**Sensory problems in eldery**

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Introduction

 The efficiency of the sensory organs—vision, hearing, taste, smell, and touch—declines with age, but the age of onset and rate of decline differ markedly among people.

 The senses become less efficient with age. But age is not the only factor causing deterioration in the senses. Disease and environmental factors are also important. Intense and prolonged noise affects hearing, smoking reduces taste and smell sensitivity, and diabetes may affect vision. Sensory changes can influence the way we see, hear, taste, smell, and respond to touch and pain. This in turn affects how we experience the world and react to things.

A significant sensory change can rob us of many simple pleasures and complicate the tasks of daily living. It may mean reduced mobility, increased dependence on others, inaccurate perception of the environment, reduced ability to communicate and socialize, or loss of self-esteem. Sensory changes vary from person to person. Fortunately, until their mid 80s older adults are free of major sensory problems. If you experience sensory changes as you age, understanding these changes can help you respond to them

Vision Changes in vision and hearing are particularly important because they can affect the person’s focusing more on what a person can do and less on what he or she can’t do. Vision Changes in vision and hearing are particularly important because they can affect the person’s ability to function in the physical environment and may lead to isolation

1. **Vision**



***Eye anatomy:***

The eye is the organ of vision. It has a complex structure consisting of a transparent lens that focuses light on the retina. The retina is covered with two basic types of light-sensitive cells-rods and cones. The cone cells are sensitive to color and are located in the part of the retina called the fovea, where the light is focused by the lens. The rod cells are not sensitive to color, but have greater sensitivity to light than the cone cells. These cells are located around the fovea and are responsible for peripheral vision and night vision. The eye is connected to the brain through the optic nerve. The point of this connection is called the "blind spot" because it is insensitive to light. Experiments have shown that the back of the brain maps the visual input from the eyes.

The brain combines the input of our two eyes into a single three-dimensional image. In addition, even though the image on the retina is upside-down because of the focusing action of the lens, the brain compensates and provides the right-side-up perception. Experiments have been done with subjects fitted with prisms that invert the images. The subjects go through an initial period of great confusion, but subsequently they perceive the images as right side up.

***The process of vision:***

Vision is the process in which light waves from an object being looked at are registered, interpreted and stored as an image by the brain. For this to happen, the light waves pass through the cornea, pupil and lens of the eye. The light waves are then projected onto the retina, which is located at the back of the eye. The optic nerve behind the retina picks up the signals from the nerve endings in the retina and relays them to parts of the brain that process the image and make it recognizable.

***Vision changes:***

Various malfunctions in the process of vision may occur as a person ages. They may be caused by:

1. Reduced muscle tone
2. Decreased eye lubrication
3. Any one of a number of eye disorders or diseases

***1. Reduced muscle tone***. The muscles that control movement of the eyes can malfunction with age. More commonly, the muscles that support the skin around the eye sockets and control the upper and lower eyelids may become too relaxed or weak and lose their firmness and elasticity. Over time, they become flaccid, causing the supporting connective tissue and skin around the eyes to droop and sag in ever-thickening folds.

This decrease in muscle tone and functioning can lead to a number of conditions in the aging eye, although these conditions are not always caused by aging. Most prominent among these conditions is blepharoptosis, or ptosis — a marked drooping of the upper eyelid. If left untreated, ptosis may impair vision and can lead to headaches and fatigue.

***2. Decreased eye lubrication***. The lacrimal gland in the eye produces protective tears with each blink. These tears keep the eye clean and lubricated. With age, the gland may start to malfunction, decreasing tear production. This can lead to burning, itchy eyes and other eye irritation.

A common problem that can develop as the eye ages is dry eye syndrome, in which the protective tear film that coats the eye dries too rapidly. And because tear production diminishes with age, replenishment of this tear film is insufficient.

***3. Eye disorders or diseases***. Vision problems may result when various structures in the eye deteriorate or become diseased. The pupil gets smaller — as much as a third of its size by age 60 according to one estimate — altering how (and how much) light passes through it.

