

* Perkembangan Sensory & Hambatannya

**Bahan Kuliah ke 7 dari
Perkembangan Anak
Berkebutuhan Khusus
PPS-PLB**

1. Sensory development includes hearing; vision; and introceptive, vestibular, and proprioceptive abilities
2. Sensory impairment has a variety of causes
3. Audilologist, otolaryngologist, an teachers of the deaf and hearing-impaired play key roles in the assessment of hearing loss and treatment
4. A wide variety of test are used to assess hearing loss
5. Hearing delays include congenital, prelingual, postlingual, and adventitious deafness.
6. Hearing impairments affect other areas of development.

* Point-point Kunci Perkembangan Sensory

7. A variety of communication and intervention methods are useful for those with hearing impairments.
8. Visual impairment include being partially sighted or blind
9. Ophthalmologists and optometrists play key roles in the assessment and treatment of visual impairments.
10. Visual impairment affect other areas of development.
11. A variety of methods and services are appropriate for children with visual impairments.

* Point-point Kunci Perkembangan Sensory

- * Sistem yang berfungsi secara normal adalah otak memproses informasi dari indera kita
- * Indera meliputi: vision, hearing, touching, tasting, and smelling.
- * Sight and hearing often are referred to as the distance senses because they provide information about what is our surroundings.
- * Smell menyediakan jarak dari sumber pembau
- * Touch, taste, smell, and balance senses saling berhubungan erat karena menyediakan informasi di dalam sistem jangkauan anggota kita.

* Sensory development

- * Penting juga sistem perasaan interoception (sistem sensory dari organ internal, seperti detak jantung, rasa lapar, pencernaan, pusat getaran, keadaan jiwa. Termasuk sistem vestibular (menyediakan informasi tentang gerakan, gravitasi, dan keseimbangan yang diterima melalui telinga bagian dalam) serta proprioception (menerima informasi tentang posisi tubuh melalui otot, ligaments, persendian; perasaan sehat dan keseimbangan.
- * Secara luas dari informasi indera bersifat konstan masuk ke otak kita. Otak harus mengorganisasikan dan mengintegrasikan seluruh dari perasaan.

* Sensory development

- * Berbagai sistem indera berhubungan erat dan harus berkoordinasi yang sesuai fungsional dan perencanaan gerakan/motorik.
- * Sensori Integrasi (SI) ialah mengorganisasikan, atau interkoneksi, dari sistem-sistem tersebut. Jika sistem sensory berfungsi secara korektif, otak dapat secara akurat menginterpretasikan informasi. Hal itulah sebagai hal yang kritis (*absolutely necessary*) dan sensitive (amat penting) tahap-tahap perkembangan
- * Otak perlu juga distimulasi agar supaya sel-sel otak belajar secara akurat memproses informasi.
- * Suatu ketidaksempurnaan (imperfection) koordinasi sistem sensori merupakan ***sensory integration dysfunction (SID)***.

* Sensory development

- * Pendengaran dimulai masuknya suara ke bagian telinga yang eksternal dan berjalan ke canal, dan menggetarkan gendang telinga. Getaran itu diubah menjadi reaksi berantai yang disalurkan ke telinga dalam seperti cochlea, semicircular canal, dan syaraf auditorik sampai membawa getaran suara ke otak.
- * Mulai anak berusia 7-10 bulan bayi bereaksi terhadap suara yang tidak dapat dilihatnya.
- * Pada usia 11-15 bulan mulai mendengar yang terkait obyek dan senang dengan suara-suara tertentu dan mencoba menirukan.

* Pendengaran/Hearing

- * Perasaan dari penglihatan/cahaya adalah jalan raya/kesempatan pembelajaran yang utama pada kebanyakan anak-anak. Penglihatan sebagai guide tonggak utama perkembangan motorik anak dan meletakkan peranan utama seluruh domain perkembangan.
- * Vision menginterpretasikan warna, cahaya, gerakan, lokasi, body language, ekspresi muka, dan kemungkinan bahaya-bahaya di depannya.
- * Sistem visual terdiri sistem ocular (mata dan otot-otot mata) connected ke sebuah sistem perceptual ke otak.
- * Vision membutuhkan koordinasi dari mata dan otak. Jika sistem itu dysfungsional, sistem visual tidak dapat menyediakan *adequate visual information*.

