Visual Disability: A Resource Book For Teachers

Visual Disability

A Resource Book For Teachers

Edited by:
Anuradha Mohit Dalmia & A. K. Mittal

NATIONAL INSTITUTE FOR THE VISUALLY HANDICAPPED
Department of Empowement of Persons with Disabilities
Ministry of Social Justice & Empowerment, Government of India
116, Rajpur Road, Dehradun (Uttarakhand)

VISUAL DISABILITY

A RESOURCE BOOK FOR TEACHERS

2015

NATIONAL INSTITUTE FOR THE VISUALLY HANDICAPPED

(Department of Empowerment of Persons with Disabilities, Ministry of Social Justice & Empowerment, Government of India)
116, Rajpur Road, Dehradun - 248 001
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FOREWORD

I am happy to find that the National Institute for the Visually Handicapped has brought out this useful publication titled "Resource Book on Visual Disability". It presents in a compact form, information on a variety of issues and topics which have direct relevance to children and adults with visual impairment.

The Government of India, through the Department of Empowerment of Persons with Disabilities, has, during the last few months, introduced several new schemes and strengthened ongoing ones, to secure genuine empowerment of persons with disabilities we seek to serve. For this purpose, the Department has undertaken the challenging task of providing reading material in Braille, especially textbooks, in the desired quantities, through an innovative scheme aimed at the establishment of new Braille presses and modernization of the existing ones in the country.

This Resource Book, through one of its chapters, has rightly stressed the need for bringing about a positive change in the mindset of the community with reference to visually impaired persons. Towards this end, the Department has undertaken two important initiatives : a Scheme for Awareness Generation and Publicity for persons with disabilities and a Scheme of In-Service Training and Sensitization of State government officials, Local Bodies and Service Providers. The revised ADIP Scheme has enabled thousands of persons with disabilities, including a large number of the visually impaired, to obtain free of charge, a much wider range of assistive devices.

I sincerely hope that this Resource Book will further contribute towards strengthening our efforts to create necessary awareness and sensitivity about visual impairment issue among all stakeholders.

I greatly appreciate the initiative taken by the officers of the Department and the National Institute for the Visually Handicapped, in undertaking this welcome initiative.

I do hope and trust that through this publication and similar endeavours, we would be able to create the desired conducive and inclusive environment for our brothers and sisters with disabilities to which we are all committed.

27.8.15

(Thaawarchand Gehlot)

No. 863/VIP/MOS(SJ&E)/ 2015

कृष्ण पाल गुर्जर
KRISHAN PAL GURJAR

सामाजिक न्याय और अधिकारिता राज्य मंत्री
भारत सरकार
MINISTER OF STATE FOR
SOCIAL JUSTICE & EMPOWERMENT
GOVERNMENT OF INDIA

FOREWORD

I am happy to learn that the National Institute for the Visually Handicapped (NIVH) is bringing out a publication titled "Resource Book on Visual Disability". Indeed, it is a very comprehensive publication depicting crucial facts and information regarding anatomy and physiology of the eye, implications of various eye diseases, data and demographic overview on visual disability, opportunities for education, vocational training, employment and social security schemes. The Book also provides useful information on services for newly blinded persons, elderly blind persons and blind multiply disabled persons.

I believe that this publication will generate ideas that will help us to move forward in our endeavour to improve the quality of life of persons with disabilities. Dissemination of information is crucial in decision making. I am sure that the detailed information available in the book will help not only the visually impaired persons but all the stakeholders. It will also serve as a ready recknor for special educators, resource persons, rehabilitation professional and care givers.

I appreciate the efforts of the team that has made it possible to bring out this comprehensive volume.

(Krishan Pal Gurjar)
27th August, 2015

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14th September, 2015

INTRODUCTION

It is an important function of our National Institutes to act as clearing houses for information pertaining to their specific areas of specialization. The present Resource Book, published by the National Institute for the Visually Handicapped, marks an important step in this direction.

Over the last two or three decades, there has been a welcome paradigm shift to the rights-based approach towards providing services for the visually impaired and other categories of persons with disabilities. At the national level, this has been marked by the positive and favorable impact created for these groups by three important legislations: The Rehabilitation Council Act of India, 1992; The Persons with Disabilities Act 1995 and the National Trust Act 2000. The ratification by the Government of the U.N. Convention on the Rights of Persons with Disabilities provided further impetus to our initiatives towards reaching out to a growing number of persons with disabilities. This has been greatly strengthened with the launch of a number of new schemes during the last few months.

At the international level, too, we are now in the third Decade of Persons with Disabilities in the Asian and Pacific Region (2013-2022). The first two Decades were launched with the Beijing Proclamation in 1992 and the Biwako Millennium Framework for Action in 2002. There has also been the Incheon Strategy and the Ministerial Declaration in 2012 followed by the Outcome Document for Persons with Disabilities for Post-2015 international disability inclusive agenda adopted by the U.N. General Assembly in September, 2013. Our government has been a signatory to all these landmark regional and international instruments, alongwith the Marrakesh Copyright Treaty for the visually impaired and other print disabled persons. It is a matter of great satisfaction that the new Sustainable Development Goals (SDG's) presently being considered for the post-2015 international development agenda, also mentions persons with disabilities under different Goals, something which was sadly missing in the case of the Millennium Development Goals.

Thus, a wide range of important developments have been taking place in the disability sector during the last few years. These have been greatly strengthened and diversified over the last few months.

The present Resource Book makes a bold attempt at focusing upon these initiatives in the government and voluntary sectors with regard to the visually impaired, in particular. I commend the efforts of the National Institute for the Visually Handicapped, especially its Director, Ms. Anuradha Dalmia, for completing this Resource Book with skill and commitment. I also commend the valuable contributions of all authors, who are eminent leaders in their respective fields, for enriching the Resource Book with their wide experience and expertise.

My sincere appreciation is also due to Mr. A.K.Mittal for the valuable help provided by him in editing the Resource Book.

I do hope this Resource Book will lead to the production of other useful publications by NIVH in the future also.

(Lov Verma)

PREFACE

Production of reading material for a sector representing low prevalence groups such as the visually impaired or, for that matter, any other category of persons with disabilities, is a matter of great significance. This is particularly so, in View of the fact that not much material is brought out for these groups, though the need for collection and presentation of information on issues concerning their well-being is repeatedly felt and stressed.

It was in this background that the idea of preparing a document to be titled: 'Resource Book on Visual Disability', was conceived at a meeting held in the Department of Disability Affairs, New Delhi, on 12th September, 2013. At this meeting, the then Secretary in the Department and President General Council (NIVH), accorded approval to the design and basic content of the Resource Book and authorized the Director of the institute to take further steps to produce it.

The Director, thereafter, initiated action to contact the identified authors requesting them to prepare chapters on topics assigned to them. Some basic outlines of material to be included in the chapters was also intimated to them. The resultant volume is, now, before us.

The Resource Book is intended as a kind of 'ready reckoner' for parents, student-teachers, serving teachers and other professionals as also service providers. The objective is to provide them some basic and essential information on various aspects of work relating to the visually impaired.

The Resource Book, thus, consists of thirteen chapters. These can broadly be divided into four segments, for ease of comprehension and referencing.

Chapters 1 to 5 provide an overview of basic information on anatomy, and physiology of the visual system including the process of seeing; major eye-diseases and disorders in the country; identification and assessment of children with visual impairment; definitions and terminology; numbers and demographic characteristics of the visually impaired population in India, as well as attitudinal factors and different psychological implications of visual impairment.

Chapter 6 to 9 describe the evolution, present status, trends and challenges in the fields of education, vocational training and employment opportunities for the visually impaired. Services available in these areas are sketched along with special provisions for certain specific groups of the visually impaired population.

Chapters 10 to 12 present the technology perspectives. Thus, simple and advanced technologies used for reading, writing, education in subjects like mathematics and science, as well as mobility devices and low vision aids are outlined. Also presented is information on how built environment can be made barrier-free and convenient for use by the visually impaired.

The volume rounds up with chapter 13 which gives basic features of various regional and international treaties, declarations and conventions concerning persons with disabilities.

The chapters have been written by professionals who have long and distinguished experience in their specific areas of work. They have enriched their contributions by drawing upon, as appropriate, current research and scholarly writing in each topical area. Each chapter introduces the reader, at the very outset, to what is to follow in the subsequent paragraphs. The chapters also include extensive references to the work of others in the field and list supplementary resources, including web resources, for additional information. Wherever appropriate, reference has also been made to the related provisions of the Rights of Persons with Disabilities Bill 2014 introduced in Rajya Sabha in February last year. Recommendations of the Standing Committee on Ministry of Social Justice and Empowerment contained in their Fifteenth Report, are also mentioned, as required.

We hope, the publication will prove a resource of great value for all its readers and stimulate them to look at the needs, interests and rights of persons with visual impairment, with much greater sensitivity, empathy and motivation.

Awanish K. Awasthi,

Joint Secretary (DD) to the Government of India
Department of Empowerment of Persons with Disabilities,
Ministry of Social Justice & Empowerment.

August, 2015

ACKNOWLEDGEMENTS

The production of Resource Book on Visual Disability has truly been a collaborative effort. To begin with, I must state that the volume would not have been possible without the encouragement and support I received from the Department of Empowerment of Persons with Disabilities, Ministry of Social Justice & Empowerment.

I am deeply grateful to the Hon'ble Minister for Social Justice & Empowerment for the insightful Foreword received from him. I must also express my sincere gratitude to the former Secretary, Department of Disability Affairs, Ms. Stuti Kackar, the present Secretary, Mr. Lov Verma and the Joint Secretary, Mr. Awanish K. Awasthi for their valuable help and encouragement. Mr. Verma has been good enough to write the Introduction and Mr. Awasthi, the Preface for this Resource Book, which are most stimulating.

The Resource Book is the outcome of contributions by way of chapters, from a number of distinguished and experienced professionals in the field. These chapters contain a reservoir of knowledge and insight, which are of inestimable value in appreciating the various dimensions of visual impairment and services for the group. My profound gratitude is due to them all. Chapter-wise, they are:

1. Dr. Geetika Mathur: Medical Officer, National Institute for the Visually Handicapped, Dehradun;

2. Prof. Sujata Bhan: Professor in Special Education, Department of Special Education, S.N.D.T. Women's University, Mumbai.

3. Dr. S.R. Mittal: Professor in Education (Retd.), Department of Education, University of Delhi; currently, Adjunct Professor, National Institute for the Visually Handicapped, Dehradun; and Ms. Monika Singh: Research Scholar, Department of Education, University of Delhi;

4. Dr. Swati Sanyal: Course Director, Durgabai Deshmukh College of Special Education (Visual Impairment), Blind Relief Association, Delhi;

5. Dr. Anita Julka: Professor, Department of Education of Groups with Special Needs, National Council for Educational Research and Training, New Delhi; and Mr. R.P. Singh: Assistant Professor, Department of Special Education and Disability Studies, National Institute for the Visually Handicapped, Dehradun;

6. Dr. I. Arivanandham: Research Officer, (Retd.), National Institute for the Visually Handicapped, Regional Centre, Chennai;

7. Dr. Bhushan Punani: Executive Secretary, Blind People's Association, Ahmedabad, and Chairman, West Asia Chapter, International Council for Education of People with Visual Impairment (ICEVI);

8. Mrs. Nandini Rawal: Executive Director, Blind People's Association, Ahmedabad, and Treasurer, International Council for Education of People with Visual Impairment (ICEVI);

9. Mr. A. K. Mittal: President, All India Confederation of the Blind, Delhi, and Treasurer, World Blind Union;

10. Dr. Sam Taraporevala: Director, Xavier's Resource Centre for the Visually Challenged, St. Xavier's College, Mumbai;

11. Ms. Nirmita Narasimhan: Programme Manager, Centre for Internet and Society, Bengaluru.

In order to avoid duplication and overlap and for greater cohesiveness, we have taken the liberty of reorganizing material in a few chapters. Some additional information has also been included for content-updating. We hope, our esteemed authors will be good enough to bear with us for these adjustments and will forgive us for any inadvertent omissions/errors.

I am most grateful to Mr. A.K. Mittal, who has, at our request, carried out the responsibilities as the co-editor of the publication and coordinated various chapters with considerable skill and efficiency. I am also most thankful to Mrs. Meera Mittal for her meticulous work concerning net-search and related matters.

Last by no means least, I am deeply appreciative of the assistance rendered by the concerned staff members of the Institute in finalizing the Resource Book.

I look forward to receiving comments and feedback from readers on the material presented in this Resource Book, so that we could further enrich the Institute's similar publications in future.

Anuradha Mohit Dalmia
Director and Editor; National Institute for the Visually Handicapped,
Dehradun

August, 2015

CONTENTS

I am only one, but still I am one.
I cannot do everything, but still I can do something;
and because I cannot do everything,
I will not refuse to do something that I can do.

-- Helen Keller

CHAPTER 1

Human Eye: Structure, Functions and Common Eye Diseases

Geetika Mathur

In this chapter, the reader is introduced to the dynamics of the visual system. In simple terms, the structure and functioning of the human eye is explained, followed by basic information about signs and symptoms and preventive measures regarding common eye diseases and disorders. It is hoped that the information presented here will enable the reader to detect early occurrence of deviant eye conditions/problems.

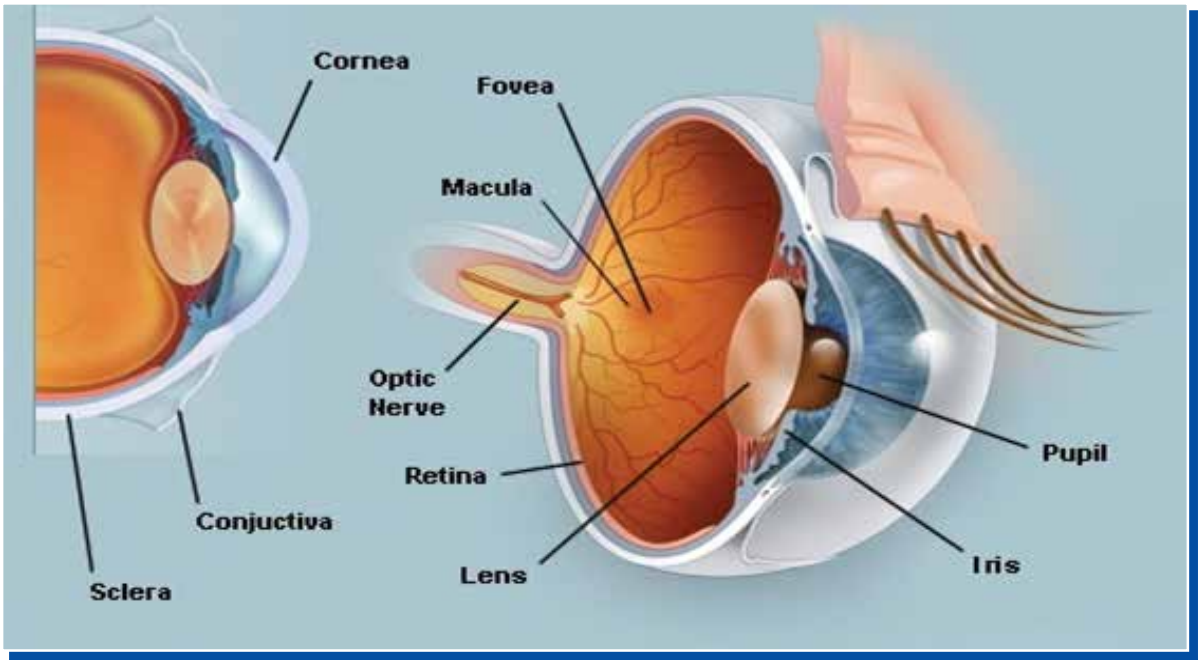
THE EYE

The human eye is one of the sense organs which enables us to see and helps in observing and learning about the world around us. We use our eyes in almost every activity we perform, whether reading, working, watching television, writing a letter, driving a car, cooking and in many other ways. It also allows us to see and interpret the shapes, colors, and dimensions of objects in the world by processing the light the objects reflect or emit. The eye is also able to detect bright light or dim light.

This delicate organ is surrounded on all sides by a bony cage called the orbit, which is a bony structure which encloses the delicate eyeball. It is in a shape of a pyramid and has the apex pointing inwards and the base in front.

SIZE

The dimensions of the human eye differs among adults by only one or two millimeter. The typical adult eye has an anterior to posterior diameter of 24 millimeters, a volume of 6 cubic centimeters and a mass of 7.5 grams. The eyeball grows rapidly, increasing to 22.5-23 mm by three years of age. By age 13, the eye attains its full size. The human eye is made of layers. These are like the onion skin one below the other.



THE HUMAN EYE

CORNEA

- Cornea is the outermost layer of the eye. It is circular and transparent, with a slight curvature outside, i.e. convex in structure.
- It is like a clear window. It has no blood vessels; hence it is clear and shiny.
- It is extremely sensitive due to number of nerve endings.
- It is 11 mm in circumference and about 0.5 mm in thickness.
- It is used for corneal transplants and not the whole eye.
- It is a powerful refracting surface and provides 2/3 of the eye's focusing power; and
- Surrounding the cornea is another transparent layer called conjunctiva.

CONJUNCTIVA

- It is the thin, transparent layer that covers the outer surface of the eye.
- When we look at the eye this layer covers the white portion of the eyes.
- It begins from the outer edge of the cornea and covers the white portion of the eye and also the inside of the eyelids, hence it is divided into two parts.
  - BULBAR -which covers the white portion of the eye.
  - PALPEBRAL - which covers the inner surface of the eye lids.

- It is nourished by tiny blood vessels.
- The conjunctiva also secretes oils and mucous that moistens and lubricates the eye. and
- Conjunctiva and cornea are the outermost layer of the eye.
- The conjunctiva covers the white visible portion of the eye which is called Sclera.

SCLERA

- This is the white portion of the eye, which is opaque, fibrous, protective and forms the outer layer of eye.
- It is made up of fibrovascular tissue.
- It gives toughness to the eye.
- Just below the sclera is the nourishing layer of the eye which is called the Uveal tract/coat or layer.

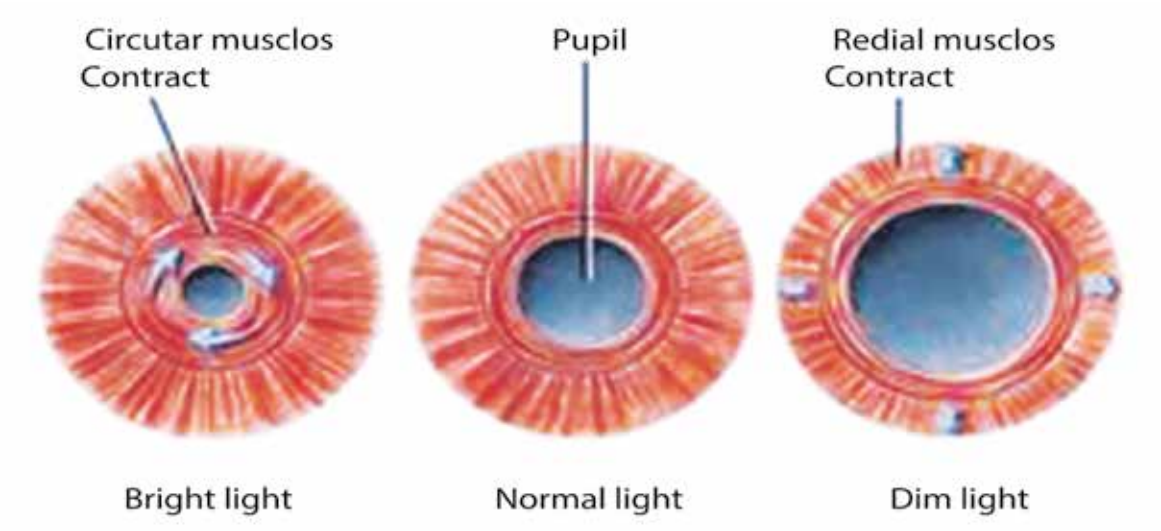
UVEAL TRACT

The Uveal tract is the vascular middle layer of the eye. It is divided into three areas, from front to back:

- Iris
- Ciliary Body
- Choroid.

IRIS

- It is the coloured part of the eye.
- Iris colour is due to pigment cells called Melanin (which give colour to hair and skin also).
- It controls light levels inside the eye similar to the aperture of a camera.
- The round the opening in the center of iris is called ‘Pupil’.
- Iris is embedded with tiny muscles which dilate (widen) and constrict (narrow) the size of the pupil.
- The dilator muscles are arranged radially like the spokes of a wheel , along the length of iris and are called Dilator Pupillae.
- The constrictor muscle are arranged circumferentially near the edge of the pupil called as Sphincter Pupillae.



DILATOR AND SPHINCTER MUSCLES OF PUPIL

Source:webmedia.unmc.edu

PUPIL

- It is a central space surrounded by Iris on all sides. It increases and decreases in size when light is thrown into the eyes.
- Sphincter muscles which lie around the edge of the Iris, contract causing pupil to decrease in size and this occurs in bright light.
- Dilator muscles which are arranged like spokes on wheel when contract cause increase in size of the pupil. This occur in dim light.
- The pupil is hanging like a curtain with one end free and the other end attached to the Ciliary Body.

CILIARY BODY

- The Ciliary Body is made up of tiny muscles.
- Attached to one end of the Ciliary Body is Iris and behind that are tiny fibers called zonules or suspensory ligament.
- The lens present in the eye is suspended by the zonular fibers or suspensory ligament.
- These suspensory ligaments help in changing the thickness of the lens by shortening and lengthening the lens.
- This helps in changing the shape of the crystalline lens leading to focussing the image on the retina for near and far objects.
- Ciliary body also produces aqueous humour, a clear fluid that fills the front

of the eye.

- The Ciliary body continues behind as the Choroid Coat.

CHOROID COAT

- The choroid coat lies between the retina and sclera.
- It is composed of layers of blood vessels that nourishes the back part of the eye.
- It is connected to the ciliary body in the front.
- It does not allow any light to enter thus helping in formation of better image on retina.

LENS

Attached by the suspensory ligament is a biconvex structure called the Lens, which is located just behind the Iris.

- It is crystalline, transparent and flexible. Hence it has the ability to thicken and thin when seeing close and distant object.
- The lens is encased in a capsule which is like a bag and is suspended with the help of suspensory ligament.
- Its curvature of the lens is controlled by ciliary muscles.
- It is made up of transparent proteins called the alpha, beta and gamma proteins or crystallines.
- It focuses the image on the retina with its ability to change its shape for close object and distant object.
- With age, the lens gradually hardens, diminishing its ability to thick and thin.
- The encapsulated lens is in contact in front with Aqueous Humour and behind with jelly like Vitreous Humour.

AQUEOUS HUMOUR

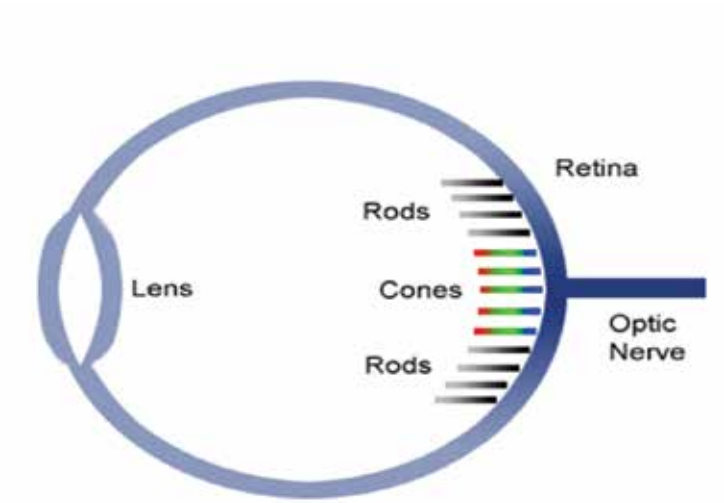
It is present in the space behind the cornea and lens, watery in consistency and is called the Aqueous Humour.

- It is continuously produced by the ciliary body, volume is about 0.31 ml.
- This fluid nourishes the cornea , the lens and also gives the eye its shape.
- At the angle where the iris meets the ciliary body and sclera is a sieve like structure called Canal of Schlemm which continuously drains the aqueous humour out.

VITREOUS HUMOUR

- The vitreous is a thick, jelly-like, transparent, colourless fluid that fills the centre of the eye. It is composed mainly of water, 99 % and comprises about 2/3 of the eye's volume, giving it form and shape (4 cc is the volume).
- The viscous properties of the vitreous allow the eye to return to its normal shape, if compressed.
- Behind the vitreous is the photosensitive layer of the eye called Retina.

RETINA

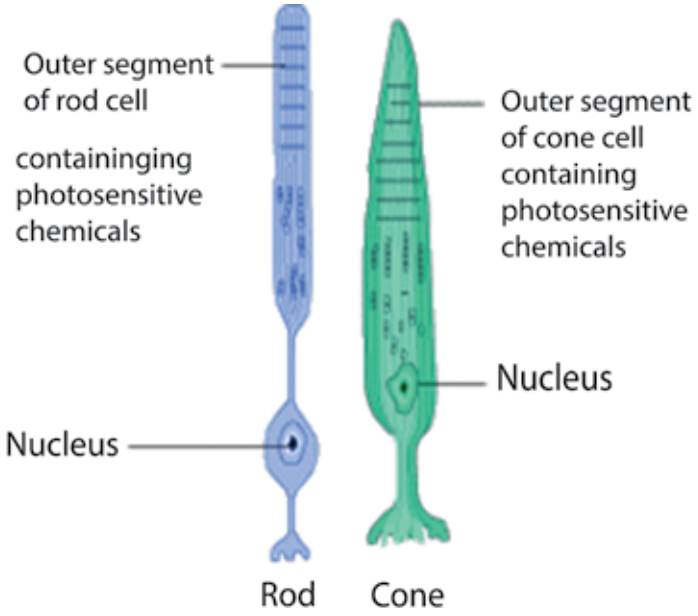


Source: sightsound.wikispaces.com

- Multilayered sensory tissue lines the back of the eye and contains photoreceptor- -Rods and Cones --which capture light and convert it into electrical impulses;
- These impulses are carried by optic nerve to the occipital lobe of the brain where they are perceived as images;
- The photoreceptors on the retina are:

  RODS: are approximately 125 million; spread through the peripheral retina and are extremely sensitive to light. They enable us to see in dim light- **"Scotopic vision"**.

