, and has no interest in activities.
- *Dysthymia*. This condition is a chronic and depressed mood that lasts for at least 2 years.
- *Bipolar disorder*. This condition is when the patient experiences episodes of mood changes that alternately go between depression and mania.
- *Mood disorder related to another health condition*. This refers to other medical illnesses that lead to symptoms of depression.
- *Substance-induced mood disorder*. This condition causes depression due to chronic use of medications.

Prevalence of Mood Disorders

Among the population, aged 18 and older, about one in ten people suffers from a mood disorder. Approximately 20.9 American adults (or 9.5%, ages 18 and older) suffer from mood disorders (MedlinePlus, 2017). Also, disabilities among Americans ages 15–44 are caused by a major depressive disorder. Finally, about 15% of adults, ages 60 and older, suffer from mood disorders (MedlinePlus, 2017).

Symptoms and Treatments

Symptoms of mood disorders include feelings of guilt, worthlessness, recurring thoughts of death or suicide, depression, changes in appetite, and insomnia. Treatments for mood disorders include medications, cognitive-behavioral therapy (CBT), or both if needed, as well as seeking help from a support group (MedlinePlus, 2017). Table 1.9 includes methods for managing mood disorders.

Table 1.9 Methods for managing mood disorders

Follow instructions when taking medication
Exercise, eat healthily, and get enough sleep
Talk with someone if you feel depressed or have a thought about death or suicide
Learn about your illness, and talk to your physician and significant others if something goes wrong, so that they can help you

Attention-Deficit/Hyperactivity Disorder (ADHD)

Attention-deficit/hyperactivity disorder (ADHD) is a condition that decreases individuals' ability to focus, pay attention, and control their behavior. They may also be excessively active and impulsive (WebMD, 2005). ADHD usually begins in childhood and adolescence but can continue into adulthood (WebMD, 2005).

Prevalence of ADHD

- For children 5–17 years of age, about 10.2% were diagnosed with ADHD (between 2012 and 2014) (Centers for Disease Control and Prevention, 2017).
- For boys 5–17 years of age, about 14.1% were diagnosed with ADHD (Centers for Disease Control and Prevention, 2017).
- For girls 5–17 years of age, about 6.2% were diagnosed with ADHD (Centers for Disease Control and Prevention, 2017).
- Boys are two or three times more at risk for ADHD than girls (Centers for Disease Control and Prevention, 2017).
- The number of healthcare visits for patients diagnosed with ADHA is about nine million (Centers for Disease Control and Prevention, 2017).

- About 4.2% of adults, ages 60 and older, have ADHD (Centers for Disease Control and Prevention, 2017).

Symptoms and Treatments

Some of the symptoms of ADHD include individuals who easily get annoyed, appear angry, do not follow the rules, and cannot handle frustration. This condition could have physical symptoms as well, including a headache, fever, and shaking (WebMD, 2005). Typical treatments include medications such as Ritalin (a long-acting stimulant), as well as functional behavioral assessment tests that can help in detecting behavioral problems and eventually help to control those behaviors (WebMD, 2005). It should also be noted that, in a recent study by Sagar, Miller, and Erdodi (2017), the faking of ADHD in adults may be a significant problem in clinical settings. This may be due to the motivation to acquire academic/work accommodations or access to controlled substances (such as Ritalin) (WebMD, 2005).

Prevention and Early Intervention

If parents/teachers notice any unusual or abnormal behaviors on how an individual is acting, they should seek medical help immediately from a mental health professional (WebMD, 2005). It should also be noted that if this condition is left untreated, it could cause negative short-term and long-term effects, such as fighting, losing one's job, and not being able to maintain a relationship (WebMD, 2005).

