

Visual impairment & low vision -a systematic study

Visha¹ , Shekhar Kumar²

¹ M. Ed instructor, NIEPVD

² TGT Special Educator, Govt. upper primary school, Dughati

Abstract -Visual Impairment (VI) is a worldwide concern in eye care and is expected to worsen as life expectancy increases. The purpose of this article is to reveal various aspects of VI, such as its content, characteristics, prevalence, causes and effects. The importance of rehabilitation for VI patients is also discussed. Visual impairment occurs when an eye disease affects the eye and its visual function. Everyone will need proper care for at least one eye in their life if they live long enough. Visual impairment can have serious consequences throughout a person's life. Many of these events can be reduced with prompt eye care. Some conditions that can cause blindness and vision loss, such as cataracts or refractive errors, are a major target of eye care for good reason; However, eye diseases that do not usually cause blindness, such as dry eye or conjunctivitis, cannot be ignored. These conditions are often the main reason for seeing an ophthalmologist. A condition of decreased visual acuity that cannot be corrected by corrective eye protection (glasses or goggles), surgery, or medical procedures, reduces contrast sensitivity, increases sensitivity to glare, and reduces the ability to perform activities of daily living such as reading or writing. Changes in visual acuity are always observed, and changes in visual function cannot necessarily be compared and contrasted with changes in clinical outcomes.

Keywords: Visual impairment ,low vision , systematic study

Introduction

Definition and characteristics of Visual Impairment

Presbyopia (826 million) is the leading cause of near vision loss. 7 At least 2.2 billion people worldwide suffer from myopia or hyperopia. Almost half of them (or at least 1 billion) have preventable or untreated blindness. Cataracts (94 million), refractive errors (88.4 million), age-related macular degeneration (8 million), glaucoma (7.7 million) and diabetic retinopathy (3.9 million) are the main diseases that limit the 1 billion a person can make. Seeing from middle-income groups than in high-income groups. 6. It is estimated that more than 80% of people in West, East and Central Sub-Saharan Africa are not treated for myopia, with most reporting coming from North America, Australia, Western Europe and Asia-Pacific7. The elderly and the general population need to increase the likelihood of people developing blindness. Over time, children may experience delays in motor, language, emotional, social and cognitive development. Visually impaired school-age children may also have poor academic performance. Visual impairment in the elderly affects the quality of life. Adults with visual impairment may experience higher levels of anxiety and depression symptoms and decreased functioning.

Visual impairment in the elderly increases the risk of falls and fractures, difficulty walking,

isolation, and access to a nursing home or other care facility. There are many factors that can cause blindness or blindness (9-12) Common causes of blindness or blindness include eye injuries, genetics, diseases, etc. takes place. 13

Visual Impairment (VI) is defined as a condition of reduced visual performance that cannot be corrected by refractive correction (spectacles or contact lenses), surgery or by medical procedure.¹ Consequently, it results in functional limitations of the vision system that may be characterized by irreversible vision loss, restricted visual field or area and decreased contrast sensitivity, increased sensitivity to glare as well as decreased ability to perform daily living activities, such as reading or writing and much more.² Corn and Lusk affirm that individuals with VI have measurable vision, yet experience difficulties achieving visual tasks even with the use of correction. Furthermore, these individuals are sometimes capable of enhancing their abilities to complete their visual tasks with the use of compensatory low vision aids and/or environmental adjustments/modifications.³ This description of VI is useful because it considers that individuals with VI may not always shows predictable clinical changes in visual function and that changes in functional vision may not always compare and contrast to measurable changes in clinical findings.³

Definition and characteristics of Visual Impairment

According to RPwD act ,2016

Visual impairment—

(a) “blindness” is refer to a condition where a person has any of these following conditions, after best correction— (i) totally loss of sight; (ii) visual acuity less than 3/60 or less than 10/200 (Snellen chart) in the better eye with best possible and the last is (iii) limitation of the field of vision subtending an angle of less than ten degree.