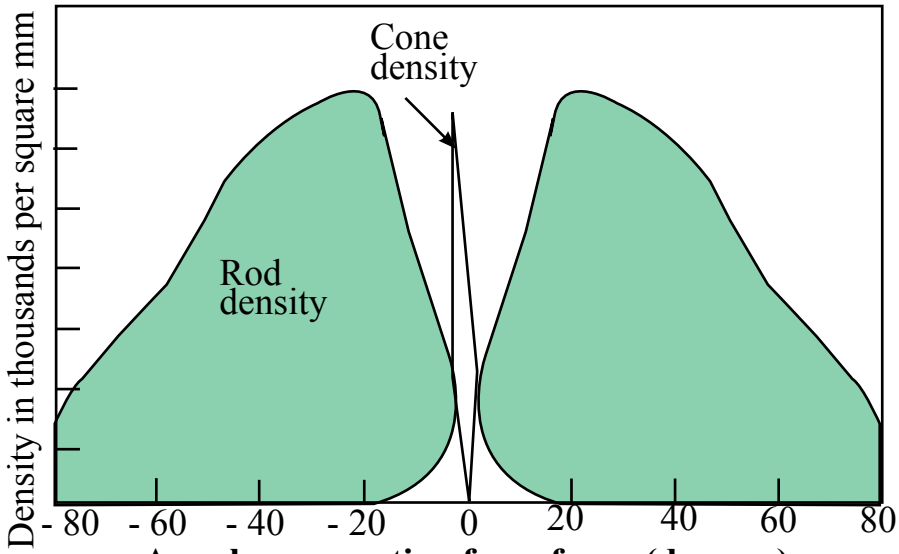
  CONES are approximately 6 to 7 million in number. They function best in bright light– **"Photopic Vision"** and also allow us to appreciate colours.
- There are 3 types of Cones which are sensitive to different colours of light- Red, Blue and Green.



Source: healthhowstuffworks.com

- The cones are distributed in the central area of Retina called the MACULA.

  MACULA: It is an oval shaped area in the centre of the Retina.
- Has a diameter of about 5.5 mm.
- Macula helps seeing details and perform task like reading, threading a needle, etc.
- In its centre is a small pit called FOVEA which has largest concentration of cones.



Source: hyperphysics.phy-astr.gsu.edu

- The vision is sharpest at fovea.
- When light falls on the Rods & Cones they get stimulated and the stimuli is carried forward by the nerve fibers.
- The fibers unite and form the optic nerve.

OPTIC NERVE

- Each optic nerve contains more than one million nerve fibers.
- It transfers visual information from the retina to the visual centre of the brain i.e. OCCIPITAL LOBE.
- The optic nerve is about 47-50 mm in length and is divided into 4 parts
  - o Intraocular - 1 mm
  - o Intraorbital - 30 mm
  - o Intracanticular - 6-9 mm
  - o Intracranial - 10 mm.
- where the optic nerve leaves the eye ball is called as BLIND SPOT ,the area of no vision because the retina is absent in that area.

STAGES OF VISION DEVELOPMENT

At Birth: The new born baby is able to appreciate only the gross structures, for example, while looking at the face, they can see the outline but are unable to appreciate the details like lips and eyebrows etc. At birth, the infant can focus till one and a half inch and most of their vision is blurred. They learn to focus their eyes by looking at faces. For example, the mother's outline of the face will be seen by the child but not the details like colour of hair or shape of the eyebrows.

At 2 Weeks: The infant is able to notice gross colours.

At 5-6 Weeks: They start following light and would try and look at light in the room.

At 2 Months: They start to focus objects. They also start to follow objects but they tend to lose their gaze and the motion of following the object is not very smooth. They also develop a reflex called the blink reflex, when an object is brought very close to their eyes, they tend to close their eyes.

At 3 Months: They are able to follow an object with smooth eye motions and their vision fixates at an object when placed in front of them. They recognizes faces, voices, and objects .Smile when they see familiar people. The social smile as it is popularly known, is apparent now.

At 4 Months: Show interest in small bright objects. The eye movements become smoother, i.e. less jerky. They try to reach out for objects when introduced in their visual field but not successfully.

At 5 Months: The hand and eye coordination improves and they grasp objects successfully. They look at things which they are holding in their hand. Examine the object with eyes and do not use it as object of play.

At 6 Months: Shift attention from one object to another. Start picking up dropped toys within reach.

At 9-10 Months: Start imitating expressions and look around the corners of the room with not much movement of the neck.

At 10 Months: Peripheral vision develops almost 80 degree from point of fixation. Start looking at object for some period of time i.e. Gaze Fixation.

At 1 Year: Visual acuity i.e. fineness of vision is present. Visual acuity improves and the child can see distant object and near object. At the end of first year there is improvement in seeing the fine details as the fovea is completely matured. Children should be introduced to bold letter books with high contrast and brightly coloured pictures.

At 1 Year 6 Months: is able to match identical objects. Point to pictures in books. Can differentiate gross colours (red/green or blue) but is unable to appreciate shades. Can also see patterns on coloured as well as white background, but the patterns should be large and should have good contrast. Usually big large brightly coloured toys when introduced in their visual fields are well appreciated by them.

PROCESS OF SEEING

The eyes help us to appreciate the size, shape and also the depth of an object. The process involves many structures of the eye which help in getting a perfect image which is appreciated by the human beings. When light rays from any source (could be the natural light or artificial light) falls on an object, it absorbs some and reflects the rest back which enters the human eye through the cornea, the transparent round outermost central area of the eye. The cornea bends or refracts the rays which then pass through the round hole called the pupil. The iris, or colored portion of the eye that surrounds the pupil, dilates and constricts (making the pupil bigger or smaller) to regulate the amount of light passing through. The light rays then pass through the lens, which actually changes shape so it can further bend the rays and focus them on the retina at the back of the eye. The retina is a thin layer of tissues at the back of the eye that contains millions of tiny light-sensing nerve cells called

rods and cones. Cones are concentrated in the center of the retina, in an area called the macula. In bright light conditions, cones provide clear, sharp central vision and detect colors and fine details. Rods are located outside the macula and extend all the way to the outer edge of the retina. They provide peripheral or side vision. Rods also allow the eyes to detect motion and help us see in dim light and at night. The light sensitive cells of the retina get activated with the incidence of light and generate electric signals. These electric signals are sent to the brain by the optic nerves and the brain interprets the electrical signals in such a way that we see an image which is erect and of the same size as the object.

COMMON EYE DISEASES AND THEIR FUNCTIONAL IMPLICATIONS

The diseases commonly associated with the various structural components of the eye are described below:

1. CORNEA

Infection of the cornea is commonly called as **Keratitis**. It can be caused by bacteria, viruses, fungi and parasites or due to minor injuries like wearing of contact lenses for very long periods causing abrasions on the cornea.

Photokeratitis or **snowblindness** is caused by excess exposure to UV light. It can occur with sunlight, sun-tanning lamps, or a welding arc. Exposure to sunlight reflected from ice and snow, is commonly called snow **blindness**. (Fresh snow reflects about 80% of the UV radiation). It is very painful and may occur several hours after exposure. It may last one to two days. Sunglasses with UV coatings can help protect against damage from UV light.

Common signs and Symptoms are:

- Eye redness.
- Eye pain.
- Excess tears or other discharge from eye.
- Difficulty in opening the eyes because of pain and irritation.
- Blurred vision.
- Unclear vision.
- Sensitivity to light (photophobia).
- A feeling that something is in the eye.
- **Corneal erosion or ulcer are followed by corneal opacity.**

KERATITIS: Corneal Inflammation

Infection produced by herpes virus, which causes chicken pox remains dormant in nerve cells of the human body. It can reactivate during life time and infect some part of body causing blistering rash, fever, painful inflammation of the affected nerve and is commonly called as Herpes. It can infect the nerve of the head and neck involving eye and infects cornea.

Source: wiki 514x278. jpeg.healthhype.com

EYE DONATION

- In India, there is are large number of people with corneal blindness who can be cured by corneal transplantation.
- Number of corneal transplantation are successful and help in restoring vision in people with corneal blindness.
- Corneal transplantation in infants born with cloudy cornea can make a big difference to their lives.

EYE DONATION

- Eyes need to be removed within six hours after death and inform the nearest eye bank at the earliest.
- Keep the eyes of the deceased closed and covered with moist cotton.
- Switch off the ceiling fan, if any, directly over the deceased person.
- If possible, apply antibiotic eye drops periodically in the deceased's eyes to reduce the chance of any infection.
- Raise the head end of the deceased by about six inches, if possible, to reduce the chances of bleeding at the time of removal of the eyes.
- Both old and young patients benefit from cornea transplants.
- **Donation from living persons is not accepted.**

2. DISEASES OF CONJUNCTIVA.

[I] ***Conjunctivitis*** is commonly called as "PINK EYE" and is due to inflammation of the conjunctiva caused by bacteria,virus,fungus, irritants such as shampoos, smoke, and pool chlorine or allergens, like dust, pollen, smoke.

- Redness in the white of the eye or inside of the eyelids.
- Increased watering from the eyes.
- Thick yellow discharge which forms crusts over the eyelashes, especially after sleep
- Itching in the eyes.
- Burning eyes
- Blurred vision
- Increased sensitivity to light (photophobia).

[II] ***Trachoma*** is caused by Chlamydia Trachomatis, Chlamydia organisms share properties of both bacteria and virus.

Factors which are responsible for Trachoma infection are:

Poor hygienic and crowded surroundings, low socio-economic status, shortage of water.

Initially, it starts with mild conjunctivitis and causes discharge from the infected eye. The discharge spreads and is **passed by hands, by clothing, or by flies that land on the face** of the infected person.

There is presence of follicles on upper lid and lower lid and also upper margin of the conjunctiva which enlarge and merge with each other involving the whole conjunctiva. Gradually, these follicles have pus discharge followed by formation of scar tissue. The scar tissue pulls the lid causing the lid to turn inwards and along with it the eyelashes. This causes the eye lashes to rub against the inflamed bulbar portion of conjunctiva and cornea leading to corneal erosions and gradually corneal scarring and corneal opacity.

Source: byebyedoctor.com

Functional Implications:

Person suffers from severe pain, redness of the eye, gritty feeling like sand in the eye, eye discharge and irritation in the eyes.

Person suffers also photophobia (difficulty in seeing in bright light).

Treatment:

Antibiotics help in controlling and curing the infection. The National Programme for Control of Blindness (NPCB) has incorporated the Trachoma Control Programme which started in 1963.

'SAFE strategy for trachoma control'

S - Surgery

A - Antibiotics (Azithromycin)

F - Facial cleanliness

E - Clean Environment.

3. XEROPHTHALMIA

'Xero' literally means dry and an eye condition leading to a 'dry eye', is known as Xerophthalmia. This is caused by deficiency of a Vitamin A which is a fat-soluble vitamin found principally in the liver of fish, poultry, livestock, in eggs and dairy products. In vegetables and fruits it is found as beta carotene which is converted in the intestine to vitamin A. After absorption, approximately 50% of the ingested vitamin A is retained and stored in the liver and then transported where required.

Hence deficiency of Vitamin A could be due to conditions that interfere with ingestion, absorption, storage, or transport.

Vitamin A is essential for:

i) The formation of rhodopsin or "visual purple" by the rods.

ii) Maintenance of the epithelial lining of several structures like skin, cornea, conjunctiva and lining of internal organs.

iii) A fully competent immune response.

The deficiency in vitamin A will affect:

i) Rods causing difficulty in seeing in dim light called as night blindness; and

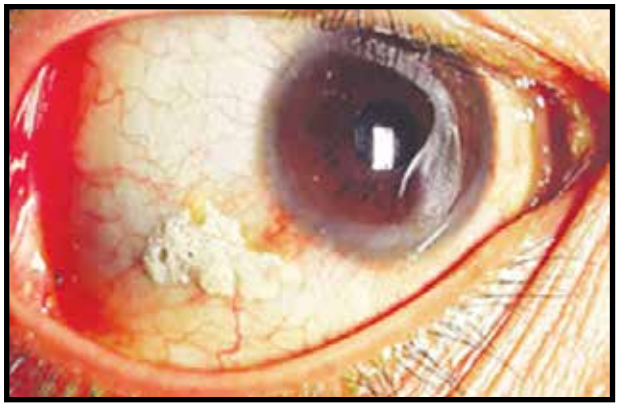
ii) Loss of luster and dryness of conjunctiva and cornea causing xerosis of cornea and conjunctiva.

Table:

Eye Diseases due to Vitamin A deficiency and their Treatment

Affected part of the eye	Leading to	Called as	Treatment with Vitamin A
RETINA - Rods	Difficulty in seeing in dim light	NIGHT BLINDNESS	Reversible in 48hrs
CONJUNCTIVA	Dryness of the eye causing difficulty in seeing	CONJUNCTIVAL XEROSIS	Improves in 2-4 days
CONJUNCTIVA	Foamy patch due to thickening of layers of conjunctiva	BITOT'S SPOT	May take weeks-months to or might not resolve
CORNEA	Dryness with corneal oedema	CORNEAL XEROSIS	Supplementation should start immediately and expert care
CORNEA	Sharply demarcated ulcer with scar formation	CORNEAL ULCERATION	Supplementation and expert care

Source: Vision 2020,The Right to Sight--A Manual for VISION 2020 Workshops



Source: glutenfreeworks.com

Bitot's Spots are associated with active vitamin A deficiency and may remain unresponsive to vitamin A therapy. These lesions are limited to the temporal quadrant of older children, generally are sequel of old xerophthalmia.

4. CATARACT

A cataract is an eye disease in which the clear lens of the eye becomes cloudy. The lens plays a very important part in focusing all rays of light on to the retina.

Facts about cataract:

- Cataracts are very commonly found as a person get old.
- A cataract can occur in either or both eyes.
- Individuals with a cataract in one eye usually go on to develop a cataract in the other eye as well.
- Cataracts do not cause the eye to water abnormally.
- They are neither painful nor they make the eye itchy or red.
- If the lens is totally opaque, it is termed as a "mature" cataract.
- Any cataract that is not opaque is therefore termed an "immature" cataract.
- Most mature cataracts are white in colour, hence commonly termed as Safaid Motiya –white pearl.

Why does this happen?

The lens is made of mostly water and protein. The proteins are arranged in a specific manner so the lens is clear. As we age, the proteins start to clump together leading to a cloudy area in the lens. Gradually, this cloudy area becomes more

dense making it more difficult to see through and we name the condition as cataract.

Causes:

- Age.
- Congenital cataract- when pregnant mother develops infection by herpes simplex,rubella, toxoplasmosis, syphilis, or cytomegalovirus during pregnancy.
- Injury- blunt injury.
- Excessive exposure to radiation (X-ray), infrared radiation (as in glass blowers), or ultraviolet radiation.
- Diabetes is associated with the development of cataracts.

'Congenital cataract' is a term when a baby is born with clouding of the lens. This may be present in one or both eyes and can be stationary or be progressive..

Functional Implications of Cataracts are:

- Decrease in clarity of vision which is not totally corrected with glasses.
- Loss of contrast sensitivity (will be difficult to appreciate light coloured objects against a light coloured background).
- Disturbing glare.
- 'Halo' may be observed around lights.
- Night vision will be diminished.
- Diplopia (double vision) may be noted in the affected eye.

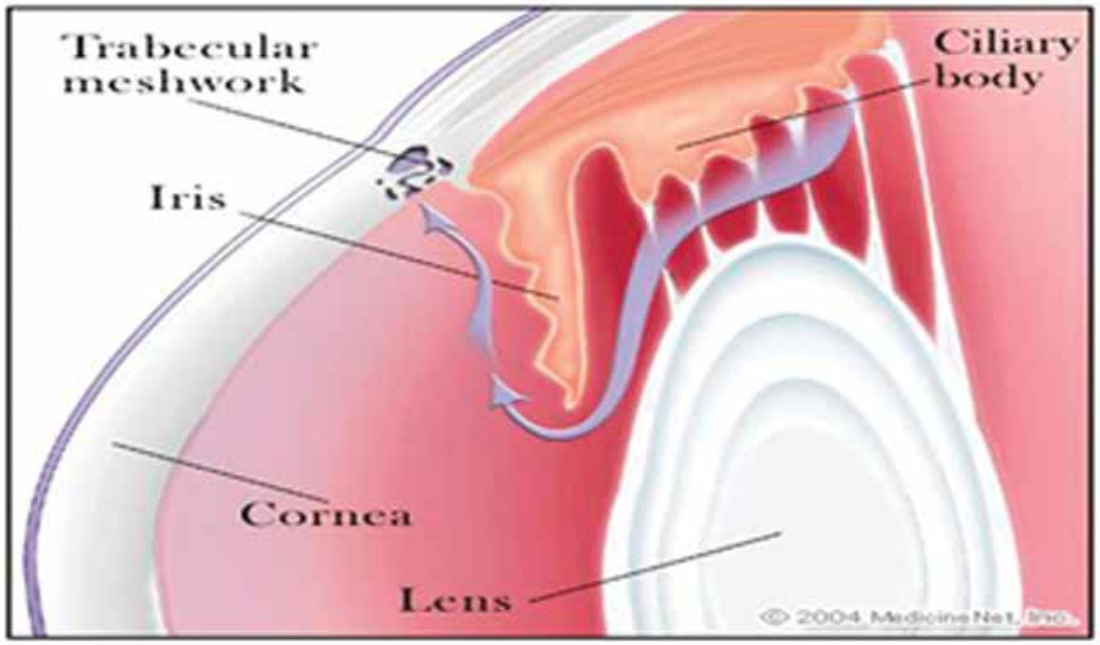
5. GLAUCOMA

This is a disease which results in vision loss due to damage to the optic nerve. First the visual field, and then the visual acuity is affected. It is often but not always associated with raised intraocular pressure.

Aqueous humour is constantly produced by the ciliary body, it fills the posterior chambers i.e. space between the front of the lens and back of the iris of the eye. It then flows through the pupil and reaches the anterior chamber i.e. the space betweenthe front of iris and back of cornea and leaves the eye through tiny channels called Canal of Schlemm a trabecular meshwork.

In most people, the drainage angles are wide open, although in some

individuals, they can be narrow. For example, the usual angle is about 45 degrees, whereas a narrow angle is about 25 degrees or less.



Source: medicinenet.com

TYPES OF GLAUCOMA:

I) Open-angle glaucoma/Wide-angle glaucoma:

- This is the most common type of glaucoma.
- Structures of the eye appear normal, but fluid in the eye does not drain properly through the trabecular meshwork.
- The drainage mechanism may become clogged with age or due to any infection, even though the drainage angle remains open.
- This leads to an increase in the amount of aqueous fluid inside the eye and raises the pressure in the eye.

II) Angle-closure glaucoma/Narrow angle glaucoma:

- This type of glaucoma is less common but can cause a sudden increase of pressure in the eye.
- Drainage may be poor because the angle between the iris and the cornea (where a drainage channel for the eye is located) is too narrow.
- When the pupil dilates (widens or enlarges), the peripheral edge of the iris can become bunched up against its corneal attachment, thereby causing the drainage angle to close.

WHO ARE AT RISK?

- Have a family history of glaucoma.
- Have poor vision.
- Have diabetes.
- Take certain steroid medications, such as prednisone.

Glaucoma causes the damage to optic disc which has nerve fibres, hence requires immediate attention.

The first sign of glaucoma is often the loss of peripheral/side vision, which can go unnoticed until disease has progressed.

Hence consult a doctor **URGENTLY** if:

- Loss in side vision
- Seeing halos around lights. The high intraocular pressure leads to corneal swelling , which causes the patient to see haloes around lights.
- Headache associated with nausea and vomiting
- Redness in the eye.
- If eye looks hazy particularly in infants.
- Nausea or vomiting.
- Pain in the eye.
- Narrowing of vision (tunnel vision).

CHALLENGES IN DIAGNOSIS AND TREATMENT OF GLAUCOMA

- People suffering from glaucoma are unaware of the disease and rarely seek treatment until they have lost a great deal of vision in one or both eyes.
- Glaucoma treatment usually does not restore vision or improve vision loss, but it can reduce further damage to vision. People sometimes stop taking medicines because they see no improvement in vision. Hence persons have to be counselled regularly.
- Medical therapy is lifelong and therefore relatively expensive.
- Loss of vision is slow and progressive in both eyes, but usually one eye is affected more than the other. Since the other eye takes over the rapid vision loss of the affected eye, patient reports very late and by then lot of damage is already done.

SCREENING AND EARLY DETECTION IS VERY IMPORTANT:

- Persons having difficulty in reading at age 40yrs + should all be screened for glaucoma.
- Check cupping of Optic disc and measure intra ocular pressure.
- Family history of glaucoma.
- Hypermetropia.
- Shallow anterior chamber.

***Glaucoma in Children*:** In 1-10% of children, glaucoma is the cause of childhood blindness.

Prevention:

- Rubella immunization in females in the child bearing age.
- Early diagnosis and surgery.
- Regular follow up of cases.
- Taking oral medication to prevent progression of disease.

5. RETINITIS PIGMENTOSA

Retinitis pigmentosa is a hereditary disease, caused by mutation of certain genes which send faulty signals to the retinal cells, leading to deterioration of the cells.

It shows varied pattern of inheritance:

- Unaffected parents can have affected children.
- Affected parents can have both affected and unaffected children.
- Only males have the disease while female are carriers and will not have the disease.
- All children are not affected in the same way, some may have mild and some may have severe symptoms.
- If it occurs in one child all family members are at risk.

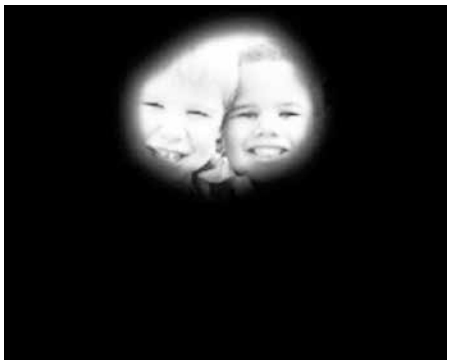
Retinitis Pigmentosa is characterized by the progressive loss of photoreceptor cells and a gradual reduction in the field of vision starting from periphery and progressing towards the centre, eventually leading to blindness.

People may experience one or more of the following symptoms:

- Night blindness or nyctalopia.
- Tunnel vision (no peripheral vision).
- Aversion to glare.
- Slow adjustment from dark to light environments and vice versa.
- Blurring of vision.
- Poor colour discrimination.
- Extreme tiredness.
- Bump in objects on the sides.
- Find difficult to see the rim or the sides of the door way.
- Difficulty to see in dim light.
- Difficulty in adjusting when entering from outdoor to a dim light room like movie theaters.

Normal Vision

Vision with Retinitis Pigmentosa



Source: ohioeyecareconsultants.com

This disease is progressive and cannot be cured, **but few options may help**:

- Light avoidance
- Use of low vision aids to slow down progression
- Vitamin A (15,000 IU/day)
- Omega 3 fatty acids
- Gene therapy

- Transplant retina research
- Retinal implants/prosthesis is a man made device to replace a damaged retinal tissue to take over the function of the dead retinal tissue and by electrical stimulation stimulate the ganglion cells;

  Or

  The visual scene can be captured by a camera which is transmitted via electromagnetic radiation to a small decoder chip located on the retinal surface. Electrical current passing from the electrodes stimulate cells in the appropriate areas of the retina corresponding to the visual scene.

6. MACULAR DEGENERATION

This disease affects the macula causing deterioration in central vision with loss of detailed vision and colour vision. The disease starts in fovea and then spreads outside. Macula becomes grey-green mass of scar tissue containing flecks of yellow or white. The flecks are deposit of Drusen.

The etiology or cause, of age-related macular degenerationis unknown . Causes are likely to be genetically inherited, but environmental factors may also contribute. Macular degeneration often runs in families.

There are two types of age-related macular degeneration:

Dry (atrophic) Form: This type results from the gradual breakdown of cells in the macula, resulting in a gradual blurring of central vision. Single or multiple, small, round, yellow-white spots called drusen are the key identifiers for the dry type.

***Wet (exudative or neovascular) Form*:** In the wet form of macular degeneration, newly created abnormal blood vessels grow under the center of the retina. These blood vessels leak, bleed, and scar the retina, distorting or destroying central vision.

MACULAR DEGENERATION SYMPTOMS

Symptoms of age-related macular degeneration include the following:

- Blurred or decreased central close-up and distance vision, which is often delayed because patients subconsciously ignore the eye with worst vision prior to development of the condition in the previously good eye.
- Blind spots, or scotomas, are a direct result of lost macular function.
- Straight lines look irregular or bent, called metamorphopsia, and objects appear a different color or shape in each of the eyes.

- Objects appearing smaller in one eye than the other, called micropsia, may also indicate a swelling of the macula.

REFRACTIVE ERRORS

A refractive error is an eye disorder. It occurs when the eye cannot clearly focus the image. The result of refractive errors is blurred vision, which is sometimes so severe that it causes visual impairment.

The common refractive errors are:

1. **Myopia (nearsightedness):*can see near objects clearly but have difficulty in seeing distant object.***

   The individuals have too long eyeball relative to the focusing power of the cornea and lens

   or when the lens and cornea lens are too curved. This causes the light rays to focus in front of the retina.

   Individuals have difficulty in reading road signs and seeing distant objects clearly, but will be able to do near tasks such as reading and computer use.

   Treatment: Myopia usually progresses every year and stabilizes by the time the child is in his/her late teens or upto the early twenties. It is difficult to stop progression of the disorder.

   Concave lenses which have a minus sign (-) are prescribed to treat the myopia.

   Spectacles and Contact lenses can be used as prescribed by eye care professionals.

   At the age of 18 years, laser surgery may be an alternative when the refractive error is stable.

2. **Hyperopia/Hypermetropia (farsightedness):** *have difficulty in seeing nearby objects but are able to see distant object clearly.*

   In these individuals the eye is too short or the lens and corneas have a strong refractive surface causing the light to focus beyond the retina. The nearby objects appear blurred and distant object are seen clearly.

   Treatment: Spectacles and Contact lenses with a positive sign in front are prescribed for correction

   Laser surgery is an alternative to spectacles at the appropriate age.

3. **Astigmatism*:*** Distorted vision resulting from an irregularly curved cornea

(the clear round outermost central covering of the eyeball). To understand the condition it is like the corneal surface is not smooth but bumpy and irregular.

Both near and distant vision are affected.

Treatment: Glasses are prescribed for significant astigmatism.

Contact lenses and laser surgery are alternatives to glasses at the appropriate age.

