

AGE RELATED CHANGES 2

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Objectives of lecture

- At the end of this lecture the student will be able to:
- Determine Age-related sensory , proprioceptive, vestibular Changes in addition to nervous system changes

Sensory changes

- The majority of older adults will experience some changes in their sensory capacity (vision, hearing, smell, taste) as a normal part of aging.
- One of the occupational therapist role to evaluate level of dysfunction caused by change in client factors such as sensation and skill that allow individual to interpret sensory input.

Vision

The prevalence of visual impairment increase with aging

- **Vision slows.**

Because the lens of the eye becomes less elastic.

- **Visual scanning becomes difficult.**

Because it takes longer for the older eyes to focus, many older adults find it hard to scan an area and find a particular object.

- **The pupil gets smaller.** So , the lens gets thicker and less transparent, resulting in less light reaching the retina.(more light to see)

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Vision

- **The near-vision declines (Presbyopia)**

A loss of elasticity in the lens of eye leading to a decrease in the eyes ability to change the shape of the lens to focus on near objects .

- Increase sensitivity to glare
- Decrease sensitivity to color
- Diminished acuity
- Dry eyes (not produce enough tears).
- Weakened eye muscles may prevent older person from moving his /her eyes in all directions (smaller visual field)

Common eye disorders that cause vision changes that are NOT normal include:

Cataracts - clouding of the lens of the eye

Glaucoma - rise in fluid pressure in the eye

Macular degeneration - disease in the macula (responsible for central vision) that causes vision loss

Retinopathy - disease in the retina often caused by diabetes or high blood pressure

Hearing

Hearing loss is the 3rd leading chronic condition affecting adults over 75 years of age.

Presbycusis: Loss of high frequency, sensorineural hearing loss. Has a gradual onset is progressive and is bilateral. Due to gradual loss of hair cells, and fibrous changes in the small blood vessels that supply the cochlea


Conductive hearing loss: result from problem in the outer and or middle ear such as wax build up .

Sensorineural hearing loss: involves damage to the inner ear, the cochlea, or the fibers of the eighth cranial nerve.

Smell and Taste changes

The sense of smell and ability to identify odors decreases. This can be problematic for safety reasons. An inability to smell smoke, gas, spoiled food for instance could put an older adult at risk.

Smell and Taste



<p>decreases the number of taste buds(chemoreceptors that respond to chemicals from food and other substances).</p>
<p>The remaining taste bud begins to shrink.</p>
<p>dry mouth due to less saliva, which can affect the sense of taste.</p>
<p>The sense of smell can also diminish, especially after age 70. Because of a loss of nerve endings and less mucus production in the nose.</p>

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Proprioception



older subjects had decline in lower extremity proprioception. These changes may be **secondary to**

Loss of vision

Peripheral vascular disease

Arthritis

Cardiovascular disease

Stroke

Inner ear problems & diabetes .

TOUCH, VIBRATION, AND PAIN

With aging, sensations may be reduced or changed. These changes can occur because of:

Decreased blood flow to the nerve endings or to the spinal cord or brain.

lack of certain nutrients.

Problems in the brain, confusion, and nerve damage from injury

Diabetes

Cont.

Changes and decrease in number and sensitivity of touch and pressure receptors

The ability to perceive painful stimuli is preserved. a slowed reaction time for pulling away from painful stimuli.

may develop problems walking because of reduced ability to perceive where your body is in relation to the floor. This increases your risk of falling.

decreased Two-point discrimination and vibratory sense

Reduced ability to detect vibration, touch, and pressure increases the risk of injuries (pressure ulcers).

VESTIBULAR SYSTEM

decreases number of nerve cells in the vestibular system

decreases Blood flow to the inner ear.

Idiopathic bilateral vestibular loss becomes more severe as age progresses.

the gradual, age-related loss of vestibular nerve endings can result in severe balance problems without any associated dizziness.

Slow loss of vestibular function may be first noticed as difficulty walking or standing, especially in the dark while on soft or uneven surfaces

Peripheral nervous system changes

a loss of myelinated and unmyelinated nerve fibers in elderly.

Axonal atrophy

Decrease in nerve conduction velocity because the myelin sheaths around nerves degenerate

Center nervous system changes

Brain weight and size are reduced

Reduction in the number of neurons.

The remaining nerve cells function less well.

The rate of neurotransmitter production declines

Decreased cerebral blood flow.

cont.

Cerebrospinal fluid space increase

Falls the number of synapses

Lipofuscin accumulates in certain areas of the brain, particularly the hippocampus and frontal cortex.

Waste products may collect in the brain tissue as nerve cells break down, causing plaques and tangles.

Slowing of thought, memory, and thinking

ANY Q?