Anxiety Disorders

Anxiety is a mental health disorder which makes one feel fearful and worried a great deal of the time, without a particular acute reason. It may eventually get worse and interfere in every aspect of a person's life, which can lead to many symptomatic changes, such as loss of sleep (insomnia) (ADAA, 2017). The most common types of anxiety include the following (ADAA, 2017):

- *Generalized anxiety disorder (GAD)*. This condition is when one feels worried all the time, even when there is nothing to worry about. This disorder is common among teenagers but also affects about 6.8 million adults or 3.1% of the US population. Its prevalence in adults 60-year or older is about 1.7%.
- *Panic disorder* (characterized by anxiety or panic attacks). This condition is characterized by excessive anxiety, which causes one to panic over small matters. This condition affects about six million people (2.7% of the US population).
- *Obsessive-compulsive disorder (OCD)*. A person with this condition (such as continually working one's hands) will struggle to end the same obsessive-compulsive actions repeatedly. This condition affects about 2.2 million people (1.0% of the US population).
- *Phobia*. This condition is characterized by an intense fear of something that should not normally cause fear. This condition affects about 19 million people or 8.7% of the US population.
- *Social anxiety disorder*. This condition is characterized by being afraid to be judged by others and always avoiding crowds/gatherings. This condition affects about 15 million people or 6.8% of the US population.
- *Post-traumatic stress disorder (PTSD)*. This condition is characterized by a feeling of fear and stress when there is not a current danger present. It is the result of being exposed to an intensely traumatic event in the past. This condition affects about 7.7 million people or 3.5% of the US population.

Prevalence of Anxiety Disorders

- Anxiety disorders are more common in women than in men, and it is the most common mental health disorder in the United States (PsychGuides.com, 2017).
- About 18% people who suffer from anxiety will attempt suicide (PsychGuides.com, 2017).
- About 39% people who suffer from anxiety have suicidal thoughts almost daily (PsychGuides.com, 2017).

Table 1.10 Advice for managing anxiety disorders

Seek help immediately when you feel overwhelmed
Exercise on a regular basis and have a healthy diet
Talk to your physician and/or significant other about the anxiety
Attend treatment sessions, as prescribed

- About one-third of people suffering from anxiety seek treatment for it (PsychGuides.com, 2017).
- About 10% of individuals, ages 60 and older, suffer from anxiety (PsychGuides.com, 2017).

Symptoms and Treatments

- Symptoms of anxiety vary from one condition to another. It can be physical (such as stomach cramps) or emotional (such as fear). General symptoms also include insomnia and poor performance at work or school (ADAA, 2017).
- Treatments for anxiety include medications such as antianxiety drugs, as well as cognitive-behavioral therapy (CBT) (ADAA, 2017).

Table 1.10 provides advice for dealing with anxiety disorders.

Some Noteworthy Chronic Illness Patterns

Why Does Heart Disease Have the Leading Prevalence in Both the "Whole Population" and 60+ Adults?

It was already known that heart disease was the leading health problem in America decades ago because the risk factors associated with getting the disease are so easily achievable. The risk factors for chronic heart disease include, but are not limited to, being overweight or physically inactive, having a family history of the disease, eating an unhealthy diet, or just aging in general. However, there were some key historical events that made our nation to start living a more sedentary lifestyle. According to the documentary *The Hidden Epidemic: Heart Disease In America*, the underlying roots that made heart disease even more prevalent were the increasing ownership of cars, the invention of television, change in diet, and a trend toward cigarettes. In the 1920s, cars were a major source of freedom, and the average family increased from having one to two cars. Instead of walking, more and more people started driving to work and visit places that might have been only a few blocks away. A few years later, the television was invented, creating the complete antithesis to exercise. Then, surviving through the depression and World War II changed the mindset of Americans as a well-deserved celebratory period, who began indulging on sweets and fast food (Arledge, 2007). Thus, the trend toward convenient but rich and fatty foods is what the American diet is mostly known for today. Lastly, the government had issued cigarettes to every soldier, who then brought them back home; soon, a great majority of Americans started smoking. These specific events are the root causes of higher blood pressure and cholesterol, as well as an explanation of why heart disease is so common in the present United States.

Why Is There Such a Huge Gap Between Cancer (22.5%) and Chronic Lower Respiratory Disease (CLRD; 5.6%)?