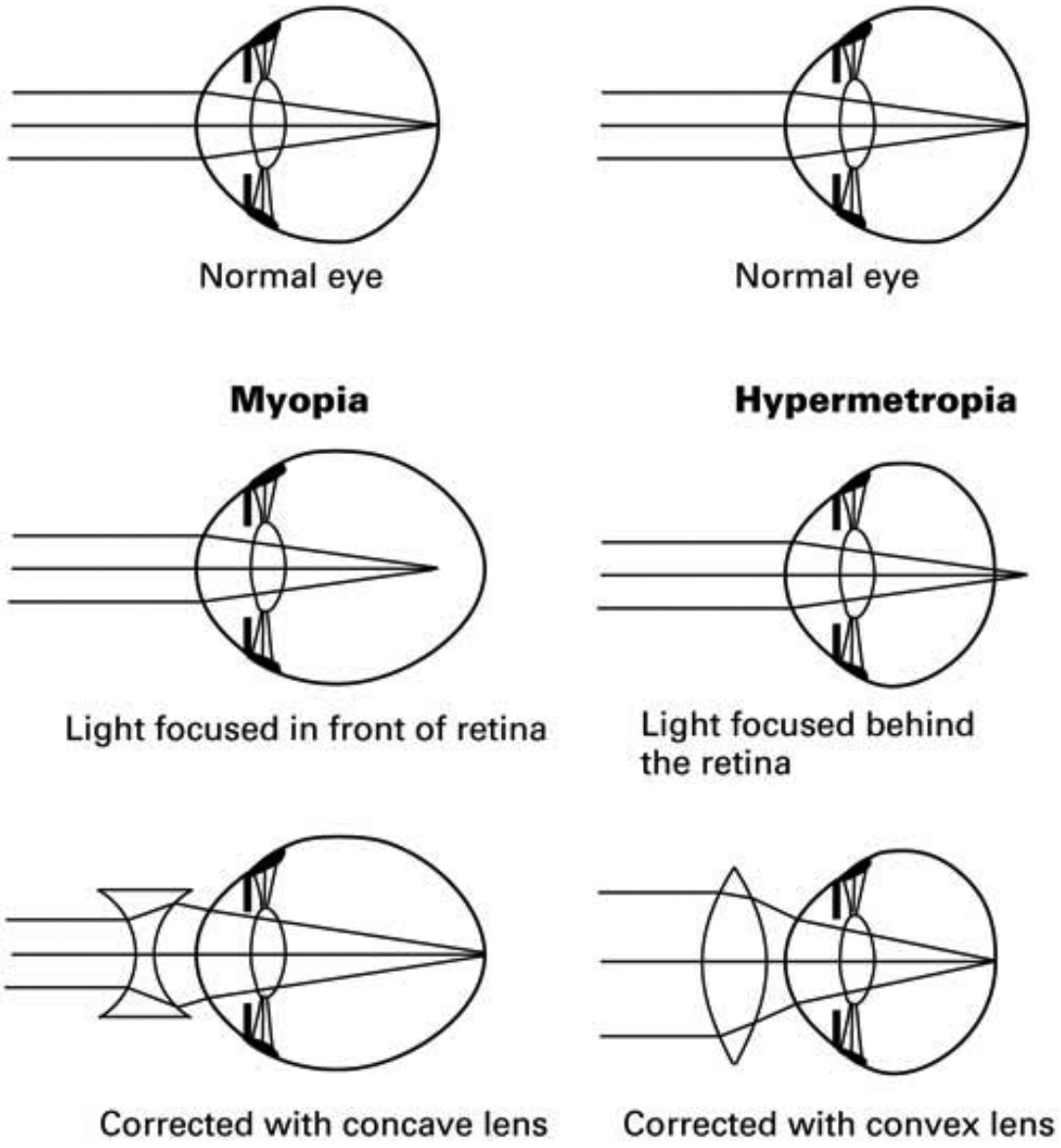
4. **Presbyopia*:*** the condition is seen in elderly persons. The person has difficulty in reading or seeing at near distance and doing tasks which require precision. It differs from the other disorders because it is linked to ageing and occurs almost universally. The lens losses it ability to contract and relax .

The person tends to hold reading material at a distance from the body and it is commonly referred as disease of long arms.

Treatment: Can be diagnosed by an eye examination and treated with corrective glasses.

All refractive errors cannot be prevented but can be diagnosed by eye examination and treated with corrective lenses/glasses, contact lenses or refractive surgery.

MYOPIA **HYPERMETROPIA**



Source: lens refration diagram 500x538.jpeg.patient.co.uk

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CHAPTER 2

Identification and Assessment of Visual Impairment

Sujata Bhan

Ashwini was a 12 year-old girl who had undiagnosed diabetes. The undiagnosed diabetes led to many complications, including progressive cardiovascular disease, kidney disease, and vision impairment. Sadly, Ashwini's teacher failed to recognize behaviors that were attributable to undiagnosed vision impairment. She often complained that the lights in the classroom were too bright, had difficulties in copying work correctly from the board and was tripping over things in the room. Since her vision impairment was not identified the effects were far-reaching and were responsible for reading and writing difficulties that she experienced throughout her schooling.

IMPORTANCE OF IDENTIFICATION & ASSESSMENT

Vision is the process of receiving stimuli transmitted to the eye and then to the brain, and translating those stimuli into images. Vision plays such an important role in a child's early development, identification of vision impairment in young children is especially important.

Sometimes vision problems develop over time or they are so subtle that they remain undiagnosed. If the vision impairment remains undetected, it can result in the student facing a substantial educational disadvantage because of adverse effects on the student's academic, communication, and social development. This can interfere with a student's ability to reach full potential. From a medical perspective, if the vision problem is left undetected and not corrected, it can cause permanent loss of vision and the long-term consequences can be serious in terms of quality of life. It is therefore important to identify children with vision impairment as early as possible so that appropriate assessment and intervention can be initiated. Early identification and appropriate intervention may help to maximize the child's general development and may promote better long-term functional outcomes.

Students identified as visually impaired represent a wide range of visual abilities. However, they share one common characteristic; a visual restriction of sufficient severity that it interferes with normal progress in a regular educational programme without some modifications. Educators and parents together have to

ensure the visually impaired children receive appropriate education. Therefore assessment is an essential component in educational programming for all children. Assessment is a multifaceted process of gathering information by using appropriate tools and techniques in order to make educational decisions about placement and the educational programme for that student. A comprehensive educational assessment employs a combination of tools and techniques selected to be consistent with the purposes of the assessment. These tools and techniques include a summary of developmental history; observation in the various settings of student's ecology; and administration of appropriate standardized tests and teacher made tests and checklists in the areas of educational need. The interpretation and integration of information gathered from these various sources is a key factor in comprehensive assessment of visually impaired children to make informed decisions about their individualized education programme.

Screening for vision impairment is done to determine whether a child has indications of vision impairment. Screening is not to arrive at a formal diagnosis, but rather to identify children with an increased likelihood of vision impairment, and who therefore need further assessment to determine if the condition exists and to establish the diagnosis. The purpose of vision screening of young children is to identify risk factors or conditions that would likely result in poor vision if not identified and treated. Vision screening generally occurs during routine health care visits as a part of general check-up for vision problems.

Information about visual behaviours that may indicate a possible vision problem can be obtained from observation of the child, from expression of parental concern about the child's vision, or from information provided by the parent in response to specific questions.

INDICATORS OF A VISION IMPAIRMENT

APPEARANCE OF EYES	One eye turns in or out at any time Reddened eyes or lids Eyes tear excessively Encrusted eyelids Frequent styes on lids
COMPLAINTS WHEN USING EYES AT DESK	Headaches in forehead or temples Burning or itching after reading or desk work Nausea or dizziness Print blurs after reading a short time

BEHAVIOURAL SIGNS OF VISUAL PROBLEMS	
Eye Movement Abilities (Ocular Motility)	Head turns as reads across page Loses place often during reading Needs finger or marker to keep place Displays short attention span in reading or copying Too frequently omits words Repeatedly omits "small" words Writes up or down hill on paper Rereads or skips lines unknowingly Orients drawings poorly on page
Eye Teaming Abilities (Binocularity)	Complains of seeing double (diplopia) Repeats letters within words Omits letters, numbers or phrases Misaligns digits in number columns Squints, closes or covers one eye Tilts head extremely while working at desk Consistently shows gross postural deviations at all desk activities
Eye-Hand Coordination Abilities	Must feel things to assist in any interpretation required Eyes not used to "steer" hand movements (extreme lack of orientation, placement of words or drawings on page) Writes crookedly, poorly spaced: cannot stay on ruled lines Misaligns both horizontal and vertical series of numbers Uses hand or fingers to keep his place on the page Uses other hand as "spacer" to control spacing and alignment on page Repeatedly confuses left-right directions
Visual Form Perception (Visual Comparison, Visual Imagery, Visualization)	Mistakes words with same or similar beginnings Fails to recognize same word in next sentence Reverses letters and/or words in writing and copying Confuses likenesses and minor differences Confuses same word in same sentence

	Repeatedly confuses similar beginnings and endings of words Fails to visualize what is read either silently or orally Whispers to self for reinforcement while reading silently Returns to "drawing with fingers" to decide likes and differences
Refractive Status (Nearsightness, Farsightedness, Focus Problems, etc.)	Comprehension reduces as reading continued; loses interest too quickly Mispronounces similar words as continues reading Blinks excessively at desk tasks and/or reading; not elsewhere Holds book too closely; face too close to desk surface Avoids all possible near - centred tasks Complains of discomfort in tasks that demand visual interpretation Closes or covers one eye when reading or doing desk work Makes errors in copying from chalkboard to paper on desk Makes errors in copying from reference book to notebook Squints to see chalkboard, or requests to move nearer Rubs eyes during or after short periods of visual activity Fatigues easily; blinks to make chalkboard clear up after desk task

Source: Children with Low Vision: A Handbook for Schools

TYPES OF ASSESSMENT-CLINICAL & FUNCTIONAL

For identification or assessment of infants and young children with vision impairment any vision assessment test, measure, or procedure can be used. Total blindness and severe vision impairment are usually relatively easy to identify by observation alone, but most other vision impairments are not always obvious.

Routine vision screening, as is usually administered to most infants and young children, can be effective for identifying many eye and vision problems, but there is no method that accurately identifies all young children with vision impairment.

A clinical assessment is an ophthalmic evaluation that provides a more in-depth assessment of the visual status of children who either have or are suspected of having vision impairment. The ophthalmic assessment is intended to further evaluate children when vision impairment is possible due to risk factors and clinical clues, parental or professionals' concerns, and positive screening test results. Clinical ophthalmic assessment can be used in several ways to assess children with possible vision impairment to:

- Determine whether vision impairment is present
- Establish a specific diagnosis and assess the severity and specific attributes of the vision impairment
- Determine whether intervention is indicated and help plan intervention strategies

Function assessment of vision is not an assessment of a child's eyes or visual status, but rather how the child uses vision to interact with the environment in his day to day life. The purpose of a visual function assessment is to examine the extent to which and the way in which the child uses any residual vision that exists. Areas addressed in a visual function assessment generally include optical and perceptual discrimination, recognition and identification visual memory, spatial perception, and visual-motor coordination.

INTERPRETATION OF CLINICAL ASSESSMENT

There are several basic aspects of vision, such as form perception (visual acuity), colour perception, and motion perception. Vision impairment is the loss of some aspect of vision and can occur as the result of a problem at any point along the visual pathway. Some vision impairments may be easily corrected with glasses, surgery, or other medical intervention. Other vision impairments may not be correctable.

ASSESSMENT OF VISUAL ACUITY

The first part of the eye exam is an assessment of acuity. When describing vision, most people tend to think of normal vision as the ability to see clearly at all distances without glasses. This is commonly referred to as "20/20" vision. The expression "20/20" is a description of visual acuity (VA), the ability to discriminate detail based on how clearly images such as letter, numbers, or pictures are seen on a standardized eye chart (referred to as an optotype). The first standardized eye

chart designed to measure visual acuity was introduced by Herbert Snellen in 1862. Although the Snellen eye chart was introduced well over a hundred years ago, it is still the most common way to measure and report visual acuity. The expression "20/20" refers to a person's visual acuity using the Snellen eye chart. This is the eye chart that is most commonly used for obtaining a general measure of how well someone is able to discriminate visual images at different distances. The Snellen visual acuity rating is written as a fraction: *f* The numerator (top number) is the testing distance, usually 20 feet (or 6 meters) but sometimes less for small children (10 feet or 3 meters) *f* The denominator (bottom number) is the distance at which a person with normal visual acuity would be able to read the letter For example, a person with 20/20 vision sees at 20 feet what a person with normal visual acuity sees at 20 feet. A person with 20/30 vision can see clearly from 20 feet what a person with normal visual acuity is able to see at 30 feet; a person with 20/200 vision can see clearly at 20 feet what a person with normal visual acuity is able to see at 200 feet.

If the patient is unable to read any of the lines, it is indicative of a big problem , a gross estimate of what they are capable of seeing should be determined (e.g. ability to detect light, motion or number of fingers placed in front of them). In general, acuity is only tested when there is a new, specific, visual complaint.

DISTANCE VISION

- Patient views test chart from 6 metres in good light
- Cover one eye and record the lowest line of letters that the patient can see
- CF= count fingers @ X distance in metres
- HM= hand movements @ X distance in metres
- PL = perception of light
- NPL = no perception of light

NEAR VISION ACUITY

- Normal near vision is that a person should read N5
- To be able to read newspaper print person should be able to read N8
- N5 requires VA of 6/9
- N8 requires VA of 6/15

SNELLEN'S EQUIVALENTS

Snellen Letters		Size (mins of arc)	Decimal Notation
6m	**20ft**		
6/6	20/20	1	1
6/9	20/30	1.5	0.67
6/12	20/40	2	0.5
6/18	20/60	3	.33
6/24	20/80	4	.25
6/36	20/120	6	0.17
6/60	20/200	10	0.1

INTERPRETATION OF CLINICAL REPORT

Good vision	Can see the 18 line at 6 metres or better	6/6 to 6/18
Poor vision	Can see the 24 line at 6 metres at best & the 60 line at 3 metres at worst	6/24 to 3/60
Blind	Cannot see the 60 line at 3 metres but can see a torch light	2/60-PL
Blind to light	Cannot see light	No Light Perception (NLP)

LEVEL OF SEVERITY OF VISION IMPAIRMENT
(Adapted from: ICD-9 Manual 1998)

Level of Severity	Best Correctable Snellen Acuity Equivalent
Normal vision	20/25 or better
Near normal vision	20/30 to 20/60
Moderate low vision	20/70 to 20/160
Severe low vision	20/200 to 20/400
Profound low vision	20/500 to 20/1000
Near total blindness	Less than 20/1000
Total blindness	No light perception(NLP)

Besides Snellen's chart, other optotypes used for clinical assessment are Tumbling E, Landolt C, and LogMar chart.

PINHOLE TESTING

The pinhole testing device can determine if a problem with acuity is the result of refractive error (and thus correctable with glasses) or due to another process. The pinholes only allow the passage of light which is perpendicular to the lens, and thus does not need to be bent prior to being focused onto the retina. The person is instructed to view the Snellen chart with the pinholes up (below right) and then again with them in the down position (below left). If the deficit corrects with the pinholes in place, the acuity issue is related to a refractive problem which can be corrected.

FUNCTIONAL ASSESSMENT OF VISION

The functional vision assessment is a pivotal assessment for children who have low vision. It is an assessment of how a child uses the vision he or she has in everyday life, so it is usually not done with children who are totally blind or have light perception only.

A functional vision assessment will investigate how a child uses his vision for

- near tasks, closer than 16 inches
- intermediate tasks, 16 inches to 3 feet
- distance tasks, more than 3 feet away

This assessment is conducted by the teacher of students with visual impairments or sometimes an orientation and mobility specialist, who uses a combination of formal tests and informal measures, depending on the child's age. He or she will review the child's records, spend time observing the child as he goes through his day, and may interview the parent, the child, and the regular classroom teacher.

Formal tests will include tests to assess visual acuity, visual field, contrast sensitivity, colour vision, and response to light.

- Visual acuity: how clear and sharp the child's vision is
- Visual field: the area the child sees to the sides, above, and below
- Contrast sensitivity: the ability of the child to detect differences in greyness and between objects and their background, i.e. how clearly the child can see the elements of an image
- Colour vision: the ability to detect different colours and also hues within a colour
- Light sensitivity: response to light; sunlight or artificial light

Since a child's visual condition and abilities can change over time, the functional vision assessment needs to be repeated periodically. It is important to recognize that for children with vision impairment, information about a child's condition and prognosis is based on observations as well as diagnostic work-up. Therefore, we must allow enough time to observe the child adequately. Take time to listen to the parents' observations of the child in other settings (e.g., home or child care settings). Understand the whole child and consider any factors that may have an impact on the child's performance during the assessment process. For example:

- The child's schedule
- The child's overall health status and current environmental influences
- The child's mood and temperament (fatigue, illness, shyness, excitement) at the time of assessment
- Assessment materials and strategies should be developmentally appropriate

STRUCTURE OF FUNCTIONAL VISION ASSESSMENT

- A review of ophthalmological and medical records
- A review of the educational testing done on the learner including modifications for test administration
- Reading or close viewing behaviours
- Preferred viewing distance for near and far work
- Preferred or optimal positioning for viewing.
- Use of writing equipment
- Writing
- Lighting requirements
- Contrast needs
- Mobility and distance tasks
- Use of eyeglasses
- Use of optical devices
- Use of special equipment
- Recommendations for accommodations

Informal measures might include observing the child to see what eye he prefers to use when looking at materials or if he can locate an object in a picture that has a lot of detail.

SOME QUESTIONS THAT CAN BE ASKED FROM PARENTS

- Does your child recognise family members?
- Does your child recognise friends?
- Does your child recognise people from photographs?
- Can your child identify him/herself from photographs?
- Can your child recognise shapes?
- Can your child recognise objects?
- Can your child name colours?
- Can your child match colours?
- Can your child find his/her way around the house?
- How often does he/she ask for directions around the home?
- Does he/she lose objects around the house?
- Can your child find his/her way around new surroundings?
- How often does he/she ask for directions in new surroundings?
- Does he/she have difficulty reaching out for and grasping objects?
- Does your child have difficulty distinguishing a line from a step?
- Is your child able to see moving objects or are they seen only when they are stationary?
- Does your child have difficulty seeing objects when he/she is moving quickly him/herself?
- Can your child find objects on a patterned carpet?
- Can your child find objects in complex pictures?
- Does your child eat food from only one part of the plate and ignore the rest?
- Does he/she misjudge going through doorways or along corridors?

TOOLS OF FUNCTIONAL ASSESSMENT OF VISION AND SKILLS

FUNCTIONAL SKILL INVENTORY FOR THE BLIND

Functional Skills Inventory for the Blind (FSIB) is a test developed by educationists Sujata Bhan and Smriti Swarup in 2008 to assess the performance of the educationally blind children in functional skills included in the expanded curriculum considered to be important for the holistic development of a child. The skills that the child needs to develop can be taught and practised by him at school, and then transferred to the home environment for making the child a competent, independent human being. In order to help the child develop optimally in all areas of development it is important to assess the child thoroughly and determine his strengths and weaknesses in various skill areas. This would help the teacher plan a customized training programme for a child.

FSIB, a criterion reference tool has been developed to assess the functional skills of blind children in the age group of 6-17 years. It does not produce a number or quotient, but shows what a student can or cannot do at a given time. It measures a child's own progress within himself/herself.

Part I of FSIB allows gathering general information about each child's age, sex, birth order, onset of blindness, and eye condition. Demographic information like type of family, education of parents, and occupation of parents, number of dependents in the family, and yearly family income is also collected in Part I of FSIB.

Part II of FSIB covers 12 developmental areas. It has two sections for each area, one for 6-10 year age group and the other for 11-17 year age group. Each area contains functional skills which are graded in terms of complexity. The Skills Inventory consists of 134 behavioural statements which are observable and measurable. There are a total of 67 items in each age group. All items are stated as positive statements which are either response oriented or performance oriented. Depending on the chronological age of the child the assessment is conducted using items in age group 1 or age group 2.

The twelve developmental areas covered in FSIB are:

1. *Gross Motor Skills (GM)*: Gross Motor skills are the abilities of a blind child to use his gross muscles for activities like walking in a straight line, co-coordinating eye-hand movements, etc.

2. *Fine Motor Skills (FM)*: Fine Motor skills are the abilities of a blind child to

use his fine muscles for activities like cutting, pasting, folding, etc.

The development of good gross and fine motor skills helps the child in environmental exploration that leads to cognitive development. Therefore, delay in acquisition of motor skills may have an impact on cognitive and affective development. The development of gross and fine motor skills is also an important prerequisite for activities in school, at home and most importantly in mobility. In school related tasks like manipulation of arithmetic types of Taylor frame or beads of an abacus or braille reading and writing require use of fine hand coordination. Intervention during the early school years would enable the child to perform skills at the level of his peers and move about in the environment with freedom and ease.

3. *Spatial Awareness (SA)*: Spatial awareness is the understanding the blind child has about 'self-to-object relationship'. For example, the child's sense of direction; whether an object is to his right or left etc.

Perception is crucial for cognitive development that starts from the correct body image. Awareness of body parts and body movements are important to be taught to blind children since due to lack of vision they have difficulty perceiving their bodies. Only after attaining a correct body image will the children be able to place themselves in correct positions relative to one another and relative to up-down and right-left dimensions. Concepts like laterality and directionality will also help the child in his orientation and mobility (O&M). Spatial deficiencies not only impede the blind child's O&M, but may also cause problems in his performance on academic tasks. Classroom activities like understanding the directions given by the teacher, and completing assignments, require some understanding of spatial concepts.

4. *Sensory Awareness (SnA)*: Sensory awareness is the ability of a blind child to identify and discriminate various senses. For example, matching of similar tactual stimuli or identifying an object by its smell.

The lack of visual sense has to be compensated by strengthening the use of remaining senses in order to gather information. A structured intervention following the sequence of awareness, recognition, identification, and differentiation of various senses will enable the blind child in conceptualization of his environment. Refinement of tactile sense is essential for braille learning whereas training of auditory sense, olfactory sense, and kinaesthetic sense helps in orientation and mobility.

5. *Environmental Awareness (EA)*: Environmental awareness is the ability of the blind child to know about his surroundings. For example, his knowledge about common fruits and vegetables, community helpers, public places etc.

There is likely to be a lag in general awareness of the environment in a blind child when compared with his sighted peers. Many things are learnt by observation, so because of lack of vision or due to lack of experiences provided, a blind child's understanding about the day to day concepts may be affected. For everyday functioning and a community life, general knowledge about various modes of transport, community helpers, public places, etc. is essential.

6. *Social and Emotional Awareness (SEA)*: Social and emotional awareness refers to the ability of the blind child to demonstrate socially appropriate behaviour in different settings, and the skills necessary for social acceptance. For example, the ability to make friends and to say thank you or sorry at appropriate time.

Expressions of emotions and social skills are skills which are often learnt by observing and imitating others around us. A blind child is perceived as different by his sighted age mates because he may not have the necessary skills to become an integral part of their group. The sighted understand neither his limitations nor his potentials hence choose to exclude him. The blind child on the other hand, does not know how to behave in order to become a part of the social group. Appropriate social behaviours and emotional expressions need to be taught to him in order to be well accepted in the society.

7. *Temporal Awareness (TA)*: Temporal awareness is the blind child's understands of time, sequence of events etc. For example: whether the child has the ability to read time, to name days of the week etc.

The blind have been found to have a difficulty in understanding the concept of time. It is important for the blind child to comprehend when an activity begins and when it ends and the understanding of relationship between time and distance. Temporal awareness will enable the child to understand the time required to accomplish various tasks and organize his life.

8. *Cognitive Skills (CS)*: Cognitive skills are the abilities of the blind child to match, discriminate, and classify objects; to form concepts; to recall and recognize etc.

Blindness puts restrictions on the range of experiences a blind child can have. Lack of vision restricts sensory stimulation which affects their concept development. Due to limited experience with the environment his comprehension, reasoning, and memory may be affected. To move from concrete to abstract thinking may be very difficult for the blind child. Maximizing the concrete experiential learning would increase his potential for learning.

9. *Language Skills (LS)*: Language skills refer to blind child's expressive verbal language; reading comprehension; vocabulary etc.

Although the process of language development would be the same for a blind child like it would be for a sighted child, the language abilities may not be well expanded in a blind child because of his restricted experiences with the environment. He may acquire a longer time in attaching meaning to certain words. Receptive understanding and self-expression using correct language is a skill that needs to be taught to the blind child. Development of language skills would affect his cognitive development and also improve his social acceptance.

10. *Compensatory Academic Skills (CAS)*: Compensatory academic skills are the blind child's knowledge of mediums and tools the use of which compensate him for his lack of vision in academics. For example, braille mechanisms i.e. correct movement of fingers while reading thus increasing efficiency in reading, writing of braille; grade I and grade II or in the use of Taylor frame or abacus.

The education of blind will emphasize tactile and auditory materials. Braille is the most efficient tactile code used for reading. Most students with visual impairments rely on auditory information for some part of their learning. Books on tape or CD, spoken output from the computer, and use of tape recorders make it necessary that the blind child has good listening skills. He has to be well trained in the effective use of assistive devices in order to match with his sighted peers in academics.

11. *Daily Living Skills (DLS)*: Daily living skills are skills required for independent living of the blind child. For example, to be able to eat and dress by self; to be able to do simple house hold chores like mopping and washing etc.

Skills like eating, dressing, toileting and hygiene skills are very basic self-help skills in which the blind child needs training. Achieving independence from others for self-care and personal management goes a long way in enhancing the blind child's self-concept and feeling of well- being.

12. *Orientation and Mobility skills (O&M)*: Orientation and mobility skills (O&M) refer to the ability of the blind child to move about safely, independently and the judgment to know where he is using his senses other than vision. For example, his efficiency in using sighted guide or cane techniques etc.

Blindness restricts movement. Well defined O&M skills will enhance self-esteem and self confidence in the blind child. Social relationships are enhanced by mobility and so are activities of daily living. The ability to use public transport to participate in social situations or to buy things for the house and later in life for economic rehabilitation will depend upon the O&M skills and techniques learnt by the blind.

LOW VISION ASSESSMENT

In 1988, Professor Jill Keeffe was working in a clinic assessing children referred for support services, due to vision impairment. At that time, there was very little research into low vision. Her aim was to design a kit that could be used to assess low vision in any country in the world, was small and light enough to fit into an envelope for ease of transport, and was affordable. The kit tested distance, near vision and refractive error and was trialled in 36 countries. It was published by the World Health Organization (WHO), initially in English, French and Chinese and has now been translated into 11 languages.

According to Jill Keeffe it is important to assess how low vision affects a person's ability to join in everyday activities. Even with same amount of vision people may vary in their ability to perform different tasks depending on their eye condition, their learning experiences, and their environment. Functional vision is the use of vision for particular purposes. Functional visual skills are required to carry out everyday activities. The differences in how people use vision are usually not related to the measure of distance visual acuity or near vision. A person may have very poor vision, not good enough for detailed work such as carving or reading but may be able to see and avoid objects to move around safely. Functional vision can be improved with training. Many people can learn to make better use of their low vision and can function efficiently with only small amounts of visual information. Objects and print can be recognized when they are blurry or only when parts of them can be seen.

