

D. EPIDEMIOLOGY OF EYE AND VISION DISORDERS IN ADULTS

The prevalence of common eye and vision conditions underscores the importance of regular eye and vision care. Among the more frequent eye and vision conditions experienced by adults are:

- Refractive errors

Vision changes due to refractive errors (myopia, hyperopia, and/or astigmatism) are among the most frequent reasons for consultation with an eye care practitioner. In addition, uncorrected refractive errors are the most common cause of reduced vision.⁹⁸⁻¹⁰¹ Blurred vision due to uncorrected refractive errors can have immediate and long-term consequences such as lost educational and employment opportunities, reduced productivity, impaired safety, and decreased health-related quality of life.^{100,102} Correction of refractive errors can lead to improvement in visual acuity in the majority of patients over a wide range of ages.¹⁰³

Clinically significant refractive errors affect more than half of the United States population age 20 years or older. Estimates based on the 1999-2004 National Health and Nutrition Examination Survey found the prevalence of refractive errors in persons 20 years of age or older to be: myopia ($\leq -1.00D$) 33.1 percent; severe myopia ($\leq -5.00D$) 6.5 percent; hyperopia ($\geq +3.00D$) 3.6 percent; astigmatism ($\geq 1.00D$) 36.2 percent. The prevalence of myopia is approximately equal in 20 to 39 and 40 to 59-year age groups (36.2 percent compared to 37.7 percent) but is markedly lower for the ≥ 60 -year age group (20.5 percent). Hyperopia increased from 1.0 percent in the 20 to 29-year age group to 2.4 percent in 40 to 59-year age group and to 10 percent in ≥ 60 -year age group.¹⁰⁴

Although most refractive errors first develop in childhood, the eye continues to undergo refractive changes throughout adult life. The Beaver Dam Eye Study, involving persons older than 40 years of age, reported changes in refractive error occurring over ten years. Younger people became more hyperopic, while older people became more myopic.¹⁰⁵

- Presbyopia

Presbyopia, which results from the loss of eye focusing ability with age, can have multiple effects on quality of vision and activities of daily living. Because presbyopia is the result of aging changes to the eye's accommodative mechanism,¹⁰⁶ its prevalence is directly related to the proportion of the aging population. Most individuals first begin experiencing the effects of presbyopia around ages 40 to 45.

When presbyopia is defined as a visual condition of everyone over the age of 45, the United States Census Bureau 2020 population estimates would suggest that about 139 million Americans have presbyopia. Approximately one in eight Americans ≥ 50 years of age have near-vision impairment due to uncorrected presbyopia.¹⁰⁷

- Cataracts

A cataract is an opacification of the crystalline lens of the eye. It is a leading cause of vision loss in adults. Cataracts are clinically significant if they cause a decrease in visual acuity or a functional visual impairment. Advancing age is the major risk factor for the development of cataracts; however, a cataract may be present at or develop shortly after birth or occur later as a result of a metabolic condition, medications, exposure to radiation, electric shock, trauma, and ocular or systemic diseases.

Approximately 17.2 percent of Americans aged 40 years and older have developed cataracts in one or both eyes. By age 80, more than half are affected.¹⁰⁸