* Penglihatan/Vision

- * Mulai lahir sampai sistem visual full maturity, penglihatan berkembang tiga kali lipat ukurannya, dan tumbuh sempurna di usia 3 tahun.
- * Ketika baru lahir memiliki poor visual fixation ability, amat terbatas pada kemampuan untuk deskriminasi warna, jarak pandang, dan mengestimasi ketajaman penglihatan. Di antara 20/200 dan 20/400. Selama bulan pertama kehidupan bayi memiliki visual acuity sekitar 20/120, ekuivalen dengan kemampuan membaca huruf E besar pada papan chart penglihatan.
- * Bertahap berkembang sesuai dengan perkembangan tahap-tahap moving obyek dan usia kronologisnya. Khususnya saat mulai merangkak.

* Perkembangan Visual

- * Anak yang baru lahir berkembang perasaan pembauanya. Contoh ekspresi wajahnya ketika membau yang menyenangkan, seperti dada ibunya, susu formula, parfume, madu atau coklat.
- * Anak juga berkembang pencecapnya, seperti merasakan asin, manis, masam, dan pahit.
- * Pada waktu lahir perkembangan persepsi taktil belum berkembang, namun dapat merasakan dan merespon rasa lapar dan manis untuk bereaksi terhadap ibunya ketika akan menyusui. Demikian juga perasaan aman ketika dipeluk dan diayun.

* Perabaan, pembau, dan pencecap

- * *“Your child has a hearing loss”*
- * Kata-kata itu akan berakibat reaksi macam-macam dari shock, tidak percaya, penolakan atau marah, sedih dan galau.
- * Berbagai macam pikiran dan reaksi dari orang tua ketika anaknya diputuskan sebagai penyandang hambatan pendengaran.
- * Berkaitan dengan hal itu tentang masa depan anak dan kontribusi pendidikan untuk mengatasi stress dari keluarga dan anggota keluarga harus diatasi.

* Auditory disabilities

- * A vibrator, such as a string, reed, or column of air, causes a displacement of air particles.
- * Vibrations are carried by air, metal, water, or other substances.
- * Sound waves are displaced air particles producing a pattern of circular waves that move away from a source to a receiver.
- * The human ear collects, processes, and transmits sounds to the brain, where they are decoded into meaningful language.

* Proses transmitting suara

1. The external ear consists of the auricle and an ear canal known as the *meatus*.
2. The auricle collects sound waves and funnels them into the ear canal.
3. The eardrum, located between the external and middle ear, vibrates freely when struck by sound waves.
4. The inner surface of the eardrum is located in the cavity of the middle ear.
5. The three small bones of the inner surface of the eardrum transmit the vibrations from the external ear through the cavity of the middle ear to the inner ear.
6. The eustachian tube equalizes the air pressure on the eardrum with that of the outside air.
7. The cochlea and the vestibular mechanism are the two major structures of the inner ear.
8. Within the cochlea, specialized cells translate vibrations into nerve impulses that are sent directly to the brain.
9. The vestibular mechanism contains canals that control balance.

- * Sound intensity (loudness) is measured in units known as decibels.
- * Sound frequency (pitch) is measured using a unit known as the hertz.

* How are sound intensity and sound frequency measured?

- * A person who is deaf typically has profound or total loss of auditory sensitivity and very little, if any, auditory perception.
- * For the person who is deaf, the primary information input is through vision; speech is not received through the ear.
- * A person who is hard-of-hearing (partially hearing) generally has residual hearing through the use of a hearing aid, which is sufficient to process language through the ear successfully.

* Distinguish between deaf and hard-of-hearing.

- * Why is it important to consider age of onset when defining a hearing disorder?
- * Age of onset is critical in determining the type and extent of intervention necessary to minimize the effect of the hearing disorder.

* Hal yang perlu
dipertimbangkan

- * Conductive hearing losses result from poor conduction of sound along passages leading to the inner ear.
- * The effect of a conductive hearing loss is the reduction or loss of loudness.
- * Sensorineural hearing losses are the result of an abnormal sense or a damaged auditory nerve.
- * Sound is distorted with a sensory hearing loss, thus affecting the clarity of human speech.
- * Mixed hearing losses are a combination of conductive and sensorineural problems.