Malignant neoplasm or cancer is a disease in which cells divide rapidly, resulting in tumors that can form anywhere in the body. One of the reasons why the prevalence of cancer may be so high, compared to the next prevalent chronic illness, is because of the many types of cancer that are covered under this "umbrella term," including skin, lungs, breast, prostate, colon/rectum, and the cervix/uterus. Meanwhile, CLRD consists of chronic bronchitis, emphysema, and asthma. Another reason why cancer is so much more prevalent than CLRD is that of the same reason with heart disease – the risk factors are common, such as exposure to sunlight and radiation, obesity, diet, hormones, and alcohol among others. As generations pass, the average life expectancy

continues to grow, and the cause of death is from being unhealthy, while, years ago, the majority of people would have died from other weaker illnesses before they even got cancer. CLRD, on the other hand, has a fewer number of risk factors associated with obtaining the illness. The major risk factors are direct smoking, exposure to secondhand smoking, and air pollutants.

Chronic Illness Risk Factors

In general, there are four major behaviors that constitute negative health risks for anyone: little physical activity, poor nutrition, tobacco use, and alcohol consumption (Centers for Disease Control and Prevention, 2016). Chronic illnesses can be frightening because an individual living an unhealthy lifestyle for a long period of time can experience a "domino effect," from something as simple as a bad diet or lack of physical activity to high cholesterol and blood pressure levels to something as deadly as heart disease. Although these behaviors can lead anyone to develop a chronic illness, people with physical and mental health conditions are more likely to be at risk because of the higher possibility of obesity and depression. When observing by social class, the majority of deaths due to noncommunicable diseases come from middle- to low-income families because of the costs of prevention programs that these families cannot afford (Alwan, Armstrong, & Branca, 2015).

Older adults are also at high risk because chronic illnesses increase with age, but, in the very elderly (around 80 years or older), the prevalence declines due to greater mortality within this age group (Kahn et al., 2015). Chronic illness is most common in the 60–80 years of age portion of the population because organs deteriorate over time, as arteries become narrower/clogged or the body may not be producing enough insulin. This can lead to hypertension, heart disease, stroke, and diabetes. The physicality of the body also deteriorates, resulting in arthritis and causing a "chain reaction" of making it difficult for seniors to keep up with a healthy diet, regular sleep routine, and exercise. Lacking these essential healthy lifestyle habits may also put people at greater risk for depression, obesity, and dementia. Finally, in a more comprehensive review of the basic risk factors of the leading causes of death in the United States, Taylor (2015) delineated those presented in Table 1.11.

Table 1.11 The major risk factors for the leading causes of death in the United States

Illness	Risk factors
Heart disease	Tobacco use; obesity; diabetes; high cholesterol and blood pressure levels; physical inactivity; stress
Stroke	Tobacco use; obesity; diabetes; high cholesterol and blood pressure levels; physical inactivity
Cancer	Tobacco use; unhealthy diet; environmental factors
Chronic lung illness	Tobacco use; environmental factors (e.g., pollution, random exposure; asbestos exposure)
Accidental injuries	On the road (failure to wear seat belts); in the home (falls; fire; poisons)

Adapted from (Taylor, 2015)

Taylor (2015) also has discussed the importance of good health habits in order to prevent the development of chronic illnesses, such as eating breakfast every day, not eating between meals, sleeping 7–8 h per night, being no more than 10% overweight, not smoking, not having more than one or two alcoholic drinks each day, and getting regular exercise every day. Methods to reduce these risk factors were also reviewed by Taylor (2015).

Methods to Better Manage Illness Development

There are two major organizations that are working hard to find new methods and implement the ones that work, in order to slow the development of chronic illnesses. The Centers for Disease Control and Prevention (CDC) has a program called the *Four Domains* of CDC that does just that. The *first domain*, epidemiology and surveillance, finds disease patterns by tracking multiple data sources, such as birth and death certificates, as well as cases of cancer death. They also conduct cancer screening and

try to spread the message about the ABCS (aspirin use, blood and cholesterol control, and smoking) for heart disease and stroke prevention. Within this *second domain*, environmental policies have been passed for healthier lifestyles, such as smoke-free air laws, banning artificial trans fat and flavored cigarettes, and making unhealthy products more expensive. The *third domain* is all about intervening the healthcare system and improving clinical treatment delivery, whether it was for the Affordable Care Act, the government, or public health organizations. Lastly, community programs are also being linked to clinical services in order to increase self-management programs and try to partner with hospitals for better benefits (the *fourth domain*). There is also an encouragement to seek different types of healthcare workers, whether it is a therapist, dietician, or pharmacist to find the best treatment.