*Here are the eye disorders and diseases that most commonly occur with age*:

* Age-related macular degeneration — this disease is the leading cause of blindness in people older than 50. Age-related macular degeneration is marked by damage to the macula area on the retina, an area that makes clearly defined, central vision possible.
* Glaucoma — Glaucoma is a leading cause of blindness in the United States. This disease is caused by an abnormal rise in pressure in the fluid-filled chambers of the eyes, damaging the optic nerve.
* Cataracts — another byproduct of aging is the development of cataracts, a condition in which the normally clear lens of the eye becomes progressively clouded, ultimately blocking light from reaching the retina or scattering light and creating glare.
* Presbyopia — almost everyone will develop this condition, typically starting around age 40. In presbyopia, the normally flexible lens of the eye becomes increasingly rigid and unable to focus on objects close-up.
* Night blindness — People with cataracts may suffer from night blindness, called nyctalopia by medical professionals. It may be hard for some people to distinguish certain colors, especially blue from green. Glare from excessive light scattering caused by cataract may lead to difficulty driving at night or difficulty navigating the way to the bathroom in the dark, etc.

To reduce your chances of developing any of these problems at a younger age, it is important that you have regular eye examinations beginning at age 40.

 ***Normal age-related changes in vision include:***

* Decrease in sharpness of vision (visual acuity)
* Decrease in the ability to focus on objects at different distances
* Decrease in ability to discriminate between certain colors
* Decrease in ability to function in low light levels and adapt to dark
* Decrease in ability to adapt to glare
* Decrease in ability to judge distances
* Most older people have fairly good vision into their 70s and 80s. However, an estimated 10 percent of people aged 65 to 75 have impaired vision to such a degree that it affects their ability to function;
* 16 percent of people aged 75 to 84 and 27 percent of those 85 years and older have this level of impairment.
* Persons with vision loss may experience problems with mobility, poor orientation, and frightening visual impressions that resemble hallucinations. They often feel more vulnerable to danger and crime. Otherwise fastidious people may wear soiled clothing because they can’t see stains and food spills. They may reduce or eliminate such pastimes as reading or watching television.
* According to the National Center for Health Statistics, vision impairment is strongly associated with greater difficulty in performing daily activities such as walking, getting outside, and transferring in and out of a bed or chair. Poor vision also increases the likelihood of falling.
* Acuity: The most common change with age is a decrease in the ability of the eyes to see clearly. Visual acuity is generally at its maximum in the late teens, remains fairly constant until age 45 to 50, then gradually declines. The Center for Health Statistics reports that by age 65, one-half of all people have a visual acuity of 20/70 (what can be seen from 70 feet by a person with perfect vision can be seen only from 20 feet) or less, while fewer than 10 percent of people 45 and younger have vision poorer than 20/70.
* Ability to focus with age: the lens of the eye becomes less flexible, gradually losing its focusing ability. This condition, called presbyopia, usually occurs in the 40s, and results in difficulty reading fine print and seeing nearby objects clearly. Although reading glasses and bifocal lenses help, many people still find it difficult to see small details, such as the hole of a needle and warning labels on medications. The ability to shift focus also becomes slightly delayed. For example, an older person’s eyes take longer to change focus from looking at playing cards in his or her hands to cards in the middle of the table.
* Color discrimination: All colors tend to look faded and dull to an aging person. Because of yellowing in the lens of the eye with age, colors at the blue end of the light spectrum appear to fade the most and to merge into greens. As a result, an older person may not be able to discriminate between shades of blue and between blues, greens, and violets. For example, one 90-year-old woman could not see the blue flowers in a bouquet because the blue blended into the green leaves