* Perbedaan antara hilang pendengaran yang conductive dan sensorineural

***The classification levels according to the severity of the condition include (1) insignificant, (2) mild (hard-of-hearing), (3) moderate (hard-of-hearing), (4) severe (hard-of-hearing and deaf), and (5) profound (deaf).**

***Klasifikasi Hearing Disorders**

Why is it difficult to determine accurately the prevalence of hearing disorders?

- * Prevalence estimates are difficult to determine because definitions are inconsistent, and there are problems with how surveys of people with hearing disorders are conducted.

Why is the research on the intelligence of people with a hearing disorder considered inconclusive?

- * Although early investigations reported that hearing-disordered individuals scored lower on intelligence tests when compared to hearing individuals, more recent studies generally reported no significant difference between the two groups.

* **Persoalan yang terkait auditory disability**

- * For people with mild and moderate losses, the effect on speech and language may be minimal.
- * Although individuals with a moderate loss cannot hear unvoiced sounds and distant speech, language delays can be prevented if the hearing loss is diagnosed and treated early.
- * The majority of people with a hearing disorder are able to use speech as the primary mode of language acquisition.
- * People who are congenitally deaf are unable to receive information through the speech process unless they have learned to lip (speech) read.
- * The sound production of the deaf person is extremely low in intelligibility.
- * How does the effect of a hearing disorder on speech and language differ for people with a mild loss as opposed to those with a more severe loss?

describe the effects of a hearing disorder on academic skills.

- *The educational achievement of students with a hearing disorder may be significantly delayed in comparison to hearing peers.
- *Reading is the academic area most adversely affected.

Describe the effects of a hearing disorders on social adjustment.

- *There is some support, through research, for the idea that some individuals with a hearing disorder may be less mature socially than their hearing peers.
- *There is little agreement as to why some people with a hearing disorder may be less socially mature, but there is a relationship between the severity and type of hearing loss and social problems.

*** EFEK DARI AUDITORY DISABILITY**

Identify factors that may impede the social integration of people who are deaf into a hearing world.

- * Social integration with hearing peers has been difficult for persons who are deaf.
- * The inability to hear and understand speech has isolated some people who are deaf from their hearing peers.

Why are educational services for hearing-disordered students described as being in the process of change?

- * There is an ongoing increase in the availability of educational services for students with hearing disorders from preschool through adolescence.
- * Educational programming is becoming more individualized in order to meet the needs of each student.

*** HAL YANG DIBUTUHKAN UNTUK
INTERVENSİ AUDİTORİ DISABILİTY**

- * Language development
- * Speech development
- * Cognitive development
- * Social-Emotional Development
- * Exposure to a Language-Rich Environment

* Perkembangan yang dibutuhkan bagi
kecacatan pendengaran

What are two misconceptions that sighted people have about people without sight?

- * Most blind people live a deprived socioeconomic and cultural existence.
- * Blind people are incapable of learning many basic skills or enjoying leisure-time and recreational activities.

- *The cornea is the external covering of the eye and reflects visual stimuli in the presence of light.
- *The pupil controls the amount of the light entering the eye.
- *The iris consists of tissues and muscles whose function is to adjust the size of the pupil.
- *The lens focuses light rays to strike the retina.
- *The retina consists of light-sensitive cells that transmit images to the brain by means of the optic nerve.

* Briefly describe the anatomy of the eye.

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- * People with a visual disorder are unable to imitate the physical mannerisms of others and do not develop body language, an important form of social communication.
- * A sighted person may misinterpret what is said by a person with a visual disorder because visual cues may not be consistent with the spoken word.
- * People with a visual disorder are often excluded from social activities that are integrally related to the use of vision, thus reinforcing the mistaken idea that they do not want to participate.

* Faktor-faktor yang mendorong kesulitan sosialisasi

What effect does a visual disorder have on orientation and mobility?

- * The lack of sight may prevent people with a visual disorder from understanding their own relative position in space.
- * A visual disorder may affect fine motor coordination and interfere with ability to manipulate objects.

What effect does a visual disorder have on perceptual development?

- * The blind child's perceptual discrimination abilities in the areas of texture, weight, and sound are comparable to those of sighted peers.
- * People who are blind do not perform as well as sighted people on complex tasks of perception, including form identification, spatial relations, and perceptual-motor integration.



