



# NMNEC Concept: **Sensory Perception**

**Mega-Concept:** Health and Illness

**Category:** Protection and Movement

**Concept Name:** Sensory Perception

**Concept Definition:**

The ability to understand and interact with the environment using senses of sight, smell, hearing, taste, touch.

**Scope and Categories:**

All individuals have a need to sense and perceive their environment. The ability to sense and perceive occurs within many parts of the body through a complex interaction of the nervous system with sensory receptors.

The major categories for this concept link to the five senses: touch, vision, hearing, smell, and taste. The scope of the sensory perception concept ranges from optimal functioning to impairment within each of the categories. For the purposes of this concept, impairment of sensory perception includes altered function or perceptual ability but does not include psychiatric applications, such as auditory, visual, or tactile hallucinations or psychosis.

**Populations at Risk:**

All persons are at risk, regardless of gender, ethnicity/race, culture, or socioeconomic status. Populations at highest risk for experiencing impairment in sensory perception are those born with congenital defects or older adults.

**Risk Factors:**

- **Age:** Changes in sensory perceptual functioning associated with the aging process increase the risk of impairment. Example: Hearing loss is present in about one third of people older than 60 years of age and half of people older than 85 years of age.
- **Medical conditions:** Many sensory perception impairments are secondary to complications from medical conditions. Example: Vision can be affected by hypertension, head injuries, cancers, brain tumors, stroke, or infectious diseases.



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- **Medications:** Changes in sensory perception function are common adverse effects of many medications, and the risk of changes is increased when medications are taken for a long time, such as with chronic illness. Examples: Perinatal exposure to retinoic acid (vitamin A) treatment of severe acne, alcohol, or quinine from the mother can result in hearing impairment in newborns. Ototoxicity is an adverse medication effect that can result in permanent or temporary inner ear problems. These inner ear problems can affect not only hearing, but also balance and possibly speech. Ototoxicity is a main preventable cause of deafness.
- **Pregnancy:** Heredity or exposure to perinatal infections increases the risk of visual or auditory impairments in the newborn. Examples: TORCH infections (toxoplasmosis, other [syphilis, varicella-zoster, parvovirus B19], rubella, cytomegalovirus, and herpes infections) can cause congenital cataracts or deafness. Perinatal transmission of chlamydia can cause newborn blindness.
- **Work environments/exposures:** There is increased risk of injuries to sensory organs in certain occupations. Example: An individual can develop a permanent hearing deficit over time when exposed to loud noises greater than 85 decibels.
- **Lifestyle choices:** Some lifestyle choices can increase the risk of sensory perception impairments. Example: Smoking creates an increased risk of alterations in both smell and taste, primarily because it damages the taste receptors on the tongue and sensory receptors in the nose.

### **Physiologic Processes and Consequences:**

- **Vision:** Requires functioning of the visual system (eyes plus cranial nerves II, III, IV, and VI). Impairment of the visual system results in poor vision ranging from mild to blindness.
- **Hearing:** Requires functioning of the auditory system (ears plus cranial nerve VIII). Impairment of the auditory system results in hearing deficits ranging from mild to deafness.
- **Taste:** Requires functioning of the gustatory system (mouth and tongue, along with various cranial nerves). Impairment of the gustatory system often results in decreased taste that can cause decreased appetite, which in turn can lead to undesired weight loss and malnutrition.
- **Smell:** Requires functioning of the olfactory system (nose plus cranial nerve I). Impairment of the olfactory system can result in a loss of ability to smell, which is often closely related to taste. Taste and smell work together and can result in nutritional



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problems. Also, a loss of ability to smell increases the risk of additional health problems because the individual may be unable to detect the presence of danger in the environment, such as spoiled food, fire, or gas leaks.

- **Touch:** Requires functioning of the somatosensory system (touch receptors and nerve endings in the skin plus the nervous system). Impairment of the somatosensory system could lead to injury and possible infections of wounds associated with injury due to decreased ability to sense pain or heat and cold.

### **Assessment History and Physical Examination:**

- Medical, surgical, and social history
- With newborns, include prenatal and maternal history
- Medication history (prescription and over-the-counter drugs)
- Report of sensory perception changes or report of deficit for each category
- Targeted inspection and testing of organ(s) associated with reported deficit
- Associated cranial nerve assessments

### **Diagnostic Tests:**

- **Vision:** Referral to eye specialist for specialized testing. Examples: Evaluating peripheral vision by testing visual fields using automated perimetry; evaluating intracocular pressure using noncontact tonometry (puff-of-air test)
- **Hearing:** Referral to a certified audiologist. Example: Pure-tone air conduction hearing test

### **Nursing Diagnoses:**

Useful nursing diagnoses are: impaired communication, ineffective health management, hearing loss, and vision loss.