***How to help someone who has loss of vision***

* Use color contrast: Older people require greater contrast between background and objects to “see” objects most effectively. For example, use light-color dinnerware on a dark tablecloth and light-color mugs for coffee;
* paint doorways a darker color than the walls; and mark the edges of steps to distinguish the riser from the flat surface. Color contrast can mean the difference between safety and injury. The lack of color contrast, for example, between street curbs and sidewalks and on escalators can increase the risk of falls.
* All print materials should use black ink on light-color paper. Black ink on white or light yellow paper is most visible. The print fades into the background when a colored ink is used on colored paper, such as brown ink on tan paper or blue ink on pink paper. Use coding schemes For example, color at different points on washing machine and oven dials can make it easier to find different dial settings and consequently, enhance independent living.
* Control glare: Shield glare from interior light sources. Cover windows with miniblinds, sheer drapery, or light-filtering shades to control sunlight entering a room.
* Avoid intense light sources and shiny surfaces (e.g. vinyl furniture, marble, glass, chrome, and highly polished floors) in planning an environment. Increase light levels Most important is to distribute light evenly and minimize glare. Increasing light levels by simply using higher wattage light bulbs can increase glare and decrease an older person’s ability to see.
* Provide additional lighting where close work activities such as cooking, taking medication, reading, and writing take place, or where safety hazards exist. Adequate lighting is especially important in the bathroom and in stairways, common sites of accidents in the home.
* Nightlights in the bedroom and bath can greatly reduce the possibility of injury. Incandescent light bulbs (regular household bulbs) are better than fluorescent lights for older people. Give the person time Older people sometimes walk slower because they no longer get as many visual clues from the environment
* Allow time for a person to adjust to light changes when going from a brightly lit area to a darkened area and vice versa. Provide materials with larger
* print Materials for the elderly should use type no smaller than 10 or 12 point size, depending on the typeface. The minimum size appropriate for people with vision disabilities is 14 point, almost twice the size found in most books, magazines, and newspapers. This is fourteen (14) point types. This is twelve (12) point type. This is ten (10) point type.
* Many large-print books and magazines are available. Clocks, bathroom scales, cookbooks, telephones, and timers are a few items available that offer the option of large print.
* Encourage regular eye examinations Early detection and treatment can often control or correct most vision problems. Annual eye examinations are suggested unless vision or other health problems necessitate a more frequent check-up.
* ***How to help someone who has a severe vision problem*** Announce your presence When approaching, be sure the person is aware of your presence. Otherwise, you may unintentionally frighten him or her. Tell what you are going to do Give advance information about what you are going to do—for example, moving someone in a wheelchair. This helps him or her feel more secure. If you are giving an injection, tell the person when and where he will feel it. Simplify the visual field To prevent accidents, keep the floor uncluttered and remove “extra” objects from tables, nightstands, and other areas. The fewer objects on a surface, the easier it is to distinguish them.
* Keep objects in the same place If you move objects in the person’s environment, put them back where they were. If the location of furniture or objects must be changed, be sure the person is aware of the change.
* At mealtimes, put silverware, cups, glasses and dinnerware in the same places each time. Describe the food served and its location on the plate. Use the face of a clock to describe where the food is: Turkey is at 3 o’clock, broccoli at 6 o’clock, and potatoes at 9 o’clock. Talk directly to the person Remember, because a person can’t see, it doesn’t mean he or she can’t hear or talk.
* Orient the person to an unfamiliar environment A new and unfamiliar setting can frighten a person and decrease confidence in ability to function independently. Make sure the person knows where everything is located.
* Describe the setting—who is there, where they are, objects that may get in the way, and location of rooms. Offer assistance But don’t insist on helping someone who doesn’t want help. If you don’t know how to help, ask. Use the person’s remaining senses Use touch and other senses to compensate for lack of sight. Touch lightly to get the person’s attention. Hold his or her hand to reassure that you are listening.
* Know how to be a sighted guide When walking, offer your arm for the person to take just above the elbow (some people have a preference for one arm over the other). You will be walking a half-step ahead, which helps the person anticipate your movements. Most important, don’t grasp and push the person in front of you. This makes him or her feel insecure. Tell when you are approaching steps. Obtain low-vision aids these devices help a person make the best possible use of remaining vision.
* Who are the eye care professionals? Ophthalmologists Physicians (M.D.s or osteopaths) who specialize in the diagnosis and treatment of eye diseases and vision problems, and perform eye surgery. Optometrists Specially trained professionals who are licensed to practice in selected areas of eye care. They screen for vision problems and prescribe glasses or contact lenses. Referral is made to ophthalmologists for diagnosis of suspected eye diseases and medical treatment or surgery. Opticians People who fit and adjust eyewear prescribed by ophthalmologists or optometrists for perception that is beyond the range of the normal.