Similarity, the World Health Organization (WHO) tries to tackle the risk factors for chronic illnesses with their four categories. The first category is prevention, in which four departments each focus on different types of noncommunicable diseases (NCD) – risk behaviors. The *Tobacco Free Initiative* has already added tobacco taxation and reduced the public demand for tobacco. *Health Promotion* tries to integrate oral health and educate the public in general. *Surveillance and Population-based Prevention* promotes physical activity, nonalcoholic beverages, and a healthy diet, especially for children. The last category, *mHealth*, uses technology to improve healthy habits. The second category is all about detection, screening, treatment, and palliative care, as well as taking care of health insurance. The third category is *surveillance* to monitor exposures (in other words, look at behavioral factors, physiology, metabolic rate, and social determinants), monitor the outcomes, and work with the health system on infrastructure and other policies. Lastly, the *Global Coordination Mechanism* category raises awareness of the global action plan, shares knowledge based on scientific evidence, and mobilizes resources on an international scale.

Socioeconomic Implications of the "Graying of Societies"

As has been noted by Hartzell and colleagues (Hartzell, Mayer, Neblett, Marquardt, & Gatchel, 2015), besides the enormous economic medical cost burden of managing chronic illnesses in older adults, there are also more far-reaching socioeconomic costs. For example, they cited a unique investigation which was conducted in Australia by Schofield et al. (2011) addressing this socioeconomic issue, using a cross-sectional analysis of the base population of that country. It was found that, for workers (aged 45–64 years) who had to retire early due to a chronic illness (in this case, a spinal disorder), when compared to workers who were fully employed with no illness conditions, these former workers were associated with a significant "economic drain" on the country, in terms of lost income taxation and increased social/medical benefit payments. As more succinctly summarized by Gatchel and Schultz (2014), the following staggering costs were associated with the early retirement individuals:

- They had 79% lower income, relative to those individuals employed (who earned four times more).
- They paid 100% less in taxes.
- They also received 21% more via government welfare support payments.

As further noted by Gatchel and Schultz (2014), the above costs had a major economic impact on Australia as a nation: AU$4.8 billion was lost in annual individual earnings, AU$622 million in additional welfare payments, AU$497 million in taxation revenue for the government, and AU$2.9 billion in gross economic product for the country. To put this in a greater perspective, the above total economic cost for Australia was approximately AU$9 billion (which computed to US$9.4 billion) in a country of only 22 million citizens (or AU$269 per capita; Dagenais & Haldeman, 2012). Finally, as highlighted by Gatchel and Schultz (2014), "If such figures were extrapolated for the USA, the financial costs to

the government would be AU$82 billion (US$85 billion)!" (p. 488); and this was only for spinal disorders. If other chronic illnesses were taken into account, they would "break the economy" for future generations in the United States and other countries. With the changing healthcare system still evolving in the United States, it is difficult to imagine how the government will be able to absorb such high financial costs.

In the next section, we will review the financial issues related to some of the major chronic illnesses discussed earlier in this chapter.

Stroke (Cerebrovascular Diseases)

Local health services and social services now assess the level of support needed and provide a support package and financial aid for living in a care home. This is based on an assessment consisting of looking at the patient's income, savings, property, benefits currently being received, and financial assets. Also, the National Health Service (NHS) allows for ongoing payment of home fees and medical care for people needing specialist treatment.

Heart Disease (Cardiovascular Disease)

As noted earlier, the cost of heart disease was about $444 billion in 2010 in the United States (Hoffman, 2017). Helpful programs and resources include:

- *GoodRx*: A discount card used in a pharmacy (Hoffman, 2017).
- *Rx Outreach*: This program provides affordable generic and brand name medications to qualified patients according to their income (Hoffman, 2017).
- *NeedyMeds*: This program is to help patients find assistance programs to help them with their medication costs (Hoffman, 2017).
- *Eldercare Locator Community Assistance for Seniors*: This program provides senior citizens and their caregiver with sources of information, such as medication assistance (Hoffman, 2017).