### **Goals:**

The objectives of Healthy People 2020 include increasing the use of hearing and eye protection devices, increasing hearing and vision screenings across the lifespan, decreasing disorders causing sensory losses, and increasing the use of assistive devices by those with sensory losses.

### **Clinical Management - Interdisciplinary:**

**Primary Prevention:** Health Promotion -Protection of the sensory organ from injury and disease



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Examples: Use of protective devices, such as safety goggles, ear plugs, or helmets; oral hygiene to protect the mouth from disease; safe administration of medications to prevent ototoxicity

### **Secondary Prevention:** Screening

Examples: Vision screening across the lifespan; hearing screening by 1 month of age and across the lifespan; antibiotic therapy (perinatal infections, newborn eye prophylaxis, otitis media, etc.)

### **Tertiary Prevention:** Prevention of Disease Progression

#### **Treatment**

- **Vision:** corrective lenses; LASIK, cataract surgery; pharmacotherapy; adaptive methods, such as braille and guide dogs
- **Hearing:** myringotomy for recurrent otitis media; cochlear implants; adaptive methods, such as sign language, closed caption television, and auditory listening devices

#### **Interrelated Concepts:**

- **Communication:** Sensory perception impairments may limit ability to communicate.
- **Functional Ability:** Sensory perception impairments may cause limits on ability to function.
- **Mobility:** Sensory perception impairments may limit mobility.
- **Safety:** Sensory perception impairments that limit functional ability or mobility or communication contribute to inability to maintain safety.

#### **Exemplars**

##### **New Mexico Nursing Education Consortium (NMNEC) Required Exemplars:**

- **Visual:**  
Changes in visual acuity
  - Myopia
  - Presbyopia
  - Cataracts
  - Glaucoma
  - Macular degenerative disease
- **Auditory:**
  - Sensorineural hearing loss
    - Genetic



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- Ototoxic medications
- Exposure to loud noise or trauma
- Presbycusis
- Conductive hearing loss
  - Otitis media
  - Allergies
  - Presence of cerumen or foreign body

### **Optional Exemplars:**

- Gustatory: Surgeries or trauma to ear, nose, and throat; dental problems
- Olfactory: Sinus infections, dental problems, brain tumor, or injury
- Somatosensory: Peripheral neuropathy, spinal cord injury, third-degree burns



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### **Resources:**

Healthy People 2020. *Hearing or other sensory or communication disorders*. Retrieved from <https://www.healthypeople.gov/2020/topics-objectives/topic/hearing-and-other-sensory-or-communication-disorders>

Hopkins, B., & Giddens, J. F. (2017). Sensory perception. In J. Giddens (Ed.), *Concepts for nursing practice* (2<sup>nd</sup> ed., pp. 271-282). St. Louis, MO: Elsevier.

Ladwig, G. B., Ackley, B. J., & Makic, M. F. (2017). *Mosby's guide to nursing diagnosis* (5<sup>th</sup> ed.; Appendix: Nursing Care Plans for Hearing Loss and Vision Loss). St Louis, MO: Elsevier.

Lewis, S. L. (2017). Visual and auditory problems. In S. L. Lewis, L. Bucher, M. M. Heitkemper, & M. M. Harding (Eds.), *Medical-surgical nursing: Assessment and management of clinical problems* (10th ed.; pp. 367-393). St. Louis, MO: Elsevier.

Sharts-Hopko, N. (2010). Lifestyle strategies for the prevention of vision loss. *Holistic Nursing Practice*, 24(5), 284-291.

Shuler, G. K., Torrey, K., Mistler, L. A., & Depukat, R. (2013). Bridging communication gaps with the deaf. *Nursing*, 43(11), 24-31.

Wilson, S. F., & Giddens, J. F. (2017). *Health Assessment for Nursing Practice* (6<sup>th</sup> ed.). St Louis, MO: Elsevier.

### **Additional Website Resources:**

The National Institute on Deafness and Other Communication Disorders: [www.nidcd.nih.gov](http://www.nidcd.nih.gov)

Centers for Disease Control and Prevention: Vision health initiatives:

<https://www.cdc.gov/visionhealth/home/index.html>

Hearing Loss Association of America: <http://hearingloss.org/>