**2.Hearing.**

**Put image of ear anatomy**

***Ear anatomy:***

The ear is the organ of hearing. The outer ear protrudes away from the head and is shaped like a cup to direct sounds toward the tympanic membrane, which transmits vibrations to the inner ear through a series of small bones in the middle ear called the malleus, incus and stapes. The inner ear, or cochlea, is a spiral-shaped chamber covered internally by nerve fibers that react to the vibrations and transmit impulses to the brain via the auditory nerve. The brain combines the input of our two ears to determine the direction and distance of sounds.

The inner ear has a vestibular system formed by three semicircular canals that are approximately at right angles to each other and which are responsible for the sense of balance and spatial orientation. The inner ear has chambers filled with a viscous fluid and small particles (otoliths) containing calcium carbonate. The movement of these particles over small hair cells in the inner ear sends signals to the brain that are interpreted as motion and acceleration

***The process of hearing:***

The process of hearing starts when sound waves travel into the ear and bounce off the eardrum, causing it to vibrate. The vibrations travel along three tiny bones in the middle ear, and then move deeper into the inner ear where they are transformed into nerve impulses or signals. The auditory nerve picks up the signals and zips them on to the brain to be interpreted. In later life, some degree of hearing loss is pretty much inevitable as the intricate structures and nerve network in the middle and inner ear slowly begin to break down. The auditory nerve itself can undergo changes related to aging, leading to interpretation changes.

***Some common age-related hearing problems include:***

1. Presbycusis — Presbycusis is one of the most common types of hearing loss experienced in late life, but it can begin as young as age 40. Changes to the auditory nerve lead to difficulty in clearly hearing high-frequency sounds.
2. Tinnitus — Tinnitus is also prevalent among the older population. In this condition, a person periodically or persistently hears abnormal noise and sounds, such as ringing. Tinnitus can occur on its own or as a symptom of another condition, such as Ménière’s disease, which is associated with a sense of spinning and is relatively common.

***Certain risk factors may play a role in the onset of hearing problems in the older population.***

* They include chronic exposure to loud sounds, smoking and numerous middle ear infections. If you notice any change in your hearing, it is important that you undergo a comprehensive hearing test.
* A hearing loss is potentially the most serious of the sensory impairments because it is our “social sense.” Unlike poor vision, hearing loss rarely inspires empathy and understanding.
* In regard to her deafness,. The problems of deafness are deeper and more complex, if not more important than those of blindness. Deafness is a much worse misfortune.
* Hearing loss affects more older people than any other chronic condition. From age 20 to 60, the rate of hearing impairments increases from 10 to 75 per 1,000 people. Between the ages of 60 and 80, the rate increases to 250 per 1,000 people. Approximately 30 to 50 percent of all older people suffer a significant hearing loss that affects their communication and relationships with others.
* Hearing loss can be devastating. It can lead to withdrawal, isolation, and depression. Even a slight loss can be emotionally upsetting, particularly if it interferes with understanding family and friends. Trying to understand conversation becomes frustrating and exhausting. Many people will withdraw from group situations, restrict their activities, and stay at home when it becomes difficult to listen and understand the conversation around them. Misunderstood conversations can lead to suspiciousness, paranoia, disagreements, and alienation from family and friends. Older people who try to cope by responding to what they think are said may be viewed as cognitively impaired, rather than hearing impaired. “Silence is golden. But the silence that comes from a hearing loss can make for loneliness.” —

***Types of hearing loss***:

 Hearing loss is usually classified as either conductive or sensorineural, reflecting the location at which normal hearing is interrupted. Some people experience both types of losses, resulting in a mixed hearing loss.

