

# Impact of sex differences and gender specificity on behavioral characteristics and pathophysiology of neurodegenerative disorders

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The impact of neurodegenerative disorders in humans has multiple consequences because of the progressive decline in cognitive and physical performances. These disorders have diverse manifestations and are influenced by genetic and lifestyle factors, concurrent health conditions as well as un-modifiable predisposing risk factors, including gender and advanced age. Accumulating evidence indicates a gender-dependent natural bias of neurodegenerative diseases, such as, Alzheimer's disease, Parkinson's disease, Huntington's disease and multiple sclerosis, with the ratio of male to female prevalence as well as the severity of the disease differing significantly between the two sexes. This observation has recently garnered much attention and it is now being realized that understanding the sex as a biological variable in the etiology of the neurodegenerative diseases may advance the status of the pathophysiology and treatment strategies while improving the associated decline in cognitive and functional abilities. This review highlights the influence of gender in neurodegenerative disorders and further discusses the sex-specific pre-determined microenvironments that are critical in predisposing the individuals to such disorders. © 2019 Elsevier Ltd

Alzheimer's disease

Cognitive impairment

Gender bias

Huntington's disease

Multiple sclerosis

Neurodegenerative disorders

Parkinson's disease

DNA

histone

neurotransmitter

sex hormone

Alzheimer disease

astrocyte

behavior

brain development

brain mitochondrion

degenerative disease

DNA methylation

DNA modification

epigenetics

gender bias

gene

human

Huntington chorea

multiple sclerosis

nonhuman

Parkinson disease

pathophysiology

priority journal

Review

sex difference

Alzheimer disease

brain

genetic epigenesis

Huntington chorea

metabolism

mitochondrion

multiple sclerosis

Parkinson disease

physiology

sex factor

sexual characteristics

Alzheimer Disease

Brain

Epigenesis, Genetic

Humans

Huntington Disease

Mitochondria

Multiple Sclerosis

Parkinson Disease

Sex Characteristics

Sex Factors