The assessment procedures and training activities have been written by Jill Keeffe so that they are suitable for use in developing countries. Instructions are given so that easily found objects can be used. Assessment is in two parts. First is the observation of effects of low vision. Second part is the assessment of visual skills used for functional vision. The results give an understanding of the effects of low vision for each person and how vision is used. The results show the importance of distance, size, contrast and light for each person. The results from the assessment show how vision is being used and which skills have been learnt. The skills that need to be trained can be identified in order to plan a training programme. Information from the assessment should be discussed with the persons with low vision, his family and teachers.

In the first part a record is kept about the following:

1. Knowledge and feelings about vision: how does the person think about being blind, having some vision and about having normal vision

2. Use of vision for obtaining information: is the person using his residual vision to know about his environment or depends on others
3. Awareness of the environment: is the person using his vision to learn about common objects used by people in the community
4. Independence: is the person using vision to do some or all the things that other people do without special help
5. Lighting: is the person able to function better in a certain amount of light or when light comes from a certain direction
6. Contrast: is the person able to see better when objects or print have a good contrast.
7. Colour vision: if a person can identify colours, match similar colour, and sort objects by their colour.
8. Spectacles and low vision devices: if the person is using spectacles or any other low vision devices and if the person's visual efficiency is better with the use of such devices.

In the second part the following visual skills are assessed:

1. Awareness and attention to objects: Fixating on an object long enough to be aware of it.
2. Control of eye movement: Being able to track moving objects with the eyes or head movement.
3. Control of eye movements: ability to scan or move eyes from one object to the other.
4. Discrimination of objects: Recognition of objects from an outline or general shape.
5. Discrimination of details to identify actions and match objects: The discrimination of detail to identify an object.
6. Discrimination of details in pictures: The important features in pictures are identified so that the meaning of the picture can be understood.
7. Identification of perception of patterns, numbers and words: Matching letters and numbers by their similar or different features.

The validity of information obtained from a functional vision assessment depends on the objects chosen. The factors that need to be considered when choosing the objects are:

- Size
- Distance
- Contrast
- Colour
- Position
- Light on and around the object

Assessment is not a test. The aim is to find out what a person can do rather than what he can't do. It is important that the person is relaxed and wanting to cooperate. On the basis of assessment findings, vision efficiency training can be planned.

LEA TESTS

The LEA Vision Test System is a series of paediatric vision tests designed specifically for children who do not know how to read the letters of the alphabet that are typically used in eye charts. There are numerous variants of the LEA test which can be used to assess the visual capabilities of near vision and distance vision, as well as several other aspects of occupational health, such as contrast sensitivity, visual field, colour vision, visual adaptation, motion perception, and ocular function and accommodation.

The first version of the LEA test was developed in 1976 by Finnish paediatric ophthalmologist Lea Hyvarinen. The first test within the LEA Vision Test System that Hyvarinen created was the classic LEA Symbols Test followed shortly by the LEA Numbers Test which was used in comparison studies within the field of occupational medicine.

The unique design of the LEA tests and their special optotypes allow for paediatric low vision to be diagnosed in children at much younger ages than standard vision tests allow. This is especially important in young children who possess other physical disabilities or mental disabilities and are entitled to receive early special education benefits. More than half of children who suffer from low vision also have other impairments or disabilities. Most of the LEA tests can also be used on children with significant brain damage and serve as one of the few methods that can accurately assess visual acuity in these situations.

The LEA Vision Test System is used for the assessment of many aspects of vision and communication deficiencies in both children and adults. They include:

1. LEA SYMBOLS TEST

The oldest and most basic form of the LEA test is simply referred to as the "LEA Symbols Test". This test consists of four optotypes (test symbols): the outlines of an apple, a pentagon, a square, and a circle. Because these four symbols can be named and easily identified as everyday, concrete objects, they can be recognized at an earlier age than abstract letters or numbers can be. This enables preschool children to be tested for visual acuity long before they become familiar with the letter and numbers used in other standard vision charts.

2. LEA NUMBERS TEST

The "LEA Numbers Test" was the second of the LEA tests that was developed and can be used to test the visual acuity of older children and even adults. This test has a layout similar to a typical Snellen chart, with lines of numbers decreasing in size towards the bottom of the page.

3. LEA GRATING ACUITY TEST

This test allows for the assessment of grating acuity, especially in children who possess severe or multiple visual deficiencies. The "LEA Gratings Test" has also been shown to be successful in vision testing of children with brain damage and is the only test that can reveal their limited capacity for the processing of large numbers of parallel lines.

4. LEA CONTRAST SENSITIVITY TEST

Visual information that is presented in low contrast settings is very important to the process of visual communication. It is especially vital to assess a child's contrast sensitivity at a young age in order to determine the distance and accuracy with the child can distinguish facial features. A very popular test designed specifically for this reason is the "Hiding Heidi Low Contrast Face Pictures" test. This test uses a series of cards depicting cartoon faces of different contrast levels. The contrast sensitivity assessment obtained from this test is very important in educational settings because children with contrast deficiencies have extreme difficulty receiving visual cues from body language or facial expressions and often can't read the blackboard or projector.

PORTFOLIO ASSESSMENT

Children with visual impairment need to show case their strengths and abilities. Their capabilities are no less by any means provided they get the right opportunities for growth and development. Teachers have been making a move from traditional paper-and-pencil type tests to alternate forms of assessment. Teacher observation, projects, essays, and other more creative ways of evaluating

student achievement have gained a larger following within the classroom.

A **student portfolio** is a collection of student's work and related material that depicts a student's activities, accomplishments, and achievements in one or more school subjects. The goal is to help students assemble portfolios that illustrate their talents, represent their writing capabilities, and tell their stories of school achievement. The collection should include evidence of student reflection and self-evaluation, guidelines for selecting the portfolio contents, and criteria for judging the quality of the work.

The Student Portfolio can also be a compilation of several assessment reports and instructional plans written by a teacher on a student who is blind/ visually impaired. Each report consists of results and recommendations based on the teacher's work with the student and collaboration with the student's family and other professionals. It mentions whether the student will follow braille literacy programme or print literacy programme. It tells about the reading efficiency of the student which is the reading rate and reading comprehension. It also reflects academic achievement of the student using informal and formal tests.

STEPS IN PORTFOLIO ASSESSMENT

1. Set a goal, or purpose, for the portfolio. The goal should be tied to how you plan to use the portfolio. Answer the following questions to help you set the goal:
   - Do you want to see student improvement over the long term or a mastery of a specific set of skills?
   - Is it important to see the scope of student learning over time or do you want to collect samples of student work to pass along to the next teacher?
   - Are you looking for a concrete way to show parents the amount of work completed and their child's improvement over time?
2. The teacher and the student need to clearly identify the portfolio contents, which are samples of student work, reflections, teacher observations, and conference records depending on the goal of the portfolio. Although many portfolios reflect long-term projects completed over the course of a semester or year, it does not have to be that way. Students can create portfolios of their work for a particular unit. That portfolio might count as a project for that particular topic of study.
3. Determine how you will grade the portfolios. If your purpose is merely to

collect work samples to pass along to another teacher or parent, there is no need to actually grade the portfolios. If, however, you are looking for an overall mastery of skills, you will want to grade the work collected. The most efficient way to grade a portfolio is through a rating scale. If you are looking for specific skills, you might begin with a checklist. That checklist will ensure that all necessary pieces are included. Is the work completed correctly (mechanics), completely (information), and comprehensively (depth)? Each area is marked on a scale of 1-4. 1 = not at all; 2 = somewhat; 3 = mostly; and 4 = entirely.

4. The teacher needs a plan for holding portfolio conferences, which are formal and informal meetings in which students review their work and discuss their progress. Because they encourage reflective teaching and learning, these conferences are an essential part of the portfolio assessment process.

   Student involvement is very important in the portfolio process. It is vital that students also understand the purpose of the portfolio, how it will be used to evaluate their work, and how grades for it will be determined. Students are given a checklist of what is expected in the portfolio before they begin submitting work.

ADVANTAGES OF PORTFOLIO ASSESSMENT

- Promoting student self-evaluation, reflection, and critical thinking.
- Measuring performance based on genuine samples of student work.
- Providing flexibility in measuring how students accomplish their learning goals.
- Enabling teachers and students to share the responsibility for setting learning goals and for evaluating progress toward meeting those goals.
- Giving students the opportunity to have extensive input into the learning process.
- Facilitating cooperative learning activities, including peer evaluation and tutoring, cooperative learning groups, and peer conferencing.
- Providing a process for structuring learning in stages.
- Providing opportunities for students and teachers to discuss learning goals and the progress toward those goals in structured and unstructured conferences.
- Enabling measurement of multiple dimensions of student progress by

including different types of data and materials.

Portfolio assessment is a very valuable and meaningful evaluation tool that effectively assesses student learning.

SUMMARY

While there are many types of vision impairment, it is generally the level of severity of the vision impairment that determines the extent of functional impact on the individual. Visual impairment in terms of visual acuity for infants and young children may not be strictly applicable because visual acuity develops over time, and development of the visual system continues until children are approximately 6 years old. Individuals with the same visual acuities may function in different ways. Assessment is the entire process of identifying and evaluating a child, including the activities and tools used to measure level of functioning, establish eligibility of services, determining a diagnosis, plan intervention and measure treatment outcomes.

One of the most important prerequisites in planning a student's educational program is assessing the student's strengths and weaknesses. Early identification and intervention can prevent further deterioration in vision. While clinical assessment can be done by ophthalmologist a teacher for the visually impaired can do the functional assessment of the residual vision to see how it can be used to make the child as independent as possible. When interpreting the assessment results, it is important to look at how the child completes each task, the quality of the performance, and the method used for assessment. It is important to know also what the child is not able to do in order to develop a baseline and design an appropriate intervention program. Timely intervention can go a long way in the holistic development of a child with visual impairment.

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CHAPTER 3

Visual Disability - Definition and Demographic Details

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Webster, Cambridge and Oxford Dictionaries define 'blind' as one who is 'unable to see'. This is a meaning which is understood by the common man. But, it is important to know what 'Blindness' means professionally or what does 'Low Vision' mean. It is also necessary to understand the criteria on which people having seeing problems are categorized. Further, in order to plan effective and purposeful programs, it is essential to have (as far as possible) accurate information about the 'incidence and prevalence' of blindness and low vision. An attempt has been made in this chapter to discuss these issues, with special reference to the Indian context.

DEFINITION

The categorization of visual impairment currently in use worldwide is based on the ICD 10th Revision 2010. This is derived from a WHO Study Group on the Prevention of Blindness that was convened in 1972 to provide a standardized definition. The table below provides the categorization of persons with blindness and low vision:

Table 1: Categorization of Blindness and Low Vision Based on ICD-10 Version: 2010 (Category H54)

Category	Presenting distance visual acuity	
	Worse than:	Equal to or better than:
0 Mild or No Visual Impairment		6/18 3/10 (0.3) 20/70

1 Moderate Visual Impairment	6/18 3/10 (0.3) 20/70	6/60 1/10 (0.1) 20/200
2 Severe Visual Impairment	6/60 1/10 (0.1) 20/200	3/60 1/20 (0.05) 20/400
3 Blindness	3/60 1/20 (0.05) 20/400	1/60* 1/50 (0.02) 5/300 (20/1200)
4 Blindness	1/60* 1/50 (0.02) 5/300 (20/1200)	Light perception
5 Blindness	No light perception	
9	Undetermined or unspecified	
	*or counts fingers (CF) at 1 metre.	

Note: The term visual impairment in category H54 comprises category 0 for mild or no visual impairment, category 1 for moderate visual impairment, category 2 for severe visual impairment, categories 3, 4 and 5 for blindness and category 9 for unqualified visual impairment. The term "low vision" included in the previous revision has been replaced by categories 1 and 2 to avoid confusion with those requiring low vision care.

In the Indian context, definition of blindness and low vision can be differentiated based on its purposes. For example, definitions of Census and NSSO were for enumeration and were thus operational in nature, while one given under PWD Act (1995) was the legal definition of the term.

According to PWD Act (1995) notified in Gazette of India on 7th February 1996, "Blindness" refers to a condition where a person suffers from any of the following conditions, namely:-

i. Total absence of sight; or

ii. Visual acuity not exceeding 6/60 or 20/200 (Snellen) in the better eye with correcting lenses; or

iii. Limitation of the field of vision subtending an angle of 20 degree or worse.

After having signed and ratified the UN Convention on the Rights of Persons with Disabilities (UNCRPD), the Government of India undertook a review of the PWD Act. The review resulted in drafting an altogether new Bill, which at the moment is before the parliament for its consideration. This is known as The Rights of Persons With Disabilities Bill 2014. According to this Bill, "Blindness" is defined as: "A condition where a person has any of the following conditions, after best correction:- (I) total absence of sight; or (II) visual acuity not exceeding 3/60 or 10/200 (Snellen) in the better eye; or (III) limitation of the field of vision subtending an angle of 10 degree or worse.

There are two terms in this definition, which require a slight explanation: 'visual acuity' and 'field of vision'. The former means in simple terms, an ability to see in front, whereas the latter refers to a person's ability to see on the right, left, up and down without turning his/her head.

According to the PWD Act, "Person with low vision" means a person with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device." As per the Bill mentioned above, 'low vision' means a condition where a person has any of the following conditions, namely:- (I) visual acuity not exceeding 6/18 or 20/60 and less than 6/60 or 20/200 (Snellen) in the better eye with correcting lenses; or

(II) limitation of the field of vision subtending an angle of more than 10 and up to 40 degree.

This definition of low vision has been challenged by a number of individuals and non-government organizations and, therefore, the Government of India set up a committee to resolve this issue. The Standing Committee on Ministry of Social Justice & Empowerment which examined the Bill, has, vide Part C Section 3.159 15 of its report suggested that the Ministry should reconsider in consultation with the Rehabilitation Council of India, the definition of 'Blindness'.

According to Census 2001, a person who cannot see at all (has no perception of light) or has blurred vision even with the help of spectacles will be treated as visually disabled. A person with proper vision only in one eye will also be treated as visually disabled. A person may have blurred vision and had no occasion to test whether his/her eye-sight would improve by using spectacles would also be treated as visually disabled.

According to NSSO 2002 visual disability meant loss or lack of ability to execute tasks requiring adequate visual acuity. For the survey, visually disabled included:

(a) those who did not have any light perception-both eyes taken together; and

(b) those who had light perception but could not correctly count fingers of hand (with spectacles/contact lenses if he/she used spectacles/contact lenses) from a distance of 3 meters (or 10 feet) in good day light with both eyes open. Night blindness was not considered as visual disability.

DISABILITY CERTIFICATION

The Ministry of Social Justice and Empowerment had notified procedures for the Medical Boards of District Civil hospitals for issuance, assessment and the format of Disability Certificate. Details of the existing procedures are listed below:

CONDITIONS FOR OBTAINING DISABILITY CERTIFICATE

In order to become eligible for obtaining the Disability Certificate, a person with disability should fulfil the following conditions:

- To be an Indian citizen.
- To possess medical reports explaining type of his/her disability.
- The minimum degree of disability should be 40% in order to be eligible.

PROCEDURE FOR OBTAINING CERTIFICATE

Parent of a person with disability, or a person himself/herself, should approach the District Hospital with his/her request for obtaining Disability Certificate providing the following documents:-

1. Copy of I.D. of the person with disability and 2 photographs showing the disability part.
2. Copy of all medical and psychological reports available.

The Medical Board distributes the cases to the medical sub-committees specialized for different types of disabilities, according to the medical diagnosis

of the person with disability.

The Medical Board issues the Disability Certificate to the person with disability, after its verification by the Head of the Medical Board.

The State Governments/UT Administrations may constitute the medical boards.

The Director General of Health Services, Ministry of Health and Family Welfare will be the final authority, should there arise any controversy/doubt regarding the interpretation of the definitions/classifications/evaluation tests etc.

Source: www.punarbhava.in

INCIDENCE AND PREVALENCE OF VISUAL IMPAIRMENT

Incidence of visual impairment means the number of persons born with visual impairment or who acquired impairment per 1,00,000 population during 365 days prior to survey. Prevalence of visual impairment means the number of persons born with visual impairment or became visually impaired per 1,00,000 population in the country till the date of survey.

Statistics is not about simple numbers; it is about data i.e. numbers in context. It is the context that makes numbers meaningful and something worth considering. According to Manual for Disability Statistics (GOI,2012,p.5) "traditionally, disability statistics has been conceived as a matter of counting people who fall into specific groups–'the blind', 'the deaf', 'wheelchair users'–in order to determine who qualifies for benefits. But disability statistics can play a pivotal role in all areas of policy-making and in each stage from development and implementation, to monitoring and assessment of effectiveness, to the analysis of cost-effectiveness." Below are some specific reasons why national disability statistics and valid disability databases are essential:-

1. Disability statistics as evidence;
2. Disability statistics for identification of target population for intervention;
3. Disability statistics for choosing a right and cost-effective method for intervention;
4. Disability statistics for monitoring the quality of intervention;
5. Disability statistics for evaluation i.e. to tap outcome.

Globally, WHO collates data for various forms of disability including

blindness and low vision and it is based on categorization of ICD 10: 2010 Revision. In their estimate, world-wide prevalence of blindness and low vision is as follows:

- 285 million people are estimated to be visually impaired worldwide: 39 million are blind and 246 have low vision.
- About 90% of the world's visually impaired live in low-income settings.
- 82% of people living with blindness are aged 50 and above.
- Source: WHO Fact Sheet N°282, August, 2014

In Indian context, the data available from National Sample Survey Organization (NSSO) and/or Census gives the prevalence of disability. The data related with access to services such as participation of CWSN (children with special needs) in school education can be accessed from the report of MHRD (Statistics of School Education), or training centers or institutes for special education can be accessed from the website of Rehabilitation Council of India.

World Bank's report on disability (People with Disabilities in India: From Commitments to Outcomes, 2007) uses the data of 58th Round of NSSO survey. At the same time, World Report on Disability (2011) gives an overall picture, based on World Health Survey of 2002-2004, covering 59 countries, and the WHO Global Burden of Disease study, 2004 update. These sources can be used to examine the prevalence of disability, but they are not directly comparable because they use different approaches to estimating and measuring disability. The World Health Survey, a face-to-face household survey in 2002-2004, is the largest multinational health and disability survey ever using a single set of questions and consistent methods to collect comparable health data across countries. The conceptual framework and functioning domains for the World Health Survey came from the International Classification of Functioning, Disability and Health (ICF 24, 32).

CENSUS OF INDIA:

Census involves enumeration of all in a given geographical location. According to Manual for Disability Statistics (GOI, 2012, p.13) "The collection of data on disability/infirmity dates back to the inception of modern Indian Census in 1872. The questionnaire of the 1872 Census included questions on physically, mentally infirm and persons affected by leprosy. Collection of information on infirmities was continued in each successive decadal Census till 1931. However, the enumeration of physically disabled persons was discontinued during the 1941

Census due to the doubts expressed about the authenticity and quality of data collected on infirm population. No attempt was made to collect information on disability through census of 1951, 1961, 1971. After a gap of 50 years, a question on disabilities was again canvassed at the 1981 Census. Again at the 1991 Census, the question on disability was not canvassed. Later it was included in 2001 Census and 2011 Census."

NATIONAL SAMPLE SURVEY ORGANIZATION:

Along with Census, Government of India took the initiative to estimate the prevalence of disability in population with various rounds of survey. The box below provides the brief history of surveys undertaken by NSSO at various points of time.

The National Sample Survey made the first attempt to collect information on the number of physically handicapped in its 15th Round survey (July 1959-June 1960) and was confined to rural areas only. In its 16th Round (July 1960-June 1961) the geographical coverage was extended to urban areas. Thereafter the subject was again taken up for nationwide survey in its 24th Round (July 1969-June 1970), 28th Round (October 1973-June 1974). These surveys (undertaken during 15th, 16th, 24th, and 28th Rounds) were intended mainly to get a count of persons in the country who suffered from certain specified physical handicaps. However, the types of physical handicaps covered were not always the same. NSSO undertook a comprehensive survey on this subject for the first time in the NSS 36th Round (July-December 1981). Detailed information relating to magnitude of disability, type of disability, cause, age at onset, type of aid/appliance used and other socio-economic characteristics was collected in this survey. A decade later, at the request of the then Ministry for Welfare, NSSO covered this subject again in its 47th Round (July-December 1991), with the same basic framework including concepts, definitions and operational procedures as followed in the 36th Round. While the earlier surveys were restricted to only the physically handicapped persons, in the survey conducted since NSS 36th Round (1981) an extended definition was used to cover all persons with one or more of the three physical disabilities – visual, communication (i.e. hearing and/or speech) and locomotor. Also, data on developmental milestones and behavioural pattern of all children of age 5-14 years was collected, regardless of whether they were physically handicapped or not. Again, after a gap of eleven years, the survey on the persons with disabilities was carried out in the 58th Round during July-December, 2002.

Source: Manual for Disability Statistics (GOI, 2012, p.25)

INCIDENCE AND PREVALENCE OF VISUAL IMPAIRMENT IN INDIA ACCORDING TO NSSO (2002):

According to NSSO survey estimates, the number of disabled persons in the country was 18.49 million during July to December, 2002, and they formed about 1.8 per cent of the total estimated population. A comparative analysis of visual impairment in different rounds of NSSO is given in Table 2.

Table 2: Prevalence and Incidence of Visually Disabled Persons per 1,00,000 Persons Obtained from NSSO 36th, 47th and 58th Rounds

All-India									
	36th Round (July -December, 1981)			**47th Round (July -December, 1991)**			**58th Round (July - December, 2002)**		
sector									
	Male	Female	persons	Male	Female	persons	male	Female	persons
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Prevalence rate									
Rural	444	670	553	471	548	525	276	326	296
Urban	294	425	356	263	346	302	163	228	194
Incidence rate									
Rural	32	45	38	22	28	25	10	16	13
Urban	23	38	30	15	25	20	7	10	9

Source: NSSO Report (2002)

The prevalence of visual disability has decreased marginally between 1981 and 1991, and substantially between 1991 and 2002 (Table 3). This is true for incidence rates too. With better health care facilities over time, ailments might have been prevented to a large extent during the recent years.

Table 3: Prevalence of Visual Impairment in Various Rounds of Survey

Year	Rural	Urban	Total
1981			34,70,000
1991	33,35,000	6,70,000	40,05,000
2002	22,57,500	5,69,200	28,26,700

Source: NSSO Report (2002)

Table 4: Age Group and Visual Impairment: Number of disabled persons per 100,000 persons for each age-group

Age Group	RURAL		URBAN	
	Blindness	Low Vision	Blindness	Low Vision
0 – 4	32	5	30	5
5 – 9	48	12	73	16
10-14	52	22	82	10
15 – 19	56	21	44	13
20 – 24	65	23	56	18
25 – 29	68	17	43	20
30 – 34	77	16	30	19
35 – 39	75	32	53	20
40 – 44	128	43	79	30
35 – 44	98	37	65	24
45 – 49	183	65	105	39
50 – 54	266	124	182	98
55 – 59	431	234	283	122
45 – 59	272	126	172	78
60 & above	1733	747	1087	459
All	210	86	140	54

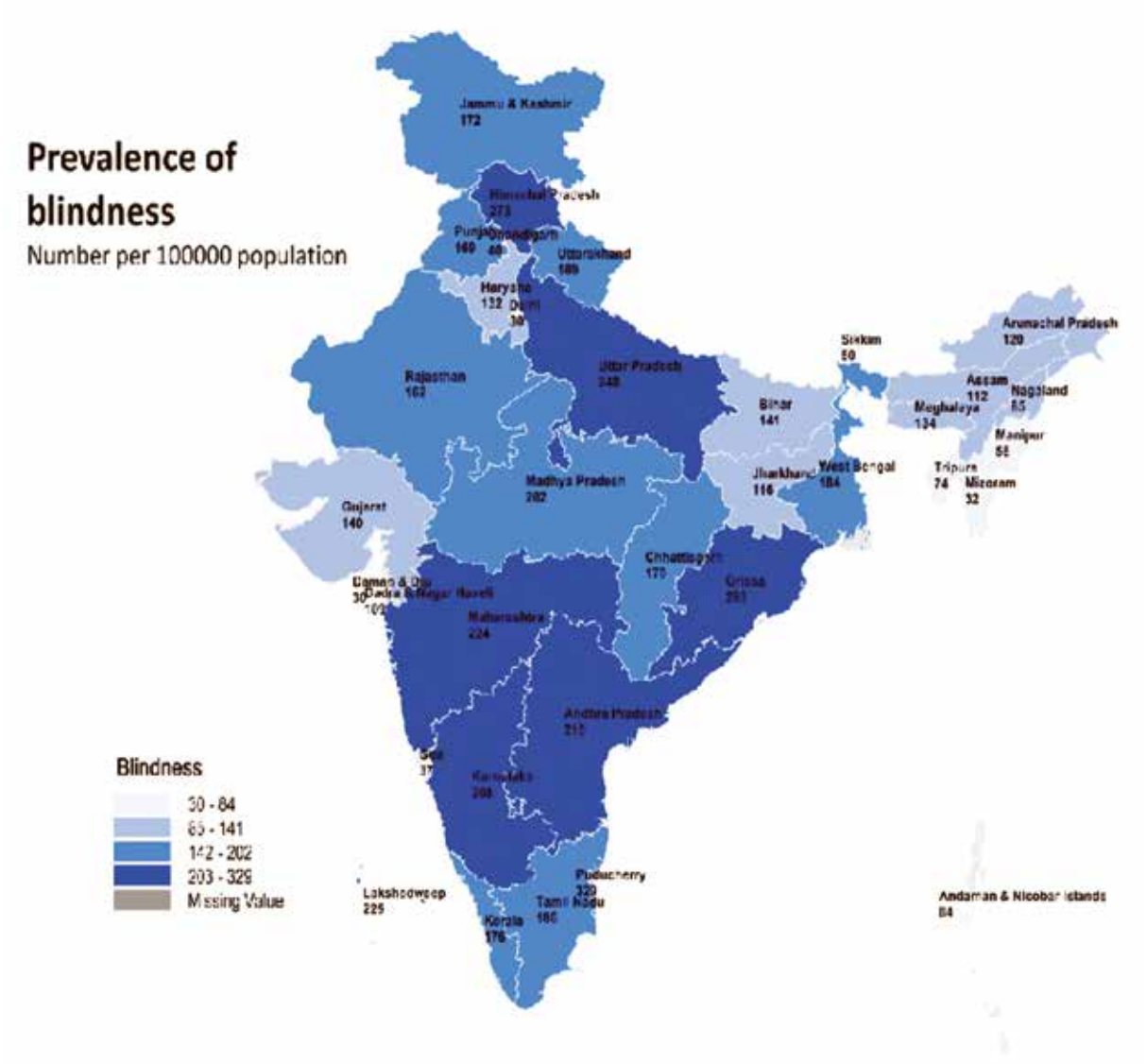
Source: NSSO (2002)

It is observed from the above Table that the prevalence rate is highest in the age group, 60 years and above for both blindness and low vision. The trend for higher incidence rate for both conditions in rural and urban areas is similar, i.e., 1733 and 1087 for blindness and 747 and 459 for low vision.