Why is age of onset of a visual disorder significant to an individual's development?

- * If an individual's sight is lost after the age of five, it is possible to retain some visual frame of reference.

In what ways can a visual disorder affect intellectual growth and development?

- * A blind child's learning experiences may be significantly restricted by the lack of vision.
- * A number of external factors may influence the intellectual differences between sighted and blind individuals, including unfavorable home environments and neurological and physical handicaps.

* **Kondisi pada perkembangan aspek lainnya dari visual disorder**

Why do many children with a visual disorder develop speech and language skills at slower rate than their sighted peers?

- * Children with a visual disorder are at a distinct disadvantage in developing speech and language skills because they are unable to visually associate a word with an object.
- * Children with a visual disorder cannot learn speech by visual imitation, but must rely on hearing or touch for input.

* **Perkembangan Bahasa & Bicara Visual Disorders**

Identify five factors that may influence the educational achievement of children with a visual disorder.

* Factors that may influence the educational achievement of a visually disordered student include : (1) late entry to school, (2) failure in inappropriate school programs, (3) loss of time in school due to illness, treatment, or surgery, (4) lack of opportunity, and (5) a slower rate of acquiring information.

* Faktor yang berpengaruh pada pencapaian akademik

What are three factors that may lead to greater social difficulties for individuals with a visual disorder?

- * People with a visual disorder are unable to imitate the physical mannerisms of others and do not develop body language, an important form of social communication.
- * A sighted person may misinterpret what is said by a person with a visual disorder because visual cues may not be consistent with the spoken word.
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* **Perkembangan Orientasi & mobilias**

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* **Perkembangan perceptual**

- * **Cognitive Development**
- * **Speech dan language Development**
- * **Motor Development**
- * **Social Development**

* **Intervensi kepada Visual Disability**

* SI disorder (SID) is neurological disorder resulting from the brain's inability to appropriately or efficiently integrate sensory information. There are two types of SID: too much sensory input, resulting in brain overload, and too little sensory input, resulting in sensory deprivation and need for additional sensory information.

* Sensory Integration Disorders (SID)

- * Children with SID often are unable to focus on learning activities and exhibit behavioral problems resulting from their frustration and their inability to screen out unnecessary sensory input.
- * Children who are underreactive to visual stimuli may move their hands in front of their faces or hold objects unusually close to their eyes. In contrast, children who are overly sensitive to visual input might be frightened in a crowded mall or become withdrawn or hyperactive in a room with bright lights and an abundance of color or movement.

- * Sensory Modulation Disorders: tactile modulation, auditory modulation, olfactory and gustatory modulation, visual modulation, vestibular-proprioceptive modulation.
- * Sensory Discrimination Disorder: tactile discrimination disorders, auditory discrimination disorders, visual discrimination disorders, vestibular-proprioceptive disorders,
- * Sensory- Based Motor Disorders. Children form of this type of SID have either postural disorders or dyspraxia, difficulty planning, sequencing, carrying out, and remembering motor movements.

* TYPE-TYPE OF SENSORY INTEGRATION DISORDERS

- * Traditional Intervention: fokus untuk perasaan sentuhan, gerakan, dan posisi tubuh, dengan tujuan sensory integration therapy.
- * Nontraditional Intervention: cerebral electrical stimulation (CES), transcutaneous electrical nerve stimulation (TENS).

- * Menyediakan tactile experiences, vibration, stroking with small soft-bristle (baby) brush, and rubbing.
- * They (SID) benefit activities such as playing with shaving cream, play dough, Silly Putty, corn starch mixed with water, rice, beans, and finger paints.
- * Children with overly responsive tactile systems often benefit from calming activities(e.g., dim lighting, soft music, slow rocking, deep pressure, being wrapped in a blanket, or being allowed to suck on something). Their environment need to be modified through the reduction of stimuli.

* Specific Intervention Strategies

- * Most children do not experience sensory disorders that result in a major negative effect on their development.
- * The most common sensory disabilities are hearing impairments, followed by visual impairments.
- * The disorders affect all sensory functions.
- * Children range from high sensitivity to extremely low sensitivity to various sensory input and may have difficulty integrating the various inputs from all senses.
- * Young children with sensory disorders benefit from early intervention program designed to help them make maximum use of their sensory abilities and use various devices.

* Conclusions