* Conductive loss: With a conductive loss, sound waves are not conducted to the inner ear. The cause may be an obstruction in the outer ear (an accumulation of wax or blockage caused by swelling and pus) or a problem in the middle ear (fluid in the middle ear or fixation of one or more of the middle ear bones). As we age, ear wax becomes harder and drier, increasing the likelihood of a wax plug. All sounds seem muffled or faint. However, the person’s own voice may seem louder than usual for him or her. Many conductive hearing losses can be corrected medically or surgically. Hearing aids also may help.
* Sensorineural loss: In sensorineural loss, sound waves reach the inner ear, but are not properly transmitted to the brain. The reason is damage to the delicate nerve mechanisms of the inner ear caused by loss of hair cells in the inner ear (from aging, certain medications, prolonged noise, or a sudden, extremely loud noise), or a tumor on the auditory nerve

***How to help someone who has hearing loss***

* Don’t shout Speaking in a normal tone of voice is preferable to shouting. When you raise your voice, sound becomes distorted and fuzzy, making it even more difficult for the person to hear.
* Shouting only accentuates the vowel sounds and obscures the consonants. Also, facial expressions often associated with shouting may be interpreted as anger.
* Talk face to face Speak at eye level. Often people develop lip reading skills to help fill gaps in information they cannot hear. Speak to the person at a distance of 3 to 6 feet.
* Make sure lighting is adequate so that your lip movements and facial expressions are clearly visible. Position yourself so that light is shining from above or toward you, not from behind you into the person’s eyes. Never talk from another room.
* Get the person’s attention before speaking. Call the person by name to start a conversation or use touch to get the person’s attention. Eliminate or reduce background noise (Turn off radio and television. Even soft music, typewriter, air conditioner, dishwasher, or street noise can reduce the ability of a person to hear).
* These sounds also are amplified by a hearing aid. Pay attention to acoustical problems in rooms or other areas. In a crowded room, the best spots for conversation are near soft, absorbent materials such as drapes or upholstered furniture. A high-backed chair, for example, helps shield the person from background noise. Hard surfaces (e.g., large windows or plaster walls) exaggerate background noise and may create echoes.
* Speak distinctly However, don’t overexaggerate lip movements. This distorts the message and makes it harder for the person to “read” visual clues from your facial expression. Don’t drop the volume of your voice at the end of a sentence.
* Enhance your speech Use facial expressions, gestures, and visual aids to illustrate your message. Write important information down as well as give it orally. Give time to respond. Try rewording a message Don’t repeat the same words if they are not understood. Using different words or different phrases may make it easier for the person to “hear” your message.
* Rephrase your statement into shorter, simpler statements. Don’t chew, smoke, or cover your mouth anything in front of your lips, including fingers or mustaches, are potential barriers to communication.
* Don’t speak directly into the person’s ear. The person can’t make use of visual clues and it tends to distort what you are saying. However, if the person has greater loss in one ear than in the other, direct your conversation to the “good” ear. Be aware of false impressions.
* Head nodding doesn’t necessarily mean “I understand.” Explore adaptive and assistive listening devices In recent years, many devices have been developed to help hearing-impaired people. They include devices that can be attached to the television and radio that transmit sound directly to the ear; flashing lights on appliances, doorbells, and telephones; vibrating alarm clocks; and pocket size amplifiers and speakers.
* Getting medical help If you suspect a hearing loss, the first step should be a medical evaluation. Some ear conditions can be treated through surgery or medication. Consult with an ear specialist.
* An otologist or otolaryngologist specializes in diagnosing and treating diseases of the ear. The doctor may recommend an audiological examination if the hearing loss can’t be corrected medically. An audiological examination will determine the nature of a hearing loss and if a hearing aid can help and to what extent.
* This examination should be done by an audiologist, a professional who specializes in the identification and non-medical treatment of hearing problems. Most audiologists also provide auditory training, teach speech reading, and help a person to develop skills to compensate for a hearing loss. An audiologist holds a master’s or doctoral degree in audiology and is certified.
* Hearing aids A hearing aid can help compensate for many hearing problems by increasing and controlling the intensity of sound or expanding the range of sounds heard. No single aid is suitable for all types of hearing loss.
* And, a hearing aid is not always the answer—it can’t help some hearing losses. Unlike new glasses, which often provide immediate improvement in vision, hearing aids require learning how to use them effectively. No matter how well designed and appropriate a hearing aid, its effectiveness depends on the wearer.
* Several factors can affect whether a person will be a successful hearing aid user, including: • Motivation • Attitude toward a hearing aid • Self-image • Poor eyesight • Hand and finger dexterity
* A hearing aid often enhances social participation and quality of life. However, adjusting to a hearing aid requires time, patience, and practice. All sounds are amplified, not only the sound of the human voice. Sounds that the person hasn’t heard for a while—street noises, dishwashers, and chirping birds—may be distressing at first. This can be the reason a person may turn off or not wear the aid. The person needs to learn to filter out unwanted sounds.
* Encourage the person to begin wearing a hearing aid for short periods of time (15 to 60 minutes) during a quiet time of the day and gradually increase the time over a month to 10 to 12 hours a day. This makes adjustment easier. Once adjusted to quiet situations, it’s easier to gradually use the aid in difficult situations.
* Noisy situations, such as the dinner table when everyone is talking and pots and silverware are clanging, can be disturbing and make it difficult to learn to discriminate speech. Patience and practice will result in a hearing aid becoming a tool in facilitating communication. It is important to take proper care of a hearing aid to ensure its effectiveness.
* Some older people neglect their hearing aids because of physical or mental impairments, and need assistance. If you help an older person with a hearing aid, know how to do these tasks: • Check battery strength, remove and replace batteries, and choose the correct battery for the hearing aid. • Inspect the hearing aid for damage and when to replace the aid. • Remove earwax from the receivers or earmolds without damaging the device. • Care for and maintain a hearing aid.