Chronic Lower Respiratory Disease

The cost of oxygen alone each year is about $3 billion dollars. The cost for patients with COPD, Stage lll, is about $10,812 annually; Stage ll is about $5,037 annually; and Stage l is about $1,681 annually (West Virginia Health Statistics Center, 2006). Thus, the financial burden is quite high. Ways to pay for treatment include:

- *State-sponsored programs*: These programs are created to provide financial assistance or medical care for prescription assistance, medical equipment, medical supplies, disease screening, and other treatments.
- *Medicare information*: This is a federal insurance program for people 65 years of age or older, as well as people with a disability under the age of 65.
- *Medicaid sites*: This program helps low-income citizens by providing them medical care sites.
- *Medicare counseling (SHIP)*: This program provides health insurance counseling to Medicare recipients by providing grants to all 50 states and some territories.
- *Federal poverty guidelines*: This program allows patients to gain extra amounts of federal poverty level (FPL), if the patient's income is less than or equal to a certain percentage of FPL income.
- *Tax return request forms*: Patients who do not file a federal income tax and apply for assistance programs need to fill out and submit Form 4506-T.

Cancer

Who will aid in payment for these illnesses? Many are listed below:

- *Hill-Burton funds*: A federal grant that assists patients who are unable to pay by offering free or low-cost services (Aaron, 2015).
- *Government programs*: This includes state-sponsored children's health insurance programs, veteran and military benefits, and several other financial support programs for women with low incomes and who have breast or cervical cancer (Aaron, 2015).
- *Life insurance loans*: These might provide one with "ready cash" that can be used (Aaron, 2015).
- *Retirement plans*: Most of these plans allow withdrawing of funds early and without penalty (Aaron, 2015).
- *Friends and family*: Fundraisers help in the payment process (Aaron, 2015).
- *Home equity loan*: There is a possibility of taking a line of credit, or a lump sum, to assist in the payment process; but regular payments need to be paid monthly (Aaron, 2015).
- *Personal loans*: Taking a personal loan may also help, but it requires collateral to ensure payment back (Aaron, 2015).
- *Reverse mortgage*: If you are a homeowner and 62 or older, home equity can be converted into cash with the loan that will be repaid in the future. However, there are many disadvantages involved with reverse mortgages (Aaron, 2015).
- *Sale of assets*: One can check with a financial advisor to sell any real estate or investment in order to be qualified for some government-sponsored funding (Aaron, 2015).

Alzheimer's Disease

It should be noted that, according to statistics from the National Center for Health Statistics, the death rate from this disease in the United States is "creeping up." There were slightly more than 31 deaths per 100,000 people in the past year. This is up from 29 deaths per 100,000 people the year before (Ahmad & Bastian, 2017).

The following are the major financial resources for this disease:

- Medicare is the most beneficial for people over 65 years of age.
- Employee benefits available to those in the early stages of Alzheimer's
- Retirement plans, including individual retirement accounts (IRAs) and annuities
- Personal savings, including investments and personal property
- Government assistance through many public programs, such as social security disability income (SSDI), supplemental security income (SSI), veteran benefits, and tax deductions

HIV

The following are some of the potential financial resources available:

- Private insurance plans usually cannot deny coverage because of a pre-existing health condition.
- Medicaid.
- *The Ryan White HIV/AIDS Program* helps those without enough financial resources or coverage.
- *Health Center Program* provides HIV testing and delivery of care.
- Federal Programs for Women and Children, such as the Children's Health Insurance Program (CHIP) and Title V of the Social Security Administration (SSA).

Summary

In addition to the financial resources possibilities/agencies discussed above, it should also be noted that another chapter in the current handbook describes services provided by the *American Association of Retired Persons* (AARP), as well as other nonprofit organizations. Nevertheless, in spite of all these potential financial resources, they still fall short of covering the costs of the many chronic illnesses we have reviewed and discussed. Most governmental social medical programs around the world are under "financial siege" in meeting these monetary needs. For