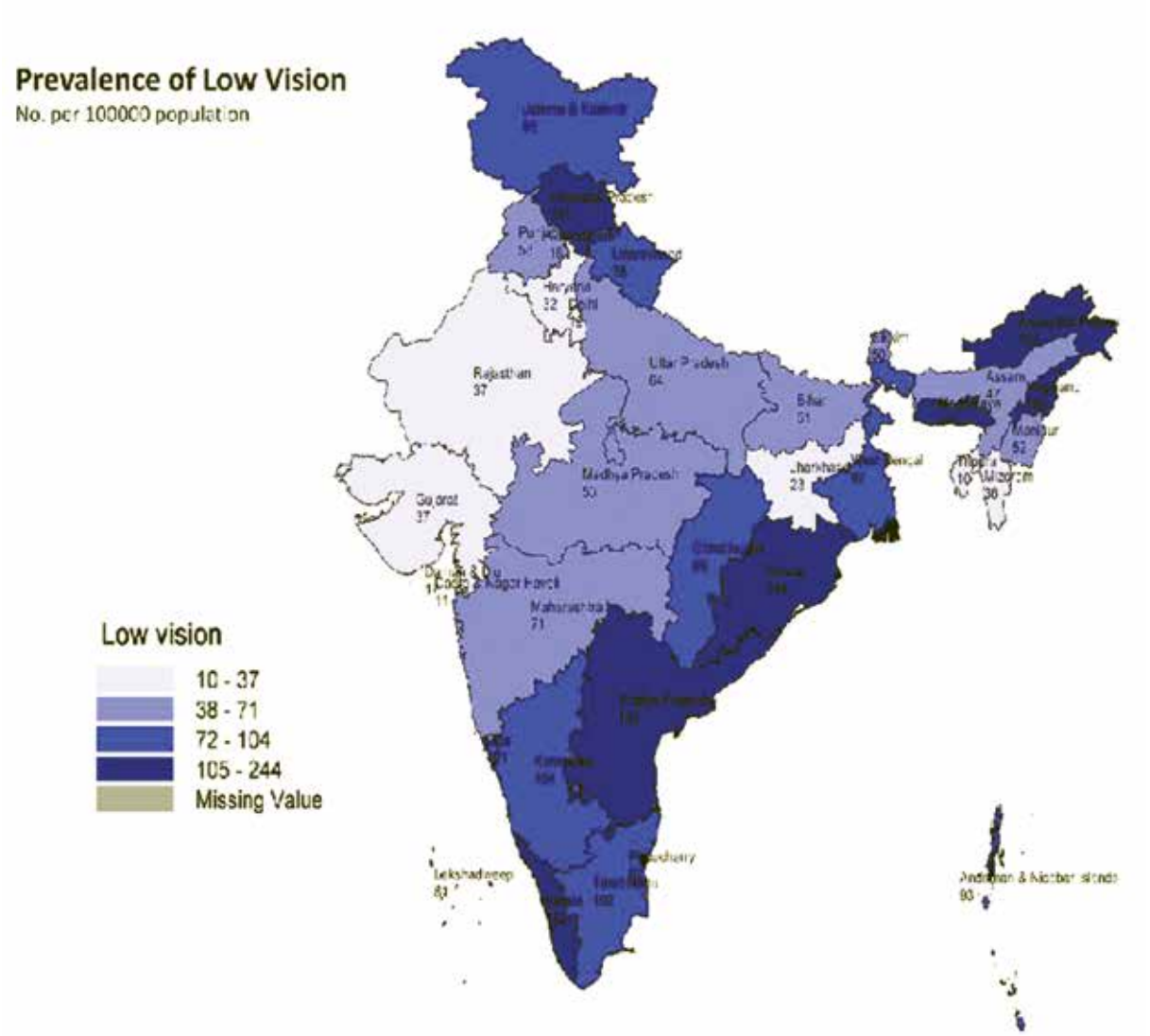
The lowest prevalence is observed in the age group of 0 to 4 years with 32, and 30 cases of blindness and 5 cases each of low vision among the rural and urban inhabitants. While there is a steady rise of blindness with an increase in age, it is not so for low vision. However, in the age group of 55 to 59, there is a marked increase in the prevalence of both blindness and low vision in both rural and urban areas.

Picture 1 and 2 given below provide information about wise prevalence of blindness and low vision in India based on NSSO (2002).

Picture 1: State-wise Prevalence of Blindness as per NSSO 2002



Picture 2: State-wise Prevalence of Low Vision as per NSSO 2002



PREVALENCE OF VISUAL IMPAIRMENT IN INDIA ACCORDING TO CENSUS REPORTS:

As per the Census Report 2001, the highest number of persons with blindness was reported from the State of Uttar Pradesh (18.52 lakhs) followed by Bihar (10 lakhs) and Tamil Nadu (9.64 lakhs) whereas leaving apart the Union Territories, Goa reported smallest number of blindness cases (44 thousand).

As per the Census Report 2011, the highest number of persons with blindness was reported from the State of Uttar Pradesh (7.63 lakhs) followed by Maharashtra (5.74 lakhs) and Bihar (5.49 lakhs) whereas leaving apart the Union Territories, Mizoram reported smallest number of blindness cases (2,035 only). The change in number of persons with blindness from 2001 to 2011 is also due to change in

definition from Census 2001 to Census 2011. One eyed persons were treated as disabled at Census 2001. At the Census 2011, such persons have not been treated as disabled in seeing. Secondly, at the Census 2011, enumeration of disability is also done under multiple disability. Thus if a person is having visual impairment along with other forms of disability, he will be enumerated under multiple disability category.

Table 5: State-wise Population of Blind Persons (disability in seeing) in Rural and Urban Areas as per Census 2011

Area Name	Total/ Rural/ Urban	Age-group	In seeing		
			Persons	**Males**	**Females**
INDIA	Total	Total	50,32,463	26,38,516	23,93,947
INDIA	Rural	Total	35,02,590	18,20,936	16,81,654
INDIA	Urban	Total	15,29,873	8,17,580	7,12,293
JAMMU & KASHMIR	Total	Total	66448	35656	30792
JAMMU & KASHMIR	Rural	Total	50142	27019	23123
JAMMU & KASHMIR	Urban	Total	16306	8637	7669
HIMACHAL PRADESH	Total	Total	26076	13382	12694
HIMACHAL PRADESH	Rural	Total	24140	12291	11849
HIMACHAL PRADESH	Urban	Total	1936	1091	845
PUNJAB	Total	Total	82199	44811	37388
PUNJAB	Rural	Total	55165	29839	25326
PUNJAB	Urban	Total	27034	14972	12062
CHANDIGARH	Total	Total	1774	1078	696
CHANDIGARH	Rural	Total	31	14	17
CHANDIGARH	Urban	Total	1743	1064	679
UTTARAKHAND	Total	Total	29107	14486	14621
UTTARAKHAND	Rural	Total	21483	10341	11142
UTTARAKHAND	Urban	Total	7624	4145	3479
HARYANA	Total	Total	82702	43624	39078
HARYANA	Rural	Total	55737	29219	26518
HARYANA	Urban	Total	26965	14405	12560
NCT OF DELHI	Total	Total	30124	16864	13260
NCT OF DELHI	Rural	Total	792	430	362

NCT OF DELHI	Urban	Total	29332	16434	12898
RAJASTHAN	Total	Total	314618	156044	158574
RAJASTHAN	Rural	Total	238859	116476	122383
RAJASTHAN	Urban	Total	75759	39568	36191
UTTAR PRADESH	Total	Total	763988	407862	356126
UTTAR PRADESH	Rural	Total	579182	307821	271361
UTTAR PRADESH	Urban	Total	184806	100041	84765
BIHAR	Total	Total	549080	297043	252037
BIHAR	Rural	Total	480118	259515	220603
BIHAR	Urban	Total	68962	37528	31434
SIKKIM	Total	Total	2772	1421	1351
SIKKIM	Rural	Total	2484	1271	1213
SIKKIM	Urban	Total	288	150	138
ARUNACHAL PRADESH	Total	Total	5652	2862	2790
ARUNACHAL PRADESH	Rural	Total	4669	2334	2335
ARUNACHAL PRADESH	Urban	Total	983	528	455
NAGALAND	Total	Total	4150	2130	2020
NAGALAND	Rural	Total	3291	1689	1602
NAGALAND	Urban	Total	859	441	418
MANIPUR	Total	Total	18226	9403	8823
MANIPUR	Rural	Total	12461	6458	6003
MANIPUR	Urban	Total	5765	2945	2820
MIZORAM	Total	Total	2035	1087	948
MIZORAM	Rural	Total	1237	669	568
MIZORAM	Urban	Total	798	418	380
TRIPURA	Total	Total	10828	5512	5316
TRIPURA	Rural	Total	7675	3913	3762
TRIPURA	Urban	Total	3153	1599	1554
MEGHALAYA	Total	Total	6980	3494	3486
MEGHALAYA	Rural	Total	6069	3026	3043
MEGHALAYA	Urban	Total	911	468	443

ASSAM	Total	Total	80553	41052	39501
ASSAM	Rural	Total	70574	35952	34622
ASSAM	Urban	Total	9979	5100	4879
WEST BENGAL	Total	Total	424473	223325	201148
WEST BENGAL	Rural	Total	277366	145670	131696
WEST BENGAL	Urban	Total	147107	77655	69452
JHARKHAND	Total	Total	180721	96042	84679
JHARKHAND	Rural	Total	142001	74799	67202
JHARKHAND	Urban	Total	38720	21243	17477
ODISHA	Total	Total	263799	136851	126948
ODISHA	Rural	Total	227522	117590	109932
ODISHA	Urban	Total	36277	19261	17016
CHHATTISGARH	Total	Total	111169	56066	55103
CHHATTISGARH	Rural	Total	88065	43912	44153
CHHATTISGARH	Urban	Total	23104	12154	10950
MADHYA PRADESH	Total	Total	270751	144282	126469
MADHYA PRADESH	Rural	Total	192819	101623	91196
MADHYA PRADESH	Urban	Total	77932	42659	35273
GUJARAT	Total	Total	214150	113617	100533
GUJARAT	Rural	Total	98315	51468	46847
GUJARAT	Urban	Total	115835	62149	53686
DAMAN & DIU	Total	Total	382	222	160
DAMAN & DIU	Rural	Total	146	95	51
DAMAN & DIU	Urban	Total	236	127	109
DADRA & NAGAR HAVELI	Total	Total	429	234	195
DADRA & NAGAR HAVELI	Rural	Total	260	136	124
DADRA & NAGAR HAVELI	Urban	Total	169	98	71
MAHARASHTRA	Total	Total	574052	311835	262217
MAHARASHTRA	Rural	Total	321266	171367	149899
MAHARASHTRA	Urban	Total	252786	140468	112318
ANDHRA PRADESH	Total	Total	398144	198473	199671

ANDHRA PRADESH	Rural	Total	261467	127379	134088
ANDHRA PRADESH	Urban	Total	136677	71094	65583
KARNATAKA	Total	Total	264170	133909	130261
KARNATAKA	Rural	Total	139405	69266	70139
KARNATAKA	Urban	Total	124765	64643	60122
GOA	Total	Total	4964	2350	2614
GOA	Rural	Total	2418	1138	1280
GOA	Urban	Total	2546	1212	1334
LAKSHADWEEP	Total	Total	337	149	188
LAKSHADWEEP	Rural	Total	104	45	59
LAKSHADWEEP	Urban	Total	233	104	129
KERALA	Total	Total	115513	53167	62346
KERALA	Rural	Total	63409	29155	34254
KERALA	Urban	Total	52104	24012	28092
TAMIL NADU	Total	Total	127405	67744	59661
TAMIL NADU	Rural	Total	71650	37833	33817
TAMIL NADU	Urban	Total	55755	29911	25844
PUDUCHERRY	Total	Total	3608	1841	1767
PUDUCHERRY	Rural	Total	1349	672	677
PUDUCHERRY	Urban	Total	2259	1169	1090
ANDAMAN & NICOBAR ISLANDS	Total	Total	1084	598	486
ANDAMAN & NICOBAR ISLANDS	Rural	Total	919	511	408
ANDAMAN & NICOBAR ISLANDS	Urban	Total	165	87	78

Table 6: State-wise Population of Blind Persons(disability in seeing) in Rural and Urban Areas as per Census 2001

India/States/Union Territories/	Residence	Disability in seeing		
		Person	Male	Female
INDIA	Total	10634881	5732338	4902543
INDIA	Rural	7873383	4222717	3650666
INDIA	Urban	2761498	1509621	1251877
JAMMU & KASHMIR	Total	208713	116034	92679
JAMMU & KASHMIR	Rural	152494	83563	68931
JAMMU & KASHMIR	Urban	56219	32471	23748
HIMACHAL PRADESH	Total	64122	34819	29303
HIMACHAL PRADESH	Rural	58132	31163	26969
HIMACHAL PRADESH	Urban	5990	3656	2334
PUNJAB	Total	170853	93153	77700
PUNJAB	Rural	112597	60743	51854
PUNJAB	Urban	58256	32410	25846
CHANDIGARH	Total	8422	5041	3381
CHANDIGARH	Rural	953	620	333
CHANDIGARH	Urban	7469	4421	3048
UTTARANCHAL	Total	85668	46434	39234
UTTARANCHAL	Rural	66804	35336	31468
UTTARANCHAL	Urban	18864	11098	7766
HARYANA	Total	201358	111545	89813
HARYANA	Rural	148286	81300	66986
HARYANA	Urban	53072	30245	22827
DELHI	Total	120712	71342	49370
DELHI	Rural	4925	2867	2058
DELHI	Urban	115787	68475	47312
RAJASTHAN	Total	753962	430589	323373
RAJASTHAN	Rural	591450	336419	255031
RAJASTHAN	Urban	162512	94170	68342
UTTAR PRADESH	Total	1852071	1042383	809688
UTTAR PRADESH	Rural	1445145	808866	636279
UTTAR PRADESH	Urban	406926	233517	173409

BIHAR	Total	1005605	556688	448917
BIHAR	Rural	903016	498654	404362
BIHAR	Urban	102589	58034	44555
SIKKIM	Total	10790	6100	4690
SIKKIM	Rural	9454	5319	4135
SIKKIM	Urban	1336	781	555
ARUNACHAL PRADESH	Total	23079	16283	6796
ARUNACHAL PRADESH	Rural	18329	12630	5699
ARUNACHAL PRADESH	Urban	4750	3653	1097
NAGALAND	Total	9968	5627	4341
NAGALAND	Rural	8209	4544	3665
NAGALAND	Urban	1759	1083	676
MANIPUR	Total	11713	6264	5449
MANIPUR	Rural	8733	4696	4037
MANIPUR	Urban	2980	1568	1412
MIZORAM	Total	6257	3506	2751
MIZORAM	Rural	3770	2089	1681
MIZORAM	Urban	2487	1417	1070
TRIPURA	Total	27505	15629	11876
TRIPURA	Rural	22559	12824	9735
TRIPURA	Urban	4946	2805	2141
MEGHALAYA	Total	13381	7170	6211
MEGHALAYA	Rural	9643	5114	4529
MEGHALAYA	Urban	3738	2056	1682
ASSAM	Total	282056	154136	127920
ASSAM	Rural	244103	132655	111448
ASSAM	Urban	37953	21481	16472
WEST BENGAL	Total	862073	468935	393138
WEST BENGAL	Rural	610221	329861	280360
WEST BENGAL	Urban	251852	139074	112778
JHARKHAND	Total	186216	104147	82069
JHARKHAND	Rural	142109	78292	63817
JHARKHAND	Urban	44107	25855	18252
ORISSA	Total	514104	274151	239953

ORISSA	Rural	435405	230381	205024
ORISSA	Urban	78699	43770	34929
CHHATTISGARH	Total	160131	84047	76084
CHHATTISGARH	Rural	129417	67167	62250
CHHATTISGARH	Urban	30714	16880	13834
MADHYA PRADESH	Total	636214	346567	289647
MADHYA PRADESH	Rural	478225	259729	218496
MADHYA PRADESH	Urban	157989	86838	71151
GUJARAT	Total	494624	273694	220930
GUJARAT	Rural	337141	184883	152258
GUJARAT	Urban	157483	88811	68672
DAMAN & DIU	Total	1898	1069	829
DAMAN & DIU	Rural	1161	730	431
DAMAN & DIU	Urban	737	339	398
DADRA & NAGAR HAVELI	Total	2346	1353	993
DADRA & NAGAR HAVELI	Rural	1860	1054	806
DADRA & NAGAR HAVELI	Urban	486	299	187
MAHARASHTRA	Total	580930	320466	260464
MAHARASHTRA	Rural	375886	201617	174269
MAHARASHTRA	Urban	205044	118849	86195
ANDHRA PRADESH	Total	581587	318730	262857
ANDHRA PRADESH	Rural	435239	235461	199778
ANDHRA PRADESH	Urban	146348	83269	63079
KARNATAKA	Total	440875	241439	199436
KARNATAKA	Rural	304701	164907	139794
KARNATAKA	Urban	136174	76532	59642
GOA	Total	4393	2316	2077
GOA	Rural	2251	1157	1094
GOA	Urban	2142	1159	983
LAKSHADWEEP	Total	603	295	308
LAKSHADWEEP	Rural	369	183	186
LAKSHADWEEP	Urban	234	112	122
KERALA	Total	334622	167352	167270
KERALA	Rural	251284	124846	126438

KERALA	Urban	83338	42506	40832
TAMIL NADU	Total	964063	397227	566836
TAMIL NADU	Rural	553331	219696	333635
TAMIL NADU	Urban	410732	177531	233201
PONDICHERRY	Total	10646	5900	4746
PONDICHERRY	Rural	3898	2037	1861
PONDICHERRY	Urban	6748	3863	2885
ANDAMAN & NICOBAR ISLANDS	Total	3321	1907	1414
ANDAMAN & NICOBAR ISLANDS	Rural	2283	1314	969
ANDAMAN & NICOBAR ISLANDS	Urban	1038	593	445

Picture 3: Percentage of Visual Impairment population to total population of the age group as per Census 2011

Similar to trend provided by NSSO age-wise estimation of visual impairment, Census 2011 also provides evidence that visual impairment is lowest in early age group (0-4) and highest in 80-89 age group. It is also indicative of the fact that preventive efforts have resulted in positive yield, but more has to be done.

Similarly, as regards work opportunity as per census 2011, 62.41% of visually impaired population is still not part of any work force. Only 26.75% of visually impaired population is involved in work related activities as main worker.

The situation is slightly better in urban sector, where 29.60% of visually impaired urban population are main worker, as compared to rural area, where this figure is 25.51%. Details of visually impaired population among main workers, marginal workers, non- workers by type of age group and sex are given below in Table 7.

Table 7: Visually Impaired Population among Main Workers, Marginal Workers, Non-Workers by Type of Age and Sex as per Census 2011

Area Name	Total/Urban/Rural	Age Group	Total Disabled Population			Main Worker			Marginal Worker			Marginal Worker			Non Worker		
									Less than 3 months			3-6 Months					
			Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
INDIA	Total	Total	5033431	2639028	2394403	1346788	1045667	301121	116887	60091	56796	428244	240276	187968	3141512	1292994	1848518
INDIA	Total	0-14	1044348	555599	488749	18444	11277	7167	5152	2716	2436	19141	10308	8833	1001611	531298	470313
INDIA	Total	15-59	2605217	1433200	1172017	1055222	822461	232761	72894	37327	35567	314343	176126	138217	1162758	397286	765472
INDIA	Total	60+	1359385	637136	722249	266490	206951	59539	38400	19787	18613	92223	52414	39809	962272	357984	604288
INDIA	Total	Age Not Stated	24481	13093	11388	6632	4978	1654	441	261	180	2537	1428	1109	14871	6426	8445
INDIA	Rural	Total	3503558	1821448	1682110	893906	674495	219411	103823	51976	51847	354892	195485	159407	2150937	899492	1251445

INDIA	Rural	0-14	733454	INDIA	Rural	15-59	1679630	INDIA	Rural	60+	1074925	INDIA	Rural	Age Not Stated	15549	INDIA	Urban	Total	1529873
INDIA	Rural	0-14	389245	INDIA	Rural	15-59	923487	INDIA	Rural	60+	500518	INDIA	Rural	Age Not Stated	8198	INDIA	Urban	Total	817580
INDIA	Rural	0-14	344209	INDIA	Rural	15-59	756143	INDIA	Rural	60+	574407	INDIA	Rural	Age Not Stated	7351	INDIA	Urban	Total	712293
INDIA	Rural	0-14	12229	INDIA	Rural	15-59	662828	INDIA	Rural	60+	214716	INDIA	Rural	Age Not Stated	4133	INDIA	Urban	Total	452882
INDIA	Rural	0-14	7293	INDIA	Rural	15-59	499728	INDIA	Rural	60+	164521	INDIA	Rural	Age Not Stated	2953	INDIA	Urban	Total	371172
INDIA	Rural	0-14	4936	INDIA	Rural	15-59	163100	INDIA	Rural	60+	50195	INDIA	Rural	Age Not Stated	1180	INDIA	Urban	Total	81710
INDIA	Rural	0-14	4739	INDIA	Rural	15-59	63146	INDIA	Rural	60+	35573	INDIA	Rural	Age Not Stated	365	INDIA	Urban	Total	13064
INDIA	Rural	0-14	2482	INDIA	Rural	15-59	31232	INDIA	Rural	60+	18056	INDIA	Rural	Age Not Stated	206	INDIA	Urban	Total	8115
INDIA	Rural	0-14	2257	INDIA	Rural	15-59	31914	INDIA	Rural	60+	17517	INDIA	Rural	Age Not Stated	159	INDIA	Urban	Total	4949
INDIA	Rural	0-14	12884	INDIA	Rural	15-59	257864	INDIA	Rural	60+	82332	INDIA	Rural	Age Not Stated	1812	INDIA	Urban	Total	73352
INDIA	Rural	0-14	6882	INDIA	Rural	15-59	141338	INDIA	Rural	60+	46254	INDIA	Rural	Age Not Stated	1011	INDIA	Urban	Total	44791
INDIA	Rural	0-14	6002	INDIA	Rural	15-59	116526	INDIA	Rural	60+	36078	INDIA	Rural	Age Not Stated	801	INDIA	Urban	Total	28561
INDIA	Rural	0-14	703602	INDIA	Rural	15-59	695792	INDIA	Rural	60+	742304	INDIA	Rural	Age Not Stated	9239	INDIA	Urban	Total	990575
INDIA	Rural	0-14	372588	INDIA	Rural	15-59	251189	INDIA	Rural	60+	271687	INDIA	Rural	Age Not Stated	4028	INDIA	Urban	Total	393502
INDIA	Rural	0-14	331014	INDIA	Rural	15-59	444603	INDIA	Rural	60+	470617	INDIA	Rural	Age Not Stated	5211	INDIA	Urban	Total	597073
INDIA	Urban	0-14	310894	INDIA	Urban	15-59	925587	INDIA	Urban	60+	284460	INDIA	Urban	Age Not Stated	8932				
INDIA	Urban	0-14	166354	INDIA	Urban	15-59	509713	INDIA	Urban	60+	136618	INDIA	Urban	Age Not Stated	4895				
INDIA	Urban	0-14	144540	INDIA	Urban	15-59	415874	INDIA	Urban	60+	147842	INDIA	Urban	Age Not Stated	4037				
INDIA	Urban	0-14	6215	INDIA	Urban	15-59	392394	INDIA	Urban	60+	51774	INDIA	Urban	Age Not Stated	2499				
INDIA	Urban	0-14	3984	INDIA	Urban	15-59	322733	INDIA	Urban	60+	42430	INDIA	Urban	Age Not Stated	2025				
INDIA	Urban	0-14	2231	INDIA	Urban	15-59	69661	INDIA	Urban	60+	9344	INDIA	Urban	Age Not Stated	474				
INDIA	Urban	0-14	413	INDIA	Urban	15-59	9748	INDIA	Urban	60+	2827	INDIA	Urban	Age Not Stated	76				
INDIA	Urban	0-14	234	INDIA	Urban	15-59	6095	INDIA	Urban	60+	1731	INDIA	Urban	Age Not Stated	55				
INDIA	Urban	0-14	179	INDIA	Urban	15-59	3653	INDIA	Urban	60+	1096	INDIA	Urban	Age Not Stated	21				
INDIA	Urban	0-14	6257	INDIA	Urban	15-59	56479	INDIA	Urban	60+	9891	INDIA	Urban	Age Not Stated	725				
INDIA	Urban	0-14	3426	INDIA	Urban	15-59	34788	INDIA	Urban	60+	6160	INDIA	Urban	Age Not Stated	417				
INDIA	Urban	0-14	2831	INDIA	Urban	15-59	21691	INDIA	Urban	60+	3731	INDIA	Urban	Age Not Stated	308				
INDIA	Urban	0-14	298009	INDIA	Urban	15-59	466966	INDIA	Urban	60+	219968	INDIA	Urban	Age Not Stated	5632				
INDIA	Urban	0-14	158710	INDIA	Urban	15-59	146097	INDIA	Urban	60+	86297	INDIA	Urban	Age Not Stated	2398				
INDIA	Urban	0-14	139299	INDIA	Urban	15-59	320869	INDIA	Urban	60+	133671	INDIA	Urban	Age Not Stated	3234				

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CHAPTER 4
Attitude Towards Visual Impairment

Swati Sanyal

Attitudes hold the key to effective mainstreaming and empowerment of persons with visual impairment. The present chapter brings out the connotational aspects of these attitudes. It makes an extensive review of different forms of attitudes to visual impairment, based on reliable research studies. Thus, it covers attitudes of parents and family members, of teachers and peers, of the community at large and the visually impaired persons themselves. In conclusion, the chapter discusses ways and means for bringing about desired changes in attitudes.

Attitudes can be one of the most challenging barriers to social participation experienced by persons with disabilities. Attitude of people with or without disabilities can have positive or negative implications for persons with disabilities in their pursuit of participation in communities. As Bedini (1992) stated, "People with disabilities historically have experienced discrimination and devaluation based solely on being different from the non-disabled public". Bedini (2000) further touched on the implications of 'differentness', indicating that persons who are different are often avoided or rejected on the basis of societal stigmatization.

WHAT IS ATTITUDE?