1. **Taste**

**Put image of taste buds**

***Taste anatomy:***

The receptors for taste, called taste buds, are situated chiefly in the tongue, but they are also located in the roof of the mouth and near the pharynx. They are able to detect four basic tastes: salty, sweet, bitter, and sour.

The tongue also can detect a sensation called "umami" from taste receptors sensitive to amino acids. Generally, the taste buds close to the tip of the tongue are sensitive to sweet tastes, whereas those in the back of the tongue are sensitive to bitter tastes. The taste buds on top and on the side of the tongue are sensitive to salty and sour tastes.

 At the base of each taste bud there is a nerve that sends the sensations to the brain. The sense of taste functions in coordination with the sense of smell. The number of taste buds varies substantially from individual to individual, but greater numbers increase sensitivity. Women, in general, have a greater number of taste buds than men. As in the case of color blindness, some people are insensitive to some tastes.

1. **Smell.**

**Put image…..**

The nose is the organ responsible for the sense of smell. The cavity of the nose is lined with mucous membranes that have smell receptors connected to the olfactory nerve.

The smells themselves consist of vapors of various substances. The smell receptors interact with the molecules of these vapors and transmit the sensations to the brain. The nose also has a structure called the vomeronasal organ whose function has not been determined, but which is suspected of being sensitive to pheromones that influence the reproductive cycle.

The smell receptors are sensitive to seven types of sensations that can be characterized as camphor, musk, flower, mint, ether, acrid, or putrid. The sense of smell is sometimes temporarily lost when a person has a cold. Dogs have a sense of smell that is many times more sensitive than man's