(b) “low-vision” means a condition where a person has any of the following conditons, :— (i) visual acuity not exceeding 6/18 or less than 20/60 upto 3/60 or upto 10/200 (Snellen) in the better eye with best possible corrections; or (ii) limitation of the field of vision subtending an angle of less than 40 degree up to 10 degree.⁴

The World Health Organization has embraced the International Classification of Diseases 11 (ICD 11) definition of visual impairment and blindness. According to this definition, a person is said to be visually impaired if the presenting VA in the better eye is worse than 3/60. In this revised definition, near vision impairment is also included; it is defined as presenting near VA worse than N6 with existing correction.⁵

Prevalence of visual impairment

At least 2.2 billion individuals worldwide suffer from a near- or far-sightedness. Nearly half of these instances, or at least 1 billion, include visual impairment that might have been avoided .A cataract (94 million), refractive error (88.4 million), age-related macular degeneration (8 million), glaucoma (7.7 million), and diabetic retinopathy (3.9 million) are the primary disorders

among this 1 billion individuals that limit their ability to see distance or cause blindness. 6 Presbyopia (826 million) is the primary disorder causing impairment in near vision. 7

Regarding geographical variations, it is estimated that the prevalence of distant visual impairment is four times higher in low- and middle-income areas than it is in high-income areas. 6. More than 80% of people in western, eastern, and central sub-Saharan Africa are estimated to have untreated near-visual impairment; in contrast, rates in high-income regions of North America, Australasia, western Europe, and Asia-Pacific are reported to be less than 10%. 7. Aging populations and population expansion are predicted to raise the likelihood that more individuals may have visual impairment.

Impact of vision impairment & low vision

Personal impact

Early on, permanent severe visual impairment in young children can lead to delayed motor, verbal, emotional, social, and cognitive development, which can have long-term effects. Children of school age who are visually impaired may also perform less well academically. The quality of life is significantly impacted by vision impairment in adult populations. Adults who are visually impaired may have greater rates of anxiety and depression as well as decreased employment rates.

Vision impairment in older persons can increase their risk of falling and breaking bones, walking difficulties, social isolation, and early admission into nursing homes or other care facilities.

Economic impact

An estimated 411 billion US dollars in purchasing power parity are lost in worldwide productivity each year due to vision impairment, which places a heavy financial burden on society.⁸ This amount much above the predicted \$25 billion cost gap that would be incurred from treating visual impairment.

Causes of visual impairment & low vision

There are many causes that may lead to vision loss or lead to vision impairment (9-12) Common causes that lead to vision loss or visual impairment include eye injury , inherited conditions, infections and so forth. 13

Injury to the eyes

Eye injuries resulting from sports, work or accidents can cause complete/partial blindness and loss of visual experience. Damage to the cornea part of the eye often causes blindness.

Infections of the eyes

Diseases such as measles can be passed from mother to fetus during pregnancy. Chlamydia trachomatis bacteria can cause trachoma in the eye, which can lead to vision impairment. This is especially true in developing countries and for poor people due to lack of access to clean water and sanitation. demolition. This inhibits the growth of the weak eye and causes amblyopia in the

eye. The lens is usually the correct way to focus light on the retina. Cataracts can cause blindness because they make it difficult for light to pass through the lens. Adults are mostly affected by this disease. Symptoms include double vision, blurred vision, and difficulty seeing in light or dark, and discoloration. More than 50 percent of Americans have cataracts by age 80.

Amblyopia

This inhibits the growth of the weak eye and causes amblyopic in the eye..

Cataract

The lens is usually the correct way to focus light on the retina. Cataracts can cause blindness because they make it difficult for light to pass through the lens. Adults are mostly affected by this disease. Symptoms include double vision, blurred vision, and difficulty seeing in light or dark, and discoloration. More than 50 percent of Americans have cataracts by age 80.