An attitude is a relatively enduring organization of beliefs around an object or situation predisposing one to respond in some preferential manner. Attitudes can be defined as an affective feeling of liking or disliking an object (which can be anything) that has an influence on behaviour.

i. An attitude is usually considered as consisting of three basic components:-

ii. An emotional component: how the object, person, issue or event makes one feel.

iii. A cognitive component: an individual's thoughts and beliefs about the subject.

iv. A behavioural component: how the attitude influences one's behaviour.

Taking a slightly different perspective, Don Forsyth in his text book, (Our

Social World), states that an attitude is not a feeling, cognition, or a form of behaviour, instead, attitudes combine all three components in an "integrated affect-cognition-behaviour system". If one component changes, then it influences the entire attitude structure.

Attitudes can also be explicit and implicit. Explicit attitudes are those that we are consciously aware of and that clearly influence our behaviours and beliefs. Implicit attitudes are unconscious but still have an effect on our beliefs and behaviours.

ATTITUDE FORMATION

One important question that psychologists often deal with is 'how attitudes are formed?' In general, attitudes are learned through one's own experiences and through interaction with others. There are specific conditions that lead to the learning of specific attitudes. Early in life, a child's attitudes are shaped primarily by the parents. During the period between ages 12 and 30-- the critical period-- a person's attitudes take final form.

There are a number of different factors that can influence how and why attitudes are formed:

- ***Experience*-** Attitudes form directly as a result of experience. They may emerge due to direct personal experience or they may result from observation.
- **Social factors-** Social roles and social norms can have a strong influence on attitudes. Very often, we learn attitudes through the norms of our group or culture. Social norms relate to how people are expected to behave in a particular context. Over time, these social norms become part of our social cognition, in the form of attitudes. The influence of reference groups is noticeable especially during the adolescence in attitude formation.
- ***Media related influences*–** The audio-visual media and the internet are very powerful sources of information that lead to attitude formation. These sources strengthen the cognitive and affective components of attitudes, and subsequently may also affect the behavioural component.
- ***Education*-** Of all the factors involved in attitude formation, education consistently stands out. It has as strong an influence on the individual as parental influences and religious affiliation.

WHY ATTITUDES MATTER?

Attitudes are seen to play a key role in achieving equality (or failure to do

so) because they may translate into behaviour towards individuals and groups in society which have negative consequences (such as discrimination and hatred). Attitudes are linked to, but are not the same as knowledge. It is often presumed that negative attitudes and behaviour come from people not having adequate knowledge. Knowledge and attitudes are important environmental factors, affecting all areas of service provision and social life. Raising awareness and challenging negative attitudes are often the first step towards creating more accessible environments for persons with disabilities. Negative imagery and language, stereotypes, and stigma--with deep historic roots–persist for people with disabilities around the world.

Negative attitudes towards disability can result in negative treatment of people with disabilities, for example:

- School Principal denying admission to children with disabilities.
- Children bullying other children with disabilities.
- Employers discriminating against people with disabilities.

Negative attitudes and behaviours thus have an adverse effect on children and adults with disabilities leading to low self esteem and reduced participation. It is, therefore, important to understand various attitudes held towards persons with disabilities, for surely without such understanding little can be done about the problems they create.

MYTHS AND STEREOTYPES ABOUT THE VISUALLY IMPAIRED

Historically, ‘disability’ has been used either as a synonym for ‘inability’ or as a reference to legally imposed limitations on rights and powers. Indeed, as late as 2006, the Oxford English Dictionary recognized only these two senses of the term (Boorse,2010). People with disabilities are perceived to be globally helpless based on their need for assistance with some facets of daily life (Wright, 1983). Stigma, discrimination, and imputations of difference and inferiority are all parts of the social experience of disability. Disability becomes a ‘master status’, preventing people from playing any adult social role and eclipsing sex, race, age, occupation, or family (Goffman, 1963; Gliedman and Roth, 1980). Many people with both congenital and acquired disabilities have said that they don’t want cures but do want societal change (Johanson, 2003; Shakespeare, 2006).

Disability confers stigmatized status on all disabled people, as the physical characteristic becomes a master trait swamping personal differences. Thus

disability is socially imposed on physically impaired people through restrictions, ranging from individual prejudice to institutional discrimination, from inaccessible public buildings to unusable transport systems, from segregated education to excluding work arrangements. Further, the consequences of such restrictions do not simply and randomly impact individuals but systematically disabled people as a group who experience it as discrimination institutionalized throughout society (Oliver,1990).

Disability is equated with helplessness, dependency and incompetence at all social interactions, and disabled people are subjected to isolation, lack of social support and social networks, low social esteem and a concomitant feeling of powerlessness. The able-bodied community uses prototypical portrayals of disability for legitimizing the social exclusion of the disabled people (Reddy & Anuradha, 2014).

Disability has been recognized as a human rights issue in the international arena, with the United Nations Convention on the Rights of Persons With Disabilities, focussing attention on the needs of disabled people globally (Ghosh, 2012).

Persons with disabilities are diverse and heterogeneous. Stereotypical views held towards different groups are also varied. In the present chapter, myths and stereotypes about the visually impaired will be discussed at length.

Recent research specifically on attitudes toward blindness within the sighted population is limited; however, some early studies provide a basis for future attitude research with the sighted population. Marsh and Friedman (1972) conducted an intervention study with a sighted sample in which they attempted to improve sighted people's perceptions of blindness. They suggested that three major stereotypes about blind people are held by the sighted population: that blind people should be given sympathy and pity, that blind people are either incapable or possess super-human abilities in their remaining senses, and that all blind people share similar interests.

Many have studied the sociological origins of misconceptions and that are held regarding the blind. (Lowenfeld, 1975; Lukoff et al., 1972). Many of the stereotypic misconceptions have a depressing effect on the self-esteem of blind persons especially when these attitudes are held by parents, teachers, and even the blind persons themselves.

Based on various studies, some of the **common myths and stereotypes** about the visually impaired can be summarized as follows:

- All blind persons are good musicians.
- All blind persons have wonderful memories.
- The blind have a sixth sense.
- People who are blind live in a world of darkness.
- People who are blind are a helpless group, groping, stumbling and unable to find their way.
- People who are blind are useless and non-productive.
- The blind are compensated for their lack of sight by sharpening of other faculties.
- The blind are being punished for past sins.
- The blind are to be feared and avoided.
- The blind are maladjusted.
- The blind are highly religious persons.
- The blind are associated with mystery, with magic, and with supernatural powers.

Dr. Kenneth Jernigan (1973, 1999) a leader in the National Federation of the Blind in the U.S. writes that the history of mistreatment of blind people is often the only history told. History tells that blind people were totally powerless and helpless, often abused and killed and then later patronized and kept in institutions. But history fails to tell the many accomplishments of blind people, focussing instead on negative things done to blind people rather than positive things done by blind people. Most of the historians who have recorded positive information about blind people were themselves blind.

COMMUNITY ATTITUDES

Societal attitudes towards the blind have changed with time. Early Greeks destroyed crippled members because of their ideal of bodily perfection. The Athenians allowed their crippled children to die of cold and neglect, while the Spartans took them to hilltops and killed them. With the spread of Christianity, the right to life was recognized, but blind and other disabled persons were still considered helpless. The humanistic philosophy generated by the Renaissance exerted a significant influence on social attitudes towards the blind. The advent of Braille was a milestone in the education of the blind which resulted in a positive change in attitudes towards them.

Attitudes of society, families and persons with disabilities themselves are, many times, responsible for impairments being viewed as disabilities. Research in our country has consistently found substantial social marginalization of people with disabilities. At the same time, in India we do not find any tangible instances of inhuman practice of exposure and destruction/annihilation, which characterized the Greek/Spartan attitude towards the disabled. It has been a part of India's cultural heritage to help the poor and the needy. Considerable attention and care have been shown to the disabled by various ancient rulers but, they could not get their rightful place in society as contributing citizens. More often the disabled were passive recipients of charity. So it can be said that while disabled were treated with pity and compassion in ancient India, their rights to social equality were not recognized. With the passage of time, the scenario has changed quite a bit, yet, covert attitudes of the community have not changed to the desired levels.

Several factors have been shown to play a role in the formation of attitudes of the non-disabled population towards disability. Gender differences, for example, represent one influential factor. Research suggests that adolescent girls tend to have more positive attitudes toward people with disabilities than do adolescent boys (Bossaert, Colpin, Pijl, & Petry, 2011). Other research indicates that undergraduate males have more negative implicit attitudes toward disability than do undergraduate women (Chen, Ma, & Zhang, 2011). Seo and Chen (2009) found that women indicated more positive attitudes toward disability than men, suggesting that gender may be one factor for predicting attitudes. Another factor contributing to attitudes towards disability is the amount of previous exposure to a person with a disability. According to Seo and Chen (2009), higher levels of previous exposure to people with disabilities were shown to predict more positive attitudes toward people with disabilities.

For the purpose of the study, the **major community attitudes** will be discussed here under different heads, though there is a considerable overlap amongst them:

Attitude of Isolation

There are people in the society who would consider blind persons as a separate community. Twersky (1955) wrote "It must be stated at the outset, obvious though it may be, that the basic attitude of the general public toward the blind is, and has long been if not always, that the blind form a class, an element apart, that a person without sight, regardless of whether born so or when the loss occurred and regardless of any other factor, is assumed to have stereotyped characteristics assigned to the blind as a class."

While the above statement is almost sixty years old, nothing has much changed as regards the stereotyped generalization that is done to the blind as a group. The myth and stereotyped ideas about blindness influence the community attitudes. Very often, we would see a blind person behaving in a certain way and conclude that all persons who are blind will behave in the same manner. This is the source of all the familiar stereotypes of the blind–the blind musician or the blind beggar soliciting alms.

Attitude of Being Helpless, Inferior and Useless

The blind person is regarded as seriously disabled, handicapped and almost helpless. From very early age, children learn about the 'poor, helpless blind man'. They read poems and stories about poor blind men. This attitude of society was expressed through the following words of Bretz (1940): "There is amusement, too, when a new acquaintance on going to the china closet exclaims that the dishes are clean. Did she fancy that I ate off dirty plates and out of unwashed cups? Funny idea!"

Pity is also a widely prevalent attitude. It implies that one, who shows pity, considers himself superior to the blind person and treats the blind as an object of charity. This makes the blind person feel inferior. "We must help the poor blind" is an instinctive reaction of many sighted people when they encounter a blind person. To satisfy their conscience, they would give him money, help or service, but all out of feelings of pity and condescension.

Attitude of Over-Solicitousness

This attitude is generally shown towards the disabled members in the family. In most cases, it is a compensatory reaction to disguise the unconscious feelings of non-acceptance.

Attitude Based on Fear and Guilt Feelings

While pity and compassion are most prevalent in the society, there are some people who experience feelings of fear and guilt in associating with blind persons. Some even feel that they are not competent enough to deal with blind persons. Others unconsciously, fear blindness just as they would fear darkness. Guilt feelings are more prevalent among parents as they often blame themselves for their child's blindness.

Attitudes Based on Religious Concepts and Superstitions

Many would explain blindness as retribution of sins committed by parents or the blind person himself. Qualitative research into attitudes towards persons

with disabilities in India finds that households generally believe that disability is due to sins of disabled people or their parents. A research conducted in urban and rural Andhra Pradesh in the early 2000s asked people about whether a disability was a punishment or curse of God. Around 40 percent of respondents agreed that it was. A similar question was asked in rural Uttar Pradesh and Tamil Nadu. In both households with and without a disabled member, around half the respondents believed that disability was always a curse of God. The survey also asked the same question by major disability categories and both visual and mental disabilities were viewed as more likely to be due to a curse of God.

Attitude towards Participation in the Community

A survey of just over 1400 households with and without disabled members was conducted in Uttar Pradesh and Tamil Nadu to study their attitudes to participation of persons with disabilities in education, employment and marriage. With respect to education, for those with vision and speech/hearing disabilities, only between a fifth and a quarter of respondents thought they could always/ almost always attend regular schools.

A remarkable shift in attitude was seen when a large number of people endorsed that persons with disabilities should always be allowed to participate in community activities and almost as strong agreement was shown that they should be included in local political and group activities. Interestingly, deeper qualitative work with the same communities found that the initial positive responses weakened to the extent that they admitted that the presence of disabled persons is inauspicious for certain celebrations such as weddings.

Attitude of Indifference

Many people in the community are indifferent to the very existence of blind people. They feel that this condition cannot happen to them, so there is no need to think and provide for the persons with blindness.

Advani (1997) had analyzed the cause of apathy towards the disabled. He observed that in India, charity outlook and emphasis on medical aspects of rehabilitation lacked the political will to encourage the empowerment of disabled people. There was little direct commitment towards bringing about changes at the social or political levels. He therefore commented that even though the first Special Employment Exchange for the Physically Handicapped was set up in Bombay in 1959, and 3% of 'identified jobs' in C and D categories in the government and the public sector were reserved for the disabled way back in 1977, very few people have benefited from it.

Alur (2001), in her study found that disability in India is not seen as something 'normal' or 'natural', rather it is seen as an 'evil eye'. Guilt, stigma and different kinds of fears tend to be paramount in such families. She further concludes that "The contradiction here was that Indian society, although integrating in accepting and valuing diversity in so many ways, has a social role construct of disability which is negative, discriminatory and exclusionary".

PARENTAL ATTITUDES AND ATTITUDES OF SIBLINGS

The attitudes of parents can have a profound effect on the social and educational integration of visually impaired children. It makes great difference to these children whether the attitudes and actions of parents reflect considerations for their real needs or are merely prompted by pity or monetary limitations (Venkat Lakshmi et al. 2009).

Fazalbhoy R. (1955) in an article "The Right Attitude Towards Blind Children" narrates how the parents feel shocked and sorrowed when they discover that their child is blind. They react in different ways as can be seen from the two incidents that the author has described. "After many years of married life, a certain couple eagerly awaited the birth of their first baby. The child was born-- a beautiful baby, but with eyes which would never open. The doctor broke the news gently to the father and left him to tell his wife that the child was born blind and that there was no hope of restoring vision. For a moment the wife was silent. Then she said ' he has been sent to the right parents. God knew how much we needed the baby, and how much he will need us. Let us give him all we can'. What a wonderful attitude of faith."

The second story is rather grim although it had a happy ending. It took place in a village in Northern Rhodesia. A certain chief, returning to his village after a day's hunting, heard strange sounds in a bush nearby. On peering through the bushes, he saw that a woman from his own village was trying to kill her little blind baby. The woman begged for mercy and told him that she is unable to spare food for the child who is as good as dead. This shows a very negative attitude towards a blind child which may have arisen from frustration of having a disabled baby. The story does not end here. The same boy learnt many things in the small school for the blind started by the chief and became a useful member of his rural community.

These are some of the typical initial reactions of parents whilst they are still trying to adjust themselves to their child's condition. If we reflect deep into these reactions, we would understand that the parents have no way of preparing themselves for blindness when it occurs. If the blind family member is a child, the

parents need help to accept the fact that the he/she is first and above all a child with the same needs for love, discipline and training that parents would render to a sighted child.

Again, parents like others in the community, have preconceived notions about blindness which unfortunately are mostly quite negative. Like others, they also think the loss of sight makes the child helpless and dependent. Also, the commonly accepted meaning of the word 'blind' in our culture reinforces negative attitudes. So when parents suddenly find themselves in a position where they have to identify their child and his future with blindness, they may react to it by being deeply disturbed.

Secondly, all parents expect their child to be able-bodied. It is natural that they will feel frustrated by the birth of a blind baby. Many parents feel that blindness of their child is a punishment imposed upon them and are ashamed of their blind offspring. With this background, when we analyse the attitudes of the parents towards their blind child, we find that quite naturally the attitudes oscillate between over-indulgence and expressions of rejection.

According to Sommers (1944), there are five distinct types of parental attitudes:

1. ACCEPTANCE OF THE CHILD AND HIS HANDICAP

This is the most desirable form of parental adjustment. Accepting parents give special opportunities to their child. Their child takes his full place in the family with all privileges and obligations as other children.

2. DENIAL

This is an attitude shown by certain parents who deny that the child's blindness has any effect on their attitude towards their child or on the child himself. They make every effort to prove that their blind child is 'just like other children'. To prove this point to themselves and others, they would often have unrealistic expectations from the child. They would deny any limitation of blindness on the child and believe that the child is perfect. This relieves them from any guilt feeling due to their child's blindness. This attitude is positive to the extent that the child gets opportunities to develop himself but if the expectations of parents are too high or unrealistic, it may affect the child both physically and mentally.

3. OVER PROTECTIVENESS

Some parents put too much stress on their child's impairment and forget that their child is primarily a child out of pity and emotional pressure, they do everything for their child making him practically inactive and dependent. The root

cause of such attitude often lies in the fact that these parents hold themselves guilty for the child's condition and try to compensate for that by showing all possible care. Quite often, a desire to keep the child dependent is involved which has its cause in the mother's need for a love object rather than in actual needs of the child himself. Although these parents think themselves to be most loving, in reality, they do more harm to their child than good by retarding physical, mental, emotional and social development of their child through overprotection.

4. DISGUISED REJECTION

Some parents who actually do not have positive attitudes towards their child, try to cover up by behaving in an over-solicitous manner, yet at other times they show hostility towards the child and other blind people quite noticeably.

5. OPEN REJECTION

This attitude shows itself in undisguised hostility and neglect. According to Sommers, parents having such attitude openly belittle their child and show no affection for him. They are aware of their hostile feelings but blame other persons or unfavourable circumstances in defence of their negative behaviour. As a result, the blind child may lack feelings of belonging and security and grows up as an unhappy person.

Sommers's study is widely quoted. Though the study was conducted in 1944, it is still relevant. Similar attitudes are seen in a study conducted by Bishop and Rhind in 2011 on Barriers and Enablers for Visually Impaired Students at a UK higher education institution. Something that characterized the students who were interviewed was the support they received from their parents.

"Mum and dad are both great because they both encourage me and tell me it's okay and it's a really good supportive network" (participant 2).

The attitude of acceptance and care by the parents was also echoed by participant 8: " I got my mum to drop me off and people took me into the halls and stuff like that and she made it clear with the contacts who were there on freshers' week knew that I was visually impaired so they kind of..... you know..... tried to help me."

Some participants highlighted how the parents' attitude could be disabling. For instance, one participant discussed how the determination of her parents to ensure that she was 'normal' and independent created problems, such as not engaging with support services.

Studies have shown that there are differences among parents by gender, by

education and professional status, by cultural background, by familiarity with a handicapped person and by stimulus.

In a family, the attitudes of the children towards their disabled siblings are no less important. The siblings of a child with disability also experience stress. They could feel that they are assigned more responsibility and receive less attention. While all siblings influence one another, if one of the siblings has a disability, it will have various effects especially on the non-disabled sibling's stress level. Their attitudes towards the sibling with disability may be that of resentment. The family stress, inadequate parental attention, extra responsibilities and difficulties in social relations may lead to higher stress levels. Apart from the stress levels, the attitudes of siblings are also influenced by various variables. These are age, age interval between siblings, gender, birth order and educational level of non disabled siblings. Grossman (1972) and Hannah and Midlarsky (1987) reported that in small families, siblings have more problems and feel more pressure to fulfil parental aspirations than in larger families.

First born females usually had a greater responsibility for the care of siblings either a first born male or a later born female. As a result, older sisters were most adversely affected by the presence of children with disabilities (Fowle,1968, cited in Lobato,1983).

ATTITUDES OF THE VISUALLY IMPAIRED TOWARDS THEMSELVES

For the groups of individuals who are blind, it is surmised that the world view, beliefs, and stereotypes that these individuals hold about the condition of blindness (i.e., their attitudes about blindness), may impact their self-esteem, motivation, and engagement in their rehabilitation. People with disabilities may have to face low self-confidence as a result of attitudes held by people in society. These negative attitudes include views that disabled people are lacking, flawed or incomplete (Rousso, 1984).

Misconceptions about blindness can be harmful to the blind persons. In his book, Freedom for the Blind: The Secret is Empowerment, Omvig (2002) discusses the importance of having appropriate expectations as a blind person. He states that a blind person who has not been trained may buy into the societal beliefs that being blind produces severe limitations in his or her life and that these limitations cannot be overcome. According to Omvig, these low expectations are detrimental to the blind person and can prevent him or her from experiencing a healthy, well integrated life.

Attitudes about self resulting from one's group identity have a significant and meaningful impact on how youth engage in life activities. As with race, gender, and a host of other characteristics, the way in which an individual feels about himself or herself in relation to those characteristics has been shown to produce a major impact on how he or she approaches life. Said another way, holding negative attitudes or misconceptions about a population with which one personally identifies shapes the hopes, aspirations, and expectations one has for oneself (Bell, 2010).

Most of the studies related to attitudes towards disability deal with the attitudes of non-disabled persons. Yet, it is equally relevant to find out how disabled persons feel about their own disability. There are various types of reactions shown towards disability by the disabled persons themselves, which are dependent on various individual factors like age at onset of disability, degree of disability, cause of disability and also the person's home environment. While a late-age blind person can equate blindness as dying, a person like Jernigan can go on to say that 'blindness is only a characteristic. It is nothing more or less than that'. It would be therefore meaningless to try to generalize the attitudes of visually impaired persons towards themselves. In an article published in the souvenir of the Blind Relief Association Mittal (1971) classified some of the **attitudes of visually impaired persons towards blindness** under the following categories:

BLINDNESS, A KIND OF DYING

According to this attitude, blindness is considered as the end of life. This attitude is commonly held by late-age blind persons. Louis Cholden, a psychiatrist wrote "sighted man dies and after training and guidance the blind man gradually emerges." Father Carroll in his book "Blindness: What It Is And What It Does", has stated that blindness imposes 20 losses on a person and each loss is equivalent to death. This type of attitude is based on disappointment and is applicable to the gradual or sudden loss of vision. A newly blinded person while struggling to adjust with this severe change in his life, often can have this type of attitude towards his disability. The attitude may again change with time.

Marks (2014) writes in Braille Monitor "Blindness took me by surprise. At first I hated it, thinking blindness to be a tragedy beyond measures. I internalized all the worst stereotypes, going through all the stages of victimhood: shame, using the victimhood to victimize others, and anger." At the same time it is not difficult to come out of this initial trauma as Marks further says, "then, in part because life taught me I was still the same person blind or sighted, I realized my main barrier wasn't blindness itself. Rather, nearly all the barriers I faced were of my own

creation through what I thought blindness meant. Once I realized that all I had to do was to reject the stereotypes and to redefine blindness in ordinary ways, life got a lot better."

TOTAL SURRENDER

A few blind people feel that since society is responsible for all their problems and hardships, they have a right to demand privileges from the society no matter whether they have worked for it or not. These are the people who have a strong temptation to surrender completely and look for opportunities to take help from other individuals and organizations. Too much dependence on others gives rise to this most unfortunate attitude.

BLINDNESS -A CHARACTERISTIC, NOT A HANDICAP

This viewpoint is a product of 20th century. It came to light after 1940 in America and was popularized by blind activists as a protest against the extreme viewpoint of total loss. Some very successful blind persons like Kenneth Jernigan had advocated this point of view. Jernigan wrote in Braille Monitor in 1995: 'No one is likely to disagree with me if I say that blindness, first of all, is a characteristic..... when we understand the nature of blindness as a characteristic-- a normal characteristic like hundreds of others with which each of us must live—we shall better understand the real need to be met by services to the blind, as well as the false needs which should not be met.'

In his article, Dr. Vaughan, a scholar in disability studies says, "Why not work on changing the connotations of what it means to be blind to challenge old understanding with new insights about blindness? Just as black became beautiful, blind is no longer a symbol of shame. Blindness is a part of who a blind person is."

BLIND SPEAKING FOR THE BLIND

This attitude is marked by a strong urge for self-representation and self-advocacy among the blind and other categories of persons with disabilities. Coming to the fore with much greater emphasis since 1970s and 80s, this response forms the basis of the emergence of strong blind persons' organizations (BPOs) and disabled persons' organizations (DPOs) nationally and globally. Blind persons assert that they are in an ideal position to decide what is best for them, since they are the end-users. The existence of individual differences among the blind is recognized, yet the stakes are common in striving for objectives like equality of opportunity and full participation as also combating discrimination. Hence, the expressions like: 'We, the blind, want' or 'We, the blind, believe'. The attitude finds recognition in the

U.N. Convention on the Rights of Persons With Disabilities (2006). Article 4 3 of the Convention calls upon States Parties to closely consult with and actively involve persons with disabilities and their organizations in the development and implementation of legislations and policies to implement the Convention and in other decision-making processes concerning issues relating to them.

ATTITUDES RELATED TO SELF-IDENTITY

In the study conducted by Bishop & Rhind on Barriers and Enablers for Visually Impaired Students at a UK Higher Education Institution, the interviewees, all visually impaired college students, projected a strong and very positive self-identity that was clearly completely independent of their disability; their impairment by no means defined them. This was implied in one of the interviewee's unwillingness to disclose his disability: 'I did not want to be labelled with that idea that you know, something is wrong' (participant 5). Conversely, participant no.4 preferred that the people should know about his disability. To quote him 'I personally would prefer it if it was known just because that way I do not have to explain it'.

When asked most of the participants reported an amount of improvement in other functions including improved hearing and memory as a result of their visual impairment.

So, we may say that many visually impaired persons may possess positive self-esteem which actually is very important to change the societal attitudes towards the visually impaired.

The more accepting persons with disabilities are of their disability, intertwined with positive and acceptance by professionals providing services for them, the more positive the overall support & service provision (Joines, Lovett & Goodwin, 1989).

ATTITUDE OF TEACHERS AND PEER GROUPS

Studies have shown that attitudes and expectations of teachers have a major impact on the students' educational outcomes, especially in an inclusive classroom. This is of particular concern where teachers hold less than positive attitudes towards individuals with a disability. Some teachers believe that children with disability will need more individualized attention and this is detrimental to other students. Teachers' attitudes are additionally influenced by the level of disability. Center and Ward (1987) found that while the majority of teachers expressed a generalized agreement with the policy of inclusion, when asked specifically about their own willingness to include students with particular disabilities within their classrooms, they were only willing to accept the inclusion of students with mild physical disabilities. Bender et al. (1995) found that teachers with more negative

attitudes towards inclusion made much less use of instructional strategies.

The research literature on teachers' attitudes towards disability suggests that negative attitudes "lead to low expectations of persons with disability" (Forlin et al., 1999) which in turn could lead to reduced learning opportunities, beginning a cycle of impaired performance and further lowered expectations, both by the teachers and the students. Consequently, Trait and Purdie (2000) stressed that pre-service teacher-education should attach due importance to the development of positive attitudes to disability among trainee-teachers.