***Changes in Taste and Smell:***

* Taste and smell are two separate and distinct senses that often work together for different purposes. They can detect pleasurable sensations or warn a person of danger. They also play an important role in the acceptance and enjoyment of food — the fuel needed to maintain optimal health and functioning.
* As the body ages, the keenness of taste and smell naturally diminishes. Even so, research now suggests that aging alone may not be solely responsible.
* Changes in taste. Taste occurs when molecules from food or liquid latch on to even smaller receptor cells found on the thousands of tastes buds that cover the tongue. Specialized nerves pick up signals from the receptor cells and transmit them along to the brain, which then identifies and recognizes these signals as flavor. Taste buds can recognize some 10,000 different flavors. Attached to each taste bud are flavor-receiving cells that every 10 days are replaced with fresh new cells.
* The sense of taste diminishes with age. In general, older people need more concentrated sweets to taste sweetness and a less intense sour flavor to taste sourness. Although it’s not precisely clear how this happens, one theory is that the production of saliva decreases. This, in turn, can cause a condition called dry mouth, which can reduce taste perception. Some experts argue, however, that dry mouth is not a given in old age and that a healthy elderly person can produce as much saliva as a younger person.

***A host of other factors can interfere with the sense of taste in older people***. These factors include:

* Mouth sores, tooth decay or poor daily mouth care
* Certain drugs and medical treatments, including chemotherapy and radiotherapy to treat cancer
* Poor nutrition

Diseases affecting the mouth (for example, periodontal disease) can alter the sense of taste in later years, as can diseases affecting other parts of the body (such as diabetes, cancer, thyroid disease, stroke and other neurological conditions).

A diminished sense of taste can lead to poor appetite and nutrition. A person suffering from a deficiency in taste might unwittingly eat contaminated or spoiled food that puts them at risk of food poisoning or other illnesses.

It is important to maintain good oral care throughout life to ward off any problems that could lead to a diminished sense of taste.

***Changes in smell***. The sense of smell identifies and distinguishes aromas and odors. It works in sync with the sense of taste in detecting food that is safe for human consumption and also enjoyable. Smell is made possible when molecules from food are breathed in through each nostril in the nose. These molecules latch on to specialized receptor cells that send signals to a specialized area of the brain for identification and recognition.

But the keenness of smell diminishes faster with age than does the keenness of taste. During a person’s 50s, the decline is pretty rapid. In the average octogenarian, the sense of smell is half as sharp as it was during his or her youth.

***Like taste, smell can be affected by a host of factors:***

* Poor nasal hygiene and nasal congestion, such as occurs with sinusitis
* Certain drugs and medical treatments
* Diseases affecting the nose, nasal passageways or sinuses, as well as neurological disease

You may want to talk with your health care professional if you find that age-related changes in smell are affecting your quality of life or your safety.

***How to help someone who has a taste or smell disorder***

* Serve food attractively Cues other than taste and smell are important to identifying and enjoying foods. We do “eat with our eyes.”
* How food looks on the plate will often determine whether it is eaten. Vary foods in color, shape, texture, and temperature. For example, serving foods warm rather than cold enhances the aroma.
* Put texture into food Texture sometimes helps substitute for taste and smell. For example, instead of serving blended applesauce, serve the chunky style. Blended foods are the most difficult to “taste.”
* Make eating a social occasion Conversation and socializing at mealtime usually encourages appetite.
* Use smell-enhancing strategies Let the aroma of pleasant foods permeate the environment.
* Increase the flavor of foods with flavor extracts or simulated odors. However, the addition of such odors will not be helpful to older adults who have completely lost their sense of smell.
* Foods with artificial odors also may be too strong for younger people. Season food. Use flavorings, herbs, and spices to enhance the flavor of foods. Certain seasonings can give the sensation that a food tastes sweeter without adding sugar. For example: • Adding or increasing vanilla or cinnamon in a recipe makes foods taste sweeter than they really are
* Encourage good oral hygiene Good mouth and dental care can improve taste perception.
* Suggest chewing food thoroughly, chewing breaks down food and allows more molecules to come in contact with taste and smell receptors.
* Encourage the person to alternate bites of different food Switching from food to food maximizes the amount of taste and flavor, and hence enjoyment, a person can get from eating. When several bites are taken of the same food, the flavor is strongest on the first bite and becomes less and less intense with each successive bite. If a person needs assistance with feeding, don’t mix foods together.
* Mixing makes it impossible for the person to separate flavors and makes food less appealing.