Diabetic retinopathy

Diabetes affects the blood vessels in the retina. When damaged, blindness may occur. Currently, one in every 10 people has diabetes. Diabetic retinopathy occurs in 40 to 45 percent of people with diabetes. Maintaining pressure can damage the brain and lead to vision loss.

Glaucoma

This condition is due to raised intraocular pressure within the eyes. The increased pressure impairs vision by damaging the optic nerves. This may be seen in mostly older adults and in some babies as well who are born with this condition . Age 40 and older, have glaucoma.

Age related Macular degeneration

Ages 40 and older are 4 to 5 times more likely to develop glaucoma than other races. It is a developmental process that causes vision loss as a result of damage to the macula, the most sensitive part of the retina. Depending on the population age of the country, this number should increase to 3 million by 2020. The patient has difficulty listening well. This usually affects the elderly.

AIDS related visual impairment

It is the most common cause and it is estimated that 20% to 40% of AIDS patients may develop cytomegalovirus retinitis. Between 300 and 400 new cases are diagnosed each year.

Curricular Adaptations for Visually Impaired Children & low vision

Principles of Curricular Adaptations for Visually Impaired Children

The special teacher has to convert the visual experiences into non-visual experiences. There are four ways by which you can adapt the curriculum:

1) Duplication- Here, the instructor mimics the subject matter, source, or technique for a student in VI. For example, the text book's printed content is repeated in Braille. He receives an embossed printed diagram.

2) Modification- Under SSA ,we can do modifications in terms of content, method of display, type of material used and Module on Training of Resource Teachers/special educators on visually impaired children. At primary level especially when the child is in the evaluation can be done orally. By the end of the initial stage of learning the VI child with normal intelligence masters Braille. After completion of the initial stage of learning she/he can write his exams in Braille.

3) Substitution- Sometimes there is no suitable meaning of modification then the teacher has to substitute/alter the matter. It is expected that a sighted child has to draw a diagram of an ear. A VI child must get the concession of describing the structure of an ear.

4) Omission- Pictures in the books, geography maps, science diagrams cannot be adapted instantly in the same textbook because of technical reasons. The principle of omission has to be used in these cases.

While adapting material for VI children teacher must bear the following things in mind:

1. As far as possible try to use materials in the original form.
2. Material has to be duplicated in accessible format to VIC (large print, Braille, JAWS).
3. Models can be effectively used to substitute the experiences.
4. Choose the right equipment.
5. Teacher must always carry a “material adaptation kit” with him.
6. Adapt material according to the concerned topic.
7. A small plastic box with a tight lid can be used for this purpose. List of material in the box –
sticky tape ,scissors, glue, short ruler, Braille slate and stylus, Braille sheets,black sketch bold pen, rubber
bands, strings, different type of textured cloth, printed map of the district/ state, twine thread, compass to
make circles.
8. Use the easiest approach to adapt material for visually impaired children .
9. When adapting materials try to make it friendly for sighted children also.

Classroom Management for Visually Impaired & low vision Children

Concept of Classroom Management

Seating Position

Many children may need to hold reading materials near to their faces, therefore in addition to taking into account distance from and angle in relation to viewing targets across the classroom, an adjustable desk top should be supplied. With this feature, reading material may be positioned closer to the eyes without requiring prolonged leaning over. This should promote proper posture, improve focus, and lessen the fatigue associated with visually demanding jobs. When a youngster is reading with his head touching the paper or extremely close to it, do not discourage or criticize him.

He might have to close the distance to the paper to 5 cm in order for him to focus well. Consult the peripatetic specialist instructor if you have any concerns. When the visually impaired youngster is working at a desk, encourage them to be organized and thorough. This not only makes it easier and faster for him to locate his equipment, but it could also give him the additional storage space he needs for his specialized equipment. A person who uses Braille will especially require a spacious storage place since, in addition to their specialized equipment, Braille books are typically big and heavy.

Lighting

While some students may choose to work in dimmer sections of the classroom or wear tinted lenses, others may appreciate the extra specialized task illumination that an angle poise lamp provides. Be mindful that certain extremely polished surfaces, or even play areas with a light reflecting surface, might produce blinding glare. In general, glare including reflected glare should be avoided wherever feasible. Matt surfaces often work better in this regard since shiny paper can also be a special issue. If at all feasible, it could be important to take the advantages of window blinds into account.

Safety Considerations

It will be important to make sure that all after-school activities are closely supervised for kids whose vision is impaired or loss , But it's crucial that the teaching assistant refrains from interfering too much since doing so might cause further impairments of its own and deprive the kid of experiences that are valued and meaningful. Once more, it's critical to consult with a specialist support teacher to determine the best ways to assist the child in developing the necessary mobility and orientation skills. Without these, the child will not be able to move safely and independently throughout the school and later on, outside of the school premises.

Without first consulting a qualified instructor, the teaching assistant shouldn't try to teach mobility since they risk giving the child false confidence and putting them in danger.

Without a doubt, assistants can be quite helpful in this situation as well. They may give verbal signals by notifying the child about barriers, entrances, steps, etc., as well as advising them if there have been any changes made to the classroom's structure.

For ease of movement and safety, the child should hold the teaching assistant's upper arm, just above the elbow, so that the fingers are on the inside and the thumb is on the outside, should the

teaching assistant find herself in a situation where the child wished to use her as a sighted guide during a field trip or in an unfamiliar place. The visually impaired child is automatically one half stride behind his guide when their arms are positioned near to the torso. When dealing with visually impaired children, all staff members should be aware that the kid may struggle to appropriately evaluate distance, speed, and depth, making it difficult for them to respond quickly to groups that move swiftly.

Writing

Perkins Braille machine is used to teach blind children to write in Braille. Dark ink on white or yellow paper should have a contrast suitable for visually impaired children. If possible, these children can be switched to dark colored pencils. Younger children may benefit from choosing a bold line or graphic design, but older children should be allowed to choose their own paper.

1) Print - Teachers teach students content, resources, or methods in VI. For example, printed texts in textbooks are reproduced in the Braille alphabet. He received the help form. This can be discussed in primary school, especially when the child is in the evaluation phase. By the end of the first period of training, children with VI of normal intelligence have mastered the Braille alphabet. After completing the 1st level education, one can take the exam with Braille alphabet. Children with poor eyesight need to draw on their ears. VI Children should be given a good explanation about the structure of the ear. 4) Shortcomings - For some reasons, pictures, maps and illustrations in the book cannot be updated immediately in the same book. In this case, the principle of negligence should be applied. Try to use documents in their original form whenever possible. Documents must be copied to VIC in a usable format (large print, text, JAWS). Patterns can change the experience. Choose the right equipment. Teachers must bring the Adaptation Kit with them. Turn data into content. For this purpose, use a small container with a tight-fitting lid. Ribbon, scissors, glue, tape measure, Braille board and pen, Braille board, black pencil, rubber bands, string, various types of textured paper, printed county/state map, Twine, compass
Draw a circle. Transfer information to visually impaired children in the easiest way. When changing ingredients, try to make them suitable for children to see. Therefore, the face should be provided with an adjustable tablet to determine distance and angle by looking at targets along the track. Thanks to this feature, reading materials can be placed close to the eyes without having to bend over for a long time. This should promote physical health, improve concentration and reduce fatigue from the demands of the job. Do not scold or scold your child when he touches his head or gets close to the paper while reading. If you have any concerns please speak to a sailing instructor. Not only does this make it easier and faster to find his tools, but it also gives him the extra storage space he needs for special tools. Braille users especially need a lot of storage space because Braille displays, as well as specialized equipment, are often large and heavy. Others may appreciate the additional lighting functionality provided by the balanced angle. Please note that some highly polished areas and even play areas that receive impact may cause eye strain. Bright colors, as well as bright colors in general, should be avoided as much as possible. In this case a matte finish usually works better as foil can be a particular issue. It will also be important to consider the advantages of blindness if possible. Yes, the TA should not interfere too much because doing so will cause further damage to the TA and make the child ineffective and unproductive. Again, it is important to consult with a support professional to determine the best way to help your child develop mobility and orientation. Without these, children will not be able to move safely and independently in and after school. Teachers should not try to teach the movement without consulting a qualified teacher, as this

reduces children's self-confidence and puts them at risk. There is no doubt that the assistant can be very helpful in this situation too. Show children obstacles, entrances, steps, etc. They can give information and advice about the situation and inform them when there are changes in the classroom. For ease of movement and safety, if the TA finds himself in a situation, the child should hold the TA by the arm, above the elbow, with the fingers on the inside and the thumb on the outside. . When the blind child's arm approaches the body, the blind child will automatically fall half a step behind the teacher. When working with visually impaired children, all staff should be aware that children may have difficulty accurately judging distance, speed and depth, which may make it difficult for them to hear.

Reading Materials

It is important to consider the print size as well as its quality and quantity. The main considerations should be the size, color and contrast of the print on the paper as these will affect its quality. It is possible to enlarge the print using a continuous printer or optical device, but the size of the negative paper may be helpful because the defect will also be larger. Also note that expanding is not a solution because as the size increases the view becomes smaller. Children with low vision should be allowed to use the smallest print possible to maximize use the information Besides the need for contrast and clarity, do not print books associated with illustrations as these will create unnecessary clutter. Some children may also need to place flashcards or leaders below the line they are reading, and the Reading Window is especially helpful for children who have difficulty focusing on a printed word or line.

Specialized Equipment

Do not provide job information to visually impaired young people; Give them access to books, charts, maps and other resources. It will also take longer to complete more challenging tasks, and you will also need to reduce the amount of reading and writing you can expect to complete at the same time as other students. Anything that can help visually impaired youth, including visually impaired assistants (LVAs), should be donated.

LVA includes CCTV available in color and black and white options, as well as hand-held or vertical magnifiers, illuminated magnifiers, binoculars, hand-held telescopes and glasses, as well as spectacle mounts with specialized telescopes. LVAs are available from the Vision Services Service (located at the top of the map) and any LVA (excluding CCTV) can be billed free of charge by sales consultants working with opticians associated with LVA clinics. ESVI CCTVs for rent are flexible and useful for reading, drawing and even presenting. Most versions of CCTV allow you to hold a keyboard and electronically elevate the content . Xiaoyao support teachers can provide training to teach children how to effectively use their special LVA; Therefore, if the teaching assistant wants to help the child do this, they should talk to them. Other equipment It goes without saying that the type of equipment depends on the child's vision and weight. But other devices that could be used include one or more of the following: for rapid hearing), talking thermometers, talking calculators, Braille leaders, large typewriters, etc., since new developments in electronics are too numerous to detail here. Financial or personal relationships that may negatively impact their writing.

Conclusion

Longer life spans are projected to worsen the global problem of visual impairment. Ninety percent of people with VI reside in poorer nations because of limited access to medical care.¹⁵ The number of people with VI decreased from 314 million to 285 million in 2010. This decrease can be ascribed to the accomplishments of the VISION 2020: Right to Sight initiative.^{16,17} Although women are more likely than males to contract VI, the gender gap was least noticeable in Sub-Saharan Africa.¹⁵ Due to longer life spans, the effects of childhood blindness and VI may be more profound, adding to the socioeconomic load on society.¹⁸

As a result, rehabilitation of individuals with VI requires a holistic approach that is readily available, accessible and affordable, especially in developing countries.¹⁹

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