Hazzard (1983) examined the development of attitudes about disabilities in young children along with factors that influence resultant attitudes. Data brought out by a study conducted by Hazzard (1983) demonstrated that children were more accepting of other children with disabilities in school activities (e.g., at lunch) than in more intimate, personal friendship activities (e.g., at sleepovers). Children and older youth having disabilities are very sensitive to peer interactions and quickly pick up on reactions that peers have toward their disability. If they lack access to positive role models or mentors, it is possible that self-confidence and self-assurance may erode, and their disability may become something that is shameful or negative (Bell, 2010). It is therefore important to identify these negative attitudes and to provide intervention that target negative associations with the disability.

Hergenrather and Rhodes (2007) found that the social context or closeness of a relationship (e.g. work relationship, dating relationship, or marriage relationship) with a disabled person impacts attitudes held by non-disabled undergraduates. Students were asked to imagine being in a work relationship with a person with a disability and to describe how comfortable they would be in such a relationship. Next, students were asked to imagine being in a dating relationship with a person with disability and to describe their comfort level with this type of relationship. The same sequence was repeated with marriage relationship imagery. Authors of the study found that the closer the relationship imagined by the students (with marriage being the closest possible relationship), the more negative their attitudes toward disability became. In other words, the closer the relationship imagined with a person with disability, the more uncomfortable/unwilling participants became about entering into such a relationship. It is apparent that attitudes such as these can have a negative impact on people with disabilities.

ATTITUDE MODIFICATION

There are certain psychological processes which can bring about attitude change. The most common and long standing assumption is that learning drives attitude change. The acquisition of propositional information about an attitudinal

object (propositional learning) and associative learning both are the critical determinants of any observed change in evaluation.

The attitudes of non-disabled are proving to be a major barrier in the social integration of persons with disabilities which need to be changed. In order to harness the great potential of persons with disabilities, it is essential that prejudices and myths concerning disability are eradicated.

Research demonstrates that attitudes and misconceptions towards disability can be changed. Hunt and Hunt (2004) used an educational intervention to test the malleability of students' attitudes toward disability. Participants consisted of undergraduate business students divided into two intervention groups in which a presentation about disabilities was given. The first group completed a pre and post-test of attitudes. The second group completed only the attitude post-test. One control group completed the pre and post-tests without hearing the presentation, and a second control group completed only a post-test. Results indicated that by increasing knowledge about disability, undergraduate students' attitudes can be significantly changed in a positive way. These results support the notion that societal attitudes are originally learned from misconceptions about disability in general.

Singh (2010) in his article on changing attitude has mentioned concrete signs of attitude change in Indian society based on acquisition of information. According to him, spreading of positive messages through awareness camps by professionals and persons with disabilities have brought perceptible change in the attitude towards disability.

A study was designed by Miller (2010) to assess the attitudes of medical school faculty towards persons with disabilities. The study showed that enhancing empathy can result in both attitudinal and behavioral changes. Therefore, teaching all professionals how to maximize empathy may improve their attitudes toward individuals with disabilities.

In his article titled "Approaches to Blindness", Mittal (1971) suggests ways and means to change attitudes towards blindness:

"As the first step towards right attitude towards blindness, it must be recognized that the blind have a place in the world and are capable of making a contribution to it just as the seeing people have. Secondly, it must be made unmistakably clear that the blind are not different, that they are not eternally dejected and sorrowful. Rightly does Professor Villey emphasize in consideration of the blind, the world should lay stress on what they possess rather than what they lack. Once the seeing world has really convinced itself of these facts, it will have very

little difficulty in assimilating fellow members of the community who cannot see. All else will follow naturally."

Many eminent persons with visual impairment also contribute towards changing the social attitude through their own achievements and encourage others to do likewise. Bacon states "As blind people we must continue the important work. We must continue to advocate and organize. It is our duty to change the social stigmas attached to being blind. We must be the ones to light the fire from within those who don't know they have the fire now."

Changing the social attitudes towards blindness even among persons with blindness themselves also demands attention. An important step could be for the media, persons with disabilities, social activists, and NGO's to place the experiences and success stories of persons with disabilities especially with blindness in public domain.

Even though various factors affect the process of attitude modification and the process is at times quite slow, yet, we must admit that the change process has begun. We may welcome this change by quoting Cesar Chavez, a civil rights activist: "Once social change begins, it cannot be reversed. You cannot un-educate the person who has learned to read. You cannot humiliate the person who feels pride. You cannot oppress the people who are not afraid any more." Let us all now strive to continue taking this process forward, so that the blind find their rightful place in society.

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CHAPTER 5
Psychological Implications of Visual Impairment

Anita Julka

In the paragraphs that follow, psychological aspects of the visual impairment are discussed by highlighting the concept of adjustment, factors affecting adjustment to visual impairment, losses and limitations associated with visual impairment, and effect of visual impairment on growth and development.

All Individuals need to remain healthy and happy to be productive. A person who is visually impaired is no different. S/he thinks like all other individuals but may face constant challenge of psychological adjustment to her/his impairment and to society. One cannot say that every person with blindness or low vision is maladjusted or unhappy as the heterogeneity of eye condition and associated psychological, social and economic conditions is vast. Persons with visual impairment may have short sightedness, long sightedness or low vision and often suffer stigmatization. Further, differences in education, family life, experiences and support systems affect the psychological adjustment of the person with visual impairment. It is important to know that psychological adjustment and the self concept of a person are most significantly affected by the attitudes of others.

Blindness can be a devastating physical condition with deep emotional and economic implications. The consequences affect not only the individual but also the family and the community (Bakare, 2011). Abang (2002) adds further that the loss of vision after illness or trauma causes major changes in life style and habits of the blind person, which may result in problems in psychological adjustment.

CONCEPT OF ADJUSTMENT

Adjustment is defined as the process of responding to life's demand and stresses (Tuttle, 1987) and has the following seven stages (Tuttle and Tuttle, 1996):

1. Trauma, Physical or Social--Trauma follows the revelation that one is losing sight and may not be able to see.
2. Shock and Denial--According to Tuttle and Tuttle,(1996) "three factors

that... influence the intensity and severity of the shock: 1) the significance of the loss to the individual, 2) the suddenness or unexpectedness of the event, and 3) the degree of visual loss."

3. Mourning and Withdrawal--The person may indulge in self-pity in this stage.
4. Succumbing and Depression--The idea that one may not be able to see like others leads to depression which can become severe in a person requiring professional help.
5. Reassessment and Reaffirmation--This is a reflection stage where the person may realize the meaning of living a life with visual impairment and purpose of living.
6. Coping and Mobilization--The person gains information and develops skills to cope with the condition of visual impairment.
7. Self-Acceptance and Self-Esteem--The person will move towards accepting the condition and moving forward.

Each stage given above does not have a time-frame indicating how long a person will stay in this stage before progressing to the next one. However, support of the family and community members and friends plays a very important role.

As a person with visual impairment, adjustment to life in a seeing world is a complex process. After carrying out a review of studies on psychosocial adjustment of low vision children, Morse (1987) concluded that children with low vision tend to be more unsettled by the limits of their vision, than compared to those whose handicaps are more severe. In addition, parents of children with low vision seem to be less understanding of the disability than those of blind children (Bateman, 1962).

An important related factor of adjustment is self-concept. According to Schinazi (2007), self concept can be defined as a set of attitudes individuals hold about themselves that help shape their identity, self-image, and esteem. Self-concept is what conditions our expectations and motivates our behaviour and has important implications on our personal, professional and social lives. Negative self-concepts are usually associated with isolation, depression and mental and health problems (López-Justicia, 2006). Negative self-image is generally caused by over-protection leading to inability to cope and to achieve goals, rare success and feeling of worthlessness, rejection and negative body image. A positive self-concept is usually associated with the ability to cope and overcome the consequences of a disability. It gives an individual a positive outlook on life, satisfaction and commitment. The person with visual impairment having low self-esteem may be

scared to take new risks, behave in a manner that gains him/her attention from others, avoid social contacts, undermine his/her positive talents and be pessimistic.

FACTORS AFFECTING ADJUSTMENT TO VISUAL IMPAIRMENT

Carroll (1961) stated the following about adjustment: "Total adjustment might be defined as the attitude which enables the blinded person... to face the fact of his/her blindness, admitting its severity without minimizing or exaggerating it... to return as a whole personality to the society from which he/she came." A visible defect not present in a sighted individual constitutes a factor of adjustment.

There are a number of individual differences in the acceptance of a disability condition like visual impairment. Some individuals are able to cope better than others. Inability to cope with the environmental challenges leads to detachment from the society in some individuals. Detachment also results from internalizing the negative attitudes of society towards themselves. For example, pity, rejection or ignorance and inability to fit in are some of the factors leading to detachment.

There may be many reasons that affect the adjustment of a person with visual impairment to his/her visual condition. Adjustment to blindness was felt to be impacted by beliefs and superstitions held by the culture and the individual (Wagner & Oliver, 1994). Many perceive persons with visual impairment to be worthless, helpless, bitter and unhappy. In fact, it is societal prejudices that cause emotional distress; many people who are blind concur that the misconceptions others have about blindness, and not the loss of vision or the need for adaptive skills, is what causes anxiety and emotional turmoil in these people (Cutsforth, 1951; Jernigan, 1969). Other factors include--the age at which vision loss occurred, the degree of vision loss, and the coping strategies utilized (Bailey & Hall, 1990; Yeadon & Grayson, 1979). Also feelings of rejection, failure, negative body image and unsupporting family environment are some other factors.

Parents' ignorance is another factor that can affect the adjustment of a visually impaired child. According to Chukuka,(2010), the state of emotional distress and attitude on the side of the parents indicates that they need someone who will educate them on how to adjust and manage their child with visual impairment to realize his potential.

VISUAL IMPAIRMENT-LOSSES AND LIMITATIONS

The population of students with visual impairments is extremely heterogeneous representing a wide range of visual abilities. The heterogeneity is

a result of a number of factors like the severity, type of loss (whether progressive or not), the age of onset, cultural background and attitudes, the overall functioning level of the child, cognitive ability, family support, socio-economic status and environmental experiences etc. Many children with multiple disabilities may also have visual impairments. In spite of the heterogeneity, the following are some common limitations/characteristics:

LIMITED OPPORTUNITIES FOR INCIDENTAL LEARNING

A sighted child learns about his/her environment incidentally with little or no direct instruction. Their vision helps them organize, synthesize, and give meaning to their perceptions of the environment (Alonze, 1987; Lowenfeld, 1973). For example, before the child learns the concept of window, s/he has seen windows all over in the house. Windows are everywhere and the sighted child begins to recognize a thing called window easily (close the window, stand near the window). S/he starts understanding the various features of a window and also different types like glass window, wooden window, small or big windows etc. S/he starts perceiving the relationship between the word 'window' and the object. S/he does not have to be taught this as all this is incidental learning because of having proper sensory information. On the other hand, incidental learning is at risk in all the visually impaired children (Ferell,1985; Halten and Curry, 1987). Because of the significant role played by incidental learning in normal developmental process, the presence of visual impairment may result in limitations in motor, cognitive and social development.

LIMITATION IN THE VARIETY OF EXPERIENCES

The child with visual impairment cannot perceive objects in the environment beyond his/her grasp including those that are too large, too small or are moving. Thus, early concept development is particularly influenced because of lack of sight. Language development can also be affected. Students may learn the names for the objects in the environment but may acquire very few words to describe the characteristics of these objects. Sometimes the students may be able to give detailed explanations about objects or events but may possess limited understanding of them (Anderson, Dunlea and Kakelis, 1984). Children born with visual impairments may have more difficulty with abstract ideas and concepts that depend on visual stimuli. This limitation may result in an educational deficit and lowered self-esteem in the students with visual impairments because of their inability to participate fully in the classroom and conversations with the peers. However, if the visual impairment occurs some time later or is adventitious, the concepts and skills may already have been acquired (Nielson, L.B.2002).

LIMITATION IN GETTING AROUND

For individuals with significant visual impairments, the limitation in movement through space directly affects their opportunities for experiences (Lowenfeld, 1973). Restriction in movement due to limited spontaneous ability to move may influence a child's early motor development and early explorations of the world. This limited ability to move may result further in reducing the opportunities for intellectual and social development of the child. Early encouragement and opportunities to explore the physical environment along with training in orientation and mobility are necessary precursors to later achievement. Children deprived of these opportunities may have difficulties in moving independently and a strong relationship exists between independent travel and self-esteem (Welsh, 1980). When the child is very young, loss of sight may affect his/her motivation to move around and s/he may not play with toys around by manipulating them. The limitation in movement also affects the relationship with peers. According to Harell and Akeson (1987), individuals who have a poor sense of their ability to effect change in their environment are at risk for the development of poor self-esteem, poor academic achievement, and reduced language and social skills.

LIMITATIONS IN INTERACTIONS WITH THE ENVIRONMENT

Socially, a child with visual impairment is limited in interaction with the environment and therefore has little control over it. She/he is unable to see the facial expressions of parents, teachers and peers, cannot model social behaviors through imitations and is sometimes unaware about the presence of others in the environment till a sound is made.

While touch does provide direct information, it is generally socially unacceptable. Other consequences of limited interaction are:

i) Poor motivation to move (Fazzi, Kirk, Pearce, Pogrund and Wolfe, 1992);

ii) Tendency towards physical and social detachment (Lowenfeld, 1973; Tuttle, 1984);

iii) Sense of anxiety related to not knowing if someone is watching you or directing verbal or physical anger at you (Lowenfeld, 1973; Cutsforth, 1951).

The characteristics of visual impairments described above influence to a great extent, how a student with visual impairment experiences the world. However, visual impairment and blindness affect how student learns a skill but do not prevent him/her from acquiring that skill (Ferrell, 1986).

Carroll (1961) has come up with twenty losses that a blind person goes through, and organizes these twenty losses into six major areas of loss:

1. Basic Losses to Psychological Security,
2. Losses in Basic Skills,
3. Losses in Communication,
4. Losses in Appreciation,
5. Losses Concerning Occupational and Financial Status, and
6. Resulting Losses to the Whole Personality.

The twenty losses given by Carroll are:

1) Loss of physical integrity;
2) Loss of confidence in the remaining senses;
3) Loss of reality contact;
4) Loss of visual background;
5) Loss of light security;
6) Loss of mobility;
7) Loss of visual perception: beautiful;
8) Loss of visual perception: pleasurable;
9) Loss of ease of written communication;
10) Loss of ease of spoken communication;
11) Loss of means for informational progress;
12) Loss of recreation;
13) Loss of techniques of daily living;
14) Loss of career, vocational goal, job opportunity;
15) Loss of financial security;
16) Loss of personal independence;
17) Loss of social adequacy;
18) Loss of obscurity;
19) Loss of self-esteem; and
20) Loss of total personality organization.

A person with visual impairment could have losses from different areas at

the same time. S/he can overcome these losses only with a positive attitude.

According to Barraga (1976), both personal child and situational factors will influence a child's use of sight. These factors include the child's experiences, motivation, needs and the expectations that are placed on him/her.

EFFECTS OF BLINDNESS ON GROWTH AND DEVELOPMENT

Children with visual impairment may not follow the same pattern of development like other children and also experience difficulties in learning. Several factors like age of onset, degree and kind of vision loss may affect the growth and development in these children to a large extent. The following section will indicate effects of visual impairments on patterns of growth and development, taking the wider cultural, social and political context in to account.

PSYCHOMOTOR DEVELOPMENT

Physical development in the earlier years of children is significant as it forms the foundation for later cognitive and affective development. Visual impairment in itself does not negatively affect the physical growth and development in the child. No marked difference has been seen in motor development of a visually impaired child as compared to other children in the first few months of life. However, in the later years, factors like lack of visual stimulation, and many other environmental factors can lead to different rates of motor development between the sighted and visually impaired children. Age of onset of visual impairment is another factor that may affect the motor development in these children. The earlier the onset the more significant is the effect. If the onset is after the child has acquired basic psychomotor skills, the slowing down is less. Visual acuity is another factor that affects the physical development in the child. The greater the vision the better the child is able to imitate the physical postures of others in the environment.

Visual impairment also affects the development of physical skills related to using body, hand- coordination and development of muscles. Since the child with visual impairment is unable to visually track objects and subsequently reach and grasp the objects, lack of motivation frequently causes delay in development of physical skills. It may also lead to delay of various physical milestones. Environmental factors like parental overprotection, lack of knowledge among parents to stimulate the child's vision etc. are also significant factors in causing delays in psychomotor development.

COGNITIVE DEVELOPMENT

Numerous speculations have been offered relative to the possible effect of visual impairment on cognitive development and functioning, but no definite conclusions can still be made. Several studies have based their researches on different areas of cognitive functioning. According to Warren (1994) data that does exist on the whole, indicates that children with some visual function are at an advantage in their cognitive development to those who are completely blind. Rubin (1964) compared abstract functioning among congenitally blind, adventitiously blinded and sighted persons and found that the blind persons performed less well than both the other groups on a series of tests of abstraction. Nevertheless, because concept development involves perceptual processes, lack of visual inputs may restrict the concept development process among children with visual impairments. Julka (2006) studied the Cognitive Architecture in the visually impaired in terms of their performance in different problem- solving tasks and found that the cognitive functioning in the visually impaired was slower than sighted children in the various tasks, but could be improved to the same level as their sighted counterparts with proper training.

Research in the area has also stated that limitation in the range and variety of experiences, the ability to move around and to control the environment leads to less access to environment and objects that are either too large or too small to be grasped tactually, affects the cognitive development, especially in the earlier years of life. Concept development is another area that is affected as it requires visual inputs for perceiving, for example colours, distance and time.

LANGUAGE DEVELOPMENT

Children with visual impairment are highly dependent upon the language inputs. One of the most common misconceptions about blind children is that they are equally or more adept in language skills than their normally sighted peers (Fraiberg 1977). In reality, severe and early impairments are likely to impact the language development of affected children. The differences are in part due to limited access to the environment and to differences in verbal feedback from people around them. They lack visual references and have reduced integration of information from their parents. More recent studies have found that the language of visually impaired children is more self-oriented and that the word meanings are more limited than for normally sighted children (Anderson et al 1984). Burlingham (1972) pointed out a higher incidence of echolalia, both immediate and delayed, for blind children, sometimes due to better-developed auditory memory skills in these children.

SOCIAL-EMOTIONAL DEVELOPMENT

Social emotional competence involves cooperative and pro-social behaviour, initiation and maintenance of peer friendships and adult relationships, management of aggression and conflict, development of a sense of mastery and self-worth, and emotional regulation and reactivity (Aviles et al., 2006).

Visual impairment as such does not result in social and emotional development differences, provided children have no additional difficulties and are reared in a sensitive and supportive environment. These children need to rely upon other senses to gather information about the feelings of other people around them. Since these children have lesser opportunities to experience the world, they may require more time to experience the social world around them and form relationships. However, with the relevant experiences and a conducive learning environment, children with severe vision impairment are likely to overcome these potential difficulties (Perez-Pereira and Conti-Ramsden, 1999).

In case their needs are not being met in school, these children may not be able to participate in ongoing events and remain isolated or stick to each other for company. Children with vision impairment do not always receive appropriate feedback from peers, as often their peers do not want to be reprimanded by adults who may overprotect the child with vision impairment, or because they perceive the child with vision impairment to be inferior (MacCuspie, 1992; Roe, 1998 unpublished observations).

The lack of eye contact between mother and child may also affect the development of a meaningful relationship with the parents and may require acceptance and comfort through physical contact. As the child grows older, his/her visual impairment hinders his/her relationship with peers, because s/he cannot see and imitate them. Adolescence is the most difficult time for these children as not only do they have problems in accepting their limitations, but may also be segregated from their peer group because of the limitations associated with visual impairment. According to Dunn (2004) children with special needs are twice as likely as their peers to be bullied and most bullying takes place in settings that are not monitored by teachers.

Some of these children may exhibit socially unacceptable behaviours like rocking backwards and forwards, whilst they are sitting on a chair or may produce strange facial grimaces. Other children may find behaviours like these odd and may keep themselves away from these children. The following story illustrates the social-emotional implications of visual impairment for a young visually impaired student:

Pooja, a ten year-old-girl with visual impairment stays in a residential accommodation provided by a voluntary organization and attends Class V of a regular government school in Delhi. She hails from the State of U.P and is the youngest in the family amongst 2 brothers and 2 sisters. She lost her sight suddenly at the age of two, when she fell sick. She is the only sibling who is being educated in her family and is extremely proud of this fact. Her parents have a lot of expectations from her and she dreams of fulfilling all these expectations in future.

Pooja is also interested in listening to music, watching TV, reading books, playing, and singing like any other child. But in spite of having normal interests like others, she does not get any opportunity to participate in any sports or other activities and competitions in the school. She feels this is because the teachers are scared about the fact that she will hurt herself if she tries to participate in the activities happening at school and they don't want to be responsible for such a mishap. Although she is interested in accompanying her classmates on recreational trips, she avoids doing so for fear of spoiling the fun of other children, who may be assigned the responsibility by the teachers to look after her.

Pooja feels upset about the fact that she has no opportunity to participate in any sports competitions and show her caliber. She remembers an incident vividly when she was asked by the teacher to accompany her fellow students to the playground because the class had to be vacated for some maintenance work. In the playground, she had the worst experience of her life, as she neither participated in any activity, nor she had any place to sit. In addition, another girl of her class was assigned the task of looking after her, which made her feel very sad about the other girl. In her words "not only me but the other girl also had to miss all the fun because of me. She must be cursing me in her mind."

In terms of her school experiences, Pooja complains about teachers teaching by keeping only the sighted children in their minds and not even making any effort to check her class work or homework. For teachers, children with visual impairment are invisible in the class and they do not encourage their participation in any class activities. Pooja, however, is appreciative of her peers who help her not only in copying important facts from the blackboard but in many other ways also. She feels that the teachers do not make use of any assistive devices like models etc. to teach her.

Pooja is a very talented and a strong person. She has a great talent for

writing which she has proven by writing a book of short inspirational stories for the blind people. Finally, Pooja dreams of a school that would give her equal opportunities for participating in learning and other activities. In her own words "Only a blind student can understand the problems of another blind student and so we get a feeling of belongingness with others who are like us."

Visually impaired children often face problems in social integration. They may want to be a part of the group but have fears about joining it. This leads to a lot of stress in some of these children and sometimes leads to total denial of their visual condition.

The following **social/emotional skills** need to be developed in children with visual impairments:

- Knowledge of Self-Acceptance
- Knowledge of Human Sexuality
- Knowledge of Visual Impairments
- Knowledge of Others
- Development of Interaction skills
- Development of Social Skills
- Lifelong Recreation and Leisure Skills
- Self-Advocacy Skills.

CONCLUSION

Although no two individuals with visual impairments are the same, many factors like the degree of impairment, family support, education, and socio-economic status and also gender affect their psychological adjustment. There are no unique psychological implications of blindness and there is no unique personality or psychopathology classifying individuals who are blind. However, people with visual impairments may face a number of challenges in their daily life and experience feelings of failure of various kinds. This may affect their sense of value and self-worth, sense of adequacy and self-satisfaction. The negative attitudes and behaviour of others towards them may also end up in lowering their self-esteem.

In the chapter, several aspects of psychosocial adjustment to blindness and low vision are presented and it has been stressed that the family, peers and the society in general play an important role in shaping the personality and in formation of a positive self-concept and the development of high self-esteem.

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CHAPTER 6

Educational Opportunities for Persons with Visual Disability

Anita Julka

R P Singh

The major focus of this chapter is on understanding various perspectives and opportunities available to children and youth with visual impairments for their education. Thus, after going through this chapter, the readers will:

- Get insight into the historical developments in the area of education of children with visual impairments
- Know about the constitutional provisions, policies and programmed initiatives in the area of education of persons with disabilities including persons with visual impairments
- Get acquainted with the measures to facilitate education of children having visual impairment
- Understand the psychological implications of blindness and their impact in educating children with visual impairment
- Have updated information on the subject of education as per the new Rights of Persons With Disabilities Bill 2014 and some important schemes.

HISTORICAL DEVELOPMENTS

Over the last 200 years, all over the world, disability policy has gradually developed from institutional care, special education and rehabilitation for persons who are disabled since birth or who become disabled during adult life, to equalization of opportunities in every sphere of life. Various organizations have advocated for better conditions for persons with disabilities in our country and also internationally.

During early years, most educators believed that the children with physical, sensory or intellectual impairments were so different that they could not participate in the activities of a common school (Lal Advani, 2002). Thus, Christian Missionaries in the 1880s started schools for the disabled as a charitable cause

(Mehta, 1982). The first school for the blind was established by Annie Sharp in 1887 in Amritsar and later in 1903 it was shifted to Dehradun. It is now called the Sharp Memorial School for the Blind. According to the Report on Blindness (1944), there were 32 special schools for the blind in undivided India.

The leading policy before the 1970s in India continued to be that of special school provisions and institutional care. The government's (Department of Education) initiatives after independence were notably manifested in establishment of a few workshop units primarily for blind adults (Luthra, 1974). Some of these units included people who were deaf, physically impaired and mentally retarded (Rohindekar & Usha,1988). Voluntary sector was heavily involved in the education of children with visual impairment from early times and the government also encouraged and assisted the voluntary organizations already working in the field (from First Five Year Plan, 1951-1956) and thereafter. Thus came into existence several new initiatives like setting up of special schools for the blind, the deaf and the mentally retarded children, provision of scholarships, establishment of Central Braille Press and employment exchanges, starting of National Library for the Blind, undertaking programmes of disability prevention and early identification of disabling conditions, developing functional skills and provision of aids and appliances.

By the year 2000, there were 300 schools for the visually impaired across the country covering 20,000 visually impaired children (http://www.bpaindia.org/pdf/VIB%20Chapter-VIII.pdf). This coverage is merely 3 percent of the population of the school age visually impaired children in the country. Most of these schools are being run by Non Governmental Organizations (NGOs) with government aid. Some of these schools are also being used as resource centers and teacher training institutes for helping children with visual impairment in regular schools.