**5. Touch.**

The sense of touch is distributed throughout the body. Nerve endings in the skin and other parts of the body transmit sensations to the brain. Some parts of the body have a larger number of nerve endings and, therefore, are more sensitive.

Four kinds of touch sensations can be identified: cold, heat, contact, and pain. Hairs on the skin magnify the sensitivity and act as an early warning system for the body. The fingertips and the sexual organs have the greatest concentration of nerve endings. The sexual organs have "erogenous zones" that when stimulated start a series of endocrine reactions and motor responses resulting in orgasm.

***The process of touch***

When you touch something or someone, or something or someone touches you, the sensation — be it hot or cold, hard or soft, pleasurable or painful — is picked up as signals by a network of superficial nerves. These nerves (called neurons) transmit the signals to nerve receptors in the central nervous system. From the central nervous system, the signals are relayed to the brain, which analyzes and interprets them.

***Aging Changes in Touch***

In later life, the sense of touch may become less sensitive. There are a number of reasons why this occurs. First, the outer skin (or epidermis) takes a beating. After all, it’s the first line of defense against disease, contaminants, and harmful rays from the sun, wind, heat and cold.

The years are also not kind to the deeper, dermis layer of the skin. For example, elastin and collagen found in the dermis begin to deteriorate. These two substances give the skin its elasticity and softness.

These changes, working in concert, can cause aging skin to become dryer, thinner, less elastic and less supple, sometimes reducing an older person’s sensitivity to certain pressure and vibrations. There can be a change in temperature sensitivity, too. A person may feel colder overall, but may have more trouble distinguishing between an object that is cold vs. cool.

***Other health problems, prevalent among older adults, also may explain changes in the sense of touch. These include:***

* Poor blood circulation
* Skin and nerve damage caused by diabetes or other diseases
* Other neurological or brain disorders and certain mental illnesses
* Certain drugs and medical treatments

A diminished sense of touch may put older individuals at an increased risk of sustaining serious injuries, such as pressure sores, skin ulcers, heat stroke, burns and hypothermia (abnormally low body temperature).

The sense of touch enables us to distinguish between objects, enjoy the touch of another person, and be aware of danger, for example from hot or sharp objects. Many of our daily activities rely on the sense of touch.

Touch sensitivity and the ability to detect pain decreases with age. Certain chronic diseases such as diabetes, circulation problems, stroke, Parkinson’s disease, and arthritis can further affect a person’s sense of touch. Some older persons find it difficult to distinguish textures and objects on the basis of touch alone. Some may experience a delayed reaction to being touched. Pain threshold increases with age.

Certain medical problems and medications may further reduce sensitivity to pain. An older adult is more likely to suffer a severe burn or cut before noticing discomfort. He or she may not feel the hot temperature of bath water or a heating pad. Compared to a younger person, an older person also is less likely to perceive internal body pain or a rising temperature. This may result in an illness or infection progressing to an advance stage before detection. This is particularly common and potentially dangerous in the older person who has diabetes. Because diabetes contributes to loss of nerve sensitivity and blood flow in the feet and legs, severe cuts and bruises may not be noticed and severe infection may result.

***Precautions*** such as

* Lowering the temperature setting of a hot water heater can reduce the likelihood of accidents due to decreased touch and pain sensitivity.
* Lowering the temperature to 120 degrees F is recommended. The use of touch can be a powerful therapeutic tool. Yet, some older adults are touched very little or not at all and suffer from “touch hunger.” Touch is a powerful means of communication. It can help reduce anxiety and provide comfort. When using touch, consider the person’s background, culture, and sense of personal space. Your attitude is important If you are experiencing age-related sensory changes, your attitude is important. Changing vision and hearing and other senses can be frustrating but with some determination and patience, you can learn to compensate for many of the sensory losses.
* Adaptive devices also help. Be willing to experiment to find ways to change your environment to improve your sensory ability. Tell people around you what they can do to help. If you work with older people, keep in mind that personality, lifestyle, and relationships with family and friends affect their adjustment to sensory losses.

 Referances??