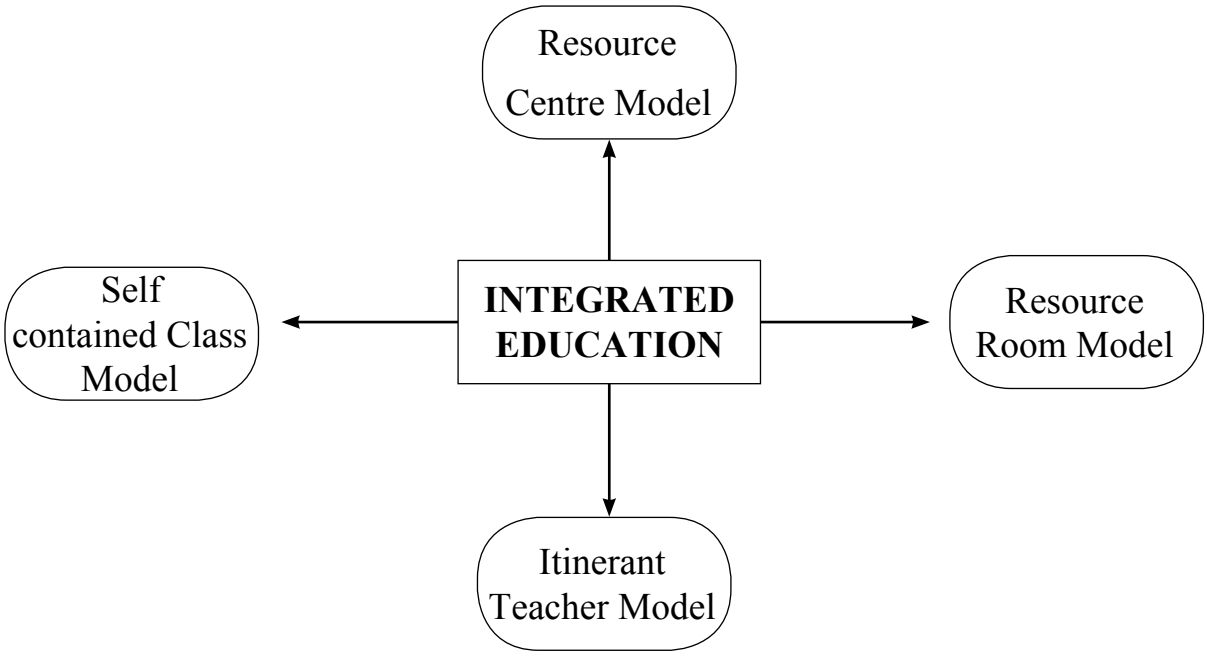
INTEGRATED EDUCATION

While before the 1970s, persons with disabilities were mostly educated in segregated settings, some efforts had already been initiated for educating visually impaired children in regular schools with some professional support. Thus, Resource/Itinerant plan services were introduced in Bombay in 1960s and an American consultant was invited by the Government of India to set up a Resource Room facility in a regular government school in New Delhi. Around that time after the 1970s, a new approach to disability was seen emerging with the concept of human rights for disabled persons becoming more and more accepted internationally. The involvement of the organizations like the United Nations with its number of declarations and the Decade of the Disabled Persons (1983-92)

followed by two Asian and Pacific Decades of Disabled Persons (1993-2002 and 2003-2012), endorsed by all nations in the Asian Pacific region, had a significant effect on the policies regarding the rehabilitation of persons with disabilities. The Asian and Pacific Decade of Persons with Disabilities, 2013-2022 will consolidate and take forward the achievement of the first two Asian and Pacific Decades of Disabled Persons, aiming to accelerate realization of the rights of the estimated 650 million persons with disabilities in the region, the majority of whom are poor, disadvantaged and discriminated against.

The National Policy on Education (NPE), 1968 attempted to create better educational opportunities for all children and the NPE, 1986 stated that up to a given level, all students irrespective of caste, creed, location or sex, have access to education of comparable quality. It recommended education for equality and addressing the specific needs of those who had been denied equality.

In 1974, the Government of India launched the Centrally Sponsored Scheme of Integrated Education for the Disabled Children (IEDC). The Scheme aimed to provide educational opportunities to learners with impairments in regular schools and to facilitate their achievement and retention. An important feature of the Scheme was the link between regular and special schools to strengthen the integration process. The following are some of the popular models of Integrated Education that were practiced in India.



Source: Julka, A. (2007) Meeting Special Needs in Schools: A Manual. NCERT, New Delhi

SOME POPULAR MODELS OF INTEGRATED EDUCATION

Meanwhile, the National Council of Educational Research and Training (NCERT) joined hands with the UNICEF and launched the Project Integrated Education for the Disabled Children (PIED) in the year 1987 for strengthening the integration of learners with impairments in regular schools. An external evaluation of this Project in 1994 showed that not only the enrolment of learners with impairments increased considerably, but also the retention rate among the disabled children was very much higher than the other children in the same blocks. Based on the policy initiatives and with an objective to decentralize education and to achieve universalization of primary education (UPE), a national initiative called the District Primary Education Programme (DPEP) was launched in 1994. One of the major components of DPEP was integration of children with disabilities in general schools including children with visual impairment. The DPEPs were brought under a single programme called the 'SSA' in 2001-2002 in an attempt to universalize elementary education (UEE) through community-ownership of the school system. Children with special educational needs including children with visual impairments formed a major focus group for these programmes. (http://www.math.tifr.res.in/~vvaish/shared/data/sarva-shiksha-abhiyan-talk.pdf). The Sarva Shiksha Abhiyan (SSA) data (March, 2014, Ministry of Human Resource Development) states that till March 2014, 574377 children with VI have been identified and out of these 529758 have been enrolled. The data indicates that various policy and legal initiatives undertaken at the governmental and voluntary level have led to increased enrolment of children with visual impairment in schools. In practice, there is a gradual shift from provision in special schools to provision in the mainstream, along with a shift from support systems characterized by learner's withdrawal from the classroom to those that are based on in-class support. However, the progress of this inclusion of children with visual impairment in regular school system has been slow.

INCLUSIVE EDUCATION

In spite of 100 per cent financial provision by the central government for the IEDC Scheme for integrating learners with special needs in the system, less than 5 per cent of the total population of these learners in India were actually integrated into the regular schools. Dissatisfaction with the progress towards integration, consideration of costs involved caused demands for more fundamental changes all over the world.

The World Conference on Education for All, held in Jomtien, Thailand in 1990 placed great emphasis on inclusive education. Inclusion was also a strong feature of the Salamanca Statement on Principles, Policy and Practices in Special Needs Education agreed to by the representatives of 92 governments including India and 25 international organizations in June 1994. The Statement confirms that: "Those with special educational needs (SEN) must have access to regular schools which should accommodate them within child centered pedagogy capable of meeting their needs." There is no reason for a student with visual impairment not to receive the same consideration as any other child. All centrally sponsored schemes for the education and welfare of children with or without disabilities extend to individuals with visual impairment.

Source: www.cbmindia.org.in.

Many people think that Inclusive Education is a replacement of Integrated Education. It is important for us to understand here that this was a step forward to integrated education and not a different approach to education of children with visual impairment. Inclusive Education is defined by Sebba and Ainscow (1996) as:

- Inclusion is: A process (rather than a state), by which a school attempts to respond to the needs of all pupils as individuals;
- Inclusion and exclusion as connected processes;
- Schools developing more inclusive practices may need to consider both;
- Emphasizes the reconstructing of curricular provision in order to reach out to all pupils as individuals;
- Emphasizes overall school effectiveness;
- Is of relevance to all phases and types of schools, possibly including special

schools, since within any educational provision teachers face groups of students with diverse needs and are required to respond to this diversity.

The National Curriculum Framework (NCF, 2005), signifies the commitment to inclusive education. It states that:

"The ideal of common schooling advocated by the Kothari commission four decades ago continues to be valid as it reflects the values enshrined in the Constitution. Schools will succeed in inculcating these values only if they create an environment in which every child feels happy and relaxed. This ideal is even more relevant now because education has become a fundamental right, which implies that millions of first generation learners are being enrolled in schools. To retain them, the system –including its private sector--must recognize that there are many children that no single norm of capacity, personality or aspiration can serve in the emerging scenario. School administrators and teachers should realize that when boys and girls from different socio-economic and cultural backgrounds and different levels of ability study together, the classroom ethos is enriched and becomes inspiring."

The NCF states that Inclusive Education, wherein all children from diverse backgrounds and with diverse abilities study together is beneficial for all children and not just for children with visual impairment.

Finally, the Centrally Sponsored Scheme of Inclusive Education of the Disabled at Secondary Stage (IEDSS) (http://mhrd.gov.in/) that was introduced in 2009 in the country, aims to provide educational opportunities and facilities to students with disabilities in the general education system at the secondary level (classes IX to XII). Recently, initiatives have been taken by the Ministry of Human Resource Development to harness the scheme with the Rashtriya Madhyamic Shiksha Abhiyan (RMSA) which is an extension of the SSA programme at the secondary level.

CONSTITUTIONAL AND LEGISLATIVE PROVISIONS

We must remember that in India, the number of persons with disabilities is very large. Meeting the needs of such large numbers requires not only the resources but also a change in society's attitude. In the existing scenario, constitutional provisions and legislations can play a major role in increasing the access of persons with disabilities to various areas of life--education, employment etc.-- and reduce discrimination. The Fundamental Rights and the Directive Principles that form the core of the Indian Constitution reflect the basic principles of the Universal Declaration of Human Rights (1948). The right of every child to education was

declared in the Universal Declaration of Human Rights (1948) and was strongly reaffirmed by the Jomtien World Declaration of Education for All (1990). Furthermore, the "Standard Rules on the Equalization of Opportunities for Persons with Disabilities" (1993) was an important resolution for improving the educational conditions of persons with disabilities. This had major implications for the Indian situation with particular reference to two legislations-- The Persons With Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 (PWD Act, 1995), and the National Trust for Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities Act, 1999.

The PWD Act consists of 14 chapters and is a significant attempt to empower persons with disabilities and promote their equality and participation. It emphasizes the need to prepare a comprehensive education scheme that will make various provisions for transport facilities, removal of architectural barriers, supply of books, uniforms and other materials, the grant of scholarships, suitable modification in the examination system, restructuring of curriculum, providing amanuensis to blind and low vision students and setting up of appropriate fora for the redressal of grievances. The National Trust Act aims to provide total care to persons with mental retardation, cerebral palsy etc. and also manage the properties bequeathed to the Trust.

National Policy for Persons with Disabilities, announced in February, 2006, recognizes that Persons with Disabilities are valuable human resource for the country. Para 48 of the Policy states: "It will be ensured that every child with disability has access to appropriate pre-school, primary and secondary level education by 2020."

THE RIGHT TO EDUCATION ACT, 2009

Article 45 of the Directive Principles of the Constitution urges all states to provide 'free and compulsory education for all children until they complete the age of fourteen years'. The Constitution (Eighty-sixth Amendment) Act, 2002 inserted Article 21-A in the Constitution of India to provide free and compulsory education for all children in the age group of six to fourteen years as a Fundamental

Right in such a manner as the State may, by law, determine. The Right of Children to Free and Compulsory Education (RTE) Act, 2009, which represents the consequential legislation envisaged under Article 21-A, means that every child has a right to full time elementary education of satisfactory and equitable quality in a formal school which satisfies certain essential norms and standards. The Act was amended in 2012 to include children with disabilities as covered under Persons With Disabilities (PWD) Act, 1995 and the National Trust Act (1999).

THE RTE ACT PROVIDES FOR:

- Right of children to free and compulsory education till completion of elementary education in a neighborhood school.
- It clarifies that 'compulsory education' means obligation of the appropriate government to provide free elementary education and ensure compulsory admission, attendance and completion of elementary education to every child in the six to fourteen age group. 'Free' means that no child shall be liable to pay any kind of fee or charges or expenses which may prevent him or her from pursuing and completing elementary education.
- It makes provisions for a non-admitted child to be admitted to an age appropriate class.
- It specifies the duties and responsibilities of appropriate governments, local authority and parents in providing free and compulsory education, and sharing of financial and other responsibilities between the Central and State Governments.
- It lays down the norms and standards relating, inter-alia, to Pupil-Teacher Ratios, buildings and infrastructure, school-working days, teacher-working hours.
- It provides for rational deployment of teachers by ensuring that the specified pupil teacher ratio is maintained for each school, rather than just as an average for the State or District or Block, thus ensuring that there is no urban-rural imbalance in teacher postings.
- It also provides for prohibition of deployment of teachers for non-educational work, other than decennial census, elections to local authority, state legislatures and parliament, and disaster relief.
- It provides for appointment of appropriately trained teachers, i.e. teachers with the requisite entry and academic qualifications.
- It prohibits (a) physical punishment and mental harassment; (b) screening

procedures for admission of children; (c) capitation fee; (d) private tuition by teachers and (e) running of schools without recognition.

- It provides for development of curriculum in consonance with the values enshrined in the Constitution, which would ensure the all-round development of the child, building on the child's knowledge, potentiality and talent and making the child free of fear, trauma and anxiety through a system of child friendly and child centered learning. (http://mhrd.gov.in/rte)

UN CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES (UNCRPD)

India has also ratified the UNCRPD in the year 2007 that promotes, protects and ensures the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities and promotes respect for their inherent dignity. This and other International declarations have paved the way for future sets of principles and policies leading to better acceptance and inclusion of persons with disabilities including persons with visual impairment in the society.

Article 24 of the Convention deals with education and has the following important provisions:

- Recognizing the right of persons with disabilities to education;
- Ensuring an inclusive education system at all levels;
- Facilitating the development by persons with disabilities of their personality, talents and creativity, as well as their mental and physical abilities to their fullest potential;
- No person with disability to be excluded from primary and secondary education;
- Persons with disabilities can access an inclusive, free and quality primary and secondary education in the communities in which they live;
- Reasonable accommodation of the individual's requirements is to be provided;
- Persons with disabilities to receive necessary individualized support required within the general education system to facilitate their maximum academic and social development;
- Facilitating learning of Braille, orientation and mobility skills and sign language;

- Ensuring that education to persons with disabilities, and, in particular children who are blind, deaf, deafblind, is delivered in the most appropriate languages and means and modes of communication for the individual, and in environments which maximize academic and social development;
- Employ teachers including those with disabilities, who are qualified in sign language and/or Braille and train professionals and staff who work at all levels of education, such training to include different disability components;
- Ensuring that persons with disabilities are able to access general tertiary education, vocational training, adult education and lifelong learning.

Based largely on the above UNCRPD provisions, education forms the subject-matter of Sections 15 to 17 and then Sections 30 and 31 of The Rights of Persons With Disabilities Bill 2014 currently before our Parliament. Let us look at some of the major highlights of provisions under these Sections which call upon appropriate governments and local authorities, as the case may be, to:

SECTIONS 15 TO 17:

- Endeavour to provide inclusive education to children with disabilities in all recognized and funded educational institutions;
- Provide opportunities for sports and recreational activities;
- Make buildings etc accessible;
- Provide reasonable accommodation to the individual's requirements;
- Provide necessary support in environments that maximize academic and social development consistent with the goal of full inclusion;
- Ensure that education to persons who are blind or deaf or both is imparted in the most appropriate languages and modes and means of communication;
- Provide transportation facilities to children with disabilities and also attendants of children having high support needs;
- Conduct survey of school going children for identifying children with disabilities, ascertaining their special needs and the extent to which these needs are being met;
- Establish adequate number of teacher training institutions;
- Train and employ teachers including teachers with disabilities, who are qualified in sign language and Braille and also teachers who are trained in teaching children with intellectual disability;

- Train professionals and staff to support inclusive education;
- Promote the use of appropriate augmentative and alternative modes including means and formats of communication, Braille and sign language;
- Provide books, other learning materials and appropriate assistive devices to students with benchmark disabilities, free of cost up to the age of 18 years, and either free or at affordable cost, thereafter;
- Provide scholarships to students with benchmark disabilities, in appropriate cases;
- Make suitable modifications in the curriculum and examination system to meet the needs of students with disabilities, such as extra time for completion of examination paper, facility of scribe or amanuensis, exemption from second and third language courses;
- Promote research;
- Promote participation of persons with disabilities in adult education and continuing education programmes.

SECTIONS 30 AND 31:

- Every child with benchmark disability between the age of six to eighteen years to have the right to free education in a neighbourhood school, or in a special school, if necessary;
- Ensure that every child with benchmark disability has access to free education in an appropriate environment till he attains the age of eighteen years;
- All government and government funded institutions of higher education to reserve not less than 5 percent seats for persons with benchmark disabilities and give an upper age relaxation of five years to persons with disabilities for admission to these institutions.

The Standing Committee on Ministry of Social Justice and Empowerment while examining the above sections of The Rights of Persons With Disabilities Bill 2014, has made the following recommendations which are of direct relevance to education:

SECTIONS 15 TO 17:

The term "endeavour" in the expression 'that all recognized and funded educational institutions provide inclusive education` be replaced with "ensure". It was further recommended that the term `educational institutions` should also

include `boards`, `councils` and `certifying authorities`. Also recommended by the Committee is that the clause dealing with buildings being made accessible be reframed as to make buildings, campuses and various facilities including technologies, toilets, drinking water etc. accessible incorporating the principles of universal design and gender specific where required.

Another recommendation of the Committee is that a period of five years be laid down for conducting surveys to identify children with disabilities, ascertain their needs etc. With reference to some of the other clauses under Sections 15 to 17, the Committee recommends: "Teachers with disabilities who are employed should be employed at all levels of education with equal grade and salary as given to other teachers of the school. The Committee also desire that all the children having disabilities should be entitled to free education including learning materials, appropriate assistive devices to students with disabilities free of cost till the completion of their school education. Lastly, the Committee further desire that Clause 16(i) of the Bill be recast as under: 16(i) 'to make suitable modifications in the curriculum and evaluation system, incorporating the principles of universal design that meets the needs of students with disabilities such as formats, extra time for completion of examination paper, facility of scribe or amanuensis, etc., exemption from second and third language courses, provided that no student is denied the opportunity of studying a subject or course on account of the syllabus not being accessible to the student'."

SECTIONS 30 AND 31:

The Committee's recommendation on these Sections is that free pre-school education i.e., before the age of six years should be extended to the children of PwDs. Further, the Committee desire the Ministry to:

i. Delete the word `special` from the title of Chapter VI, which, at present is: "Special Provisions For Persons With Benchmark Disabilities";

ii. Replace the phrase `if necessary` with `of her/his choice` in the sub-clause `or in a special school, if necessary`;

iii. Extend upper age relaxation of five years for PwDs and their children to get admission in institutions of higher education; and

iv. Extend the upper age limit of free education to PwDs and their children up to 21 years instead of 18 years since the PwDs may take more time to complete their school education as compared to normal students.

SOME IMPORTANT GOVERNMENT SCHEMES

Grant of scholarships was the first Government of India scheme of direct support to disabled persons introduced in the First Five year Plan. At present, State Governments are awarding scholarships to students with disabilities for pursuing their education at different levels. Here, we would make a reference of the major scholarship schemes for students with disabilities administered by the Department of Empowerment of Persons with Disabilities:

Trust Fund Scholarship Scheme being implemented by the National Handicapped Finance Development Corporation ((NHFDC) seeks to facilitate professional/technical education of students with disabilities. 2500 scholarships are available to students with disabilities under this scheme every year. 30% of these are reserved for girls with disabilities. The income ceiling is less than Rs. 30, 0000 per annum from all sources for applicant students. There is no minimum percentage of marks prescribed in the qualifying examination where the admission is based on competitive entrance test. However, where the admission is not linked to a competitive examination, the marks in the qualifying examination should be 50% or more. The benefits available under the scheme include the reimbursement of non-refundable fees in case of government/government-aided institutions. In addition to the reimbursement, the students with disabilities will be provided financial assistance to purchase equipment like computer, Brailler, low vision aids etc. The reader may visit NHFDC website: www.nhfdc.nic.in for further details of the scheme.

Central Sector Scheme of Rajiv Gandhi National Fellowship is intended for providing scholarships to students with disabilities to pursue courses in higher education such as M. Phil and Ph.D. The scheme was launched jointly by the Ministry of Social Justice and Empowerment and UGC in 2012-13.

Financial assistance under the Scheme is given at the rate of similar fellowships offered by UGC to non-disabled scholars. A total of 200 fellowships are available every year. The students with disabilities can apply for this fellowship after they are enrolled in M.Phil. or Ph.D. program of any recognized university or research institution. The eligible candidates are required to apply through their supervisor and the head of institution to UGC. The selection is made by UGC and the scholarship is disbursed by The Department of Empowerment of Persons with Disabilities on the basis of the recommendation of UGC.

Central Sector Scheme of Pre &Post Matric Scholarships for Students with Disabilities is intended for applicants whose parents'/guardians' total income

does not exceed Rs.2,00,000 per annum. It has the following objectives:

(a) To support parents of students with disabilities for education of their wards studying in classes IX and X and onwards so that the incidence of drop-out, especially in the transition from the elementary to the secondary stage is minimized;

(b) To improve participation of students with disabilities in classes IX and X and at the post-matric stage of education;

(c) To support students with disabilities to study further in order to prepare themselves to earn their livelihood and find a dignified place for themselves in the society.

For more details, readers may visit Department's website www.departmentofempowermentofpersonswithdisabilities/schemes/scholarship

Central Sector plan Scheme of National Overseas Scholarships for Students with Disabilities provides financial assistance to the students with disabilities who are finally selected for pursuing Master's level courses and Ph.D abroad in the following specified fields of study:-

a) Engineering & Management;

b) Pure Sciences & Applied Sciences;

c) Agricultural Science & Medicine;

d) Commerce, Accounting & Finance and

e) Humanities, Social Sciences & Fine Arts.

A total of 20 scholarships are available every year.

The minimum qualification for Ph. D course is: A First class degree or 55% marks or equivalent grade in relevant Master's Degree. Preference would be given to experienced candidates, especially to those who are having a lien on their existing posts.

For Masters' Degree, the eligibility qualification is 55% marks or equivalent grade in relevant Bachelor's Degree. Here again, preference would be given to the experienced candidates, especially to those who are having a lien on their existing posts. Age of the candidates should be 35 years or less, as on first day of the month of the advertisement of the scheme. The total income from all sources of the employed candidate or his/her parents/guardians, should not exceed Rs.6,00,000/- per annum.

Financial assistance under this Scheme is provided for travel from residence to the place of study, maintenance allowance, books and other study-related material, for attending conferences and seminars during the studies and tuition fee at the prescribed rates. Readers may visit www.socialjustic.nic.in for the details of the scheme.

Some other schemes of the Ministry of Social Justice & Empowerment, Department of Disability Affairs (now Department of Empowerment of Persons with Disabilities) relating to education of persons with disabilities are:

- *Revised Scheme of Assistance to Persons with Disabilities for Purchase/ Fitting of Aids and Appliances (ADIP);*
- *Deen Dayal Disabled Rehabilitation Scheme to Promote Voluntary Action for Persons with Disabilities;*
- *Central Sector Scheme of Support for Establishment/Modernization/ Capacity Augmentation of Braille Presses.*

Basic information about these and related schemes can be seen at www.socialjustic.nic.in.

PSYCHO-SOCIAL AND EDUCATIONAL IMPLICATIONS FOR CHILDREN WITH VISUAL IMPAIRMENT

Vygotsky indicated that each psychological function in the child '...appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological), and then inside a child (intrapsychological)' (Vygotsky, 1978, p. 57). It means that our behavior and personality is a result of social interactions to a great extent. The way people view us and interact with us affects our development. According to Vygotsky, learning contexts in which students play an active role are more effective than only teachers delivering one way lectures. It implies that if children with visual impairment study in a welcoming school environment where they form mutual friendships, have meaningful social interactions and are given opportunities to fully participate in a learning environment, they prosper and develop up to their potential. However, if they are put in an environment where they face negative attitudes, ridicule, pity, bullying and teasing, it affects their self esteem and sometimes leads to dropping out of school and withdrawal from society.

Based on the study of self-reports of individuals with impaired organs,

Vygotsky argued that defects are not subjectively perceived as 'abnormality' until they are brought into the social context. The human brain, eye, ear, or limbs are not just physical organs: impairment of these organs 'leads to a restructuring of the social relationships and to a displacement of all the systems of behavior' (Vygotsky, 1983, Vol. 5, p. 63). In this sense, physical impairment does not only affect the physical organ but also has social and other behavioral manifestations.

A child with visual impairment does not have any unique psychology or unique personality attributes. Deprivation of learning experiences may lead the child to perform poorly academically.

Sometimes, being neglected can lead to major problems like mood disorders, anxiety disorders and personality disorders and hence these children may require help from a specialist, in such cases.

The psychological impact of visual impairment may include experiences that could lead to negative consequences like feelings of looking different than others because either they cannot visually verify how others look or because they wear glasses or use optical devices; feeling like an outsider because they cannot take part fully in activities; feeling less than capable because they do not understand visual concepts fully; feeling clumsy because they drop things or bump into objects.

All of these consequences can have the effect of lowering self-esteem. It is important that students identify themselves not by their visual impairment but see their impairment as one aspect of who they are. Intervention may be necessary so that students can build successful experiences and find activities in which they excel(http://www.afb.org/info/programs-and-services/professional-development/teachers/educational-interventions-for-students-with-low-vision-2646/1235#).

EDUCATION ENVIRONMENT

Children with visual impairment are a heterogeneous group and vary in educational, physical and developmental abilities and needs. Their impairment may significantly affect them beyond their academic needs, as explained above, and they may require a number of specialized supports and services. Vision is the primary sense upon which most traditional educational strategies are based. These strategies also need to be modified to bring the world of experience to the visually impaired learner in a meaningful manner. There is a need for reforms at various levels in order to develop a school environment which takes account of the individual needs of all children with visual impairment. Studying in residential special schools or being mainstreamed into regular schools are some of the options available for visually impaired children. Home teaching is another option for

those who, due to multiple disabilities or any other reason, are unable to attend special residential school or a mainstream regular school. In such a programme, the special teacher visits the home of the child with visual impairment as per the educational needs and extends all possible support. The Government of India under SSA provides financial support for such a programme.

Needed professionals and their training is key to the successful inclusion of children with disabilities. Thus, the professional development of teachers and educators is an important issue. This training must incorporate attitudinal change, and the required knowledge and skills. Educational interventions in both the educational settings can create forces that may either help or hinder academic performance. This can further create social and psychological impact on visually impaired students. Factors like non-disabled students' and teachers' positive perceptions and attitudes towards students with visual impairment, social approval by other students, necessary support and services, proper classroom infrastructure etc. hold the key to conducive educational environment. Interaction between students with visual impairment and their seeing counterparts would produce a stable environment for the latter also and bring out a consistent set of attitudes, behaviors, and social, psychological and learning outcomes over time.

Lowenfeld (1973) stated that the psychological implications of visual loss on education depend on the degree of vision loss as well as the age at onset of blindness. He further said "It is obvious that a child who was born totally blind experiences the world around him in a different way than the child who is partially seeing." According to Lowenfeld (1973) the blind child can gain knowledge of the reality around him, but he gains it in a slightly different way and the knowledge itself is in some respect of a different nature.

Lowenfeld mentioned three basic limitations as the direct effect of vision loss. These are limitations:

- In the range and variety of experiences;
- In his ability to get about; and
- In his interaction with the environment.

The teachers may follow various principles such as the principles of individualization, concreteness, unifying experiences and learning by doing , to help children with visual impairment to overcome these limitations. Educational interventions, proper support to parents and professionals in the form of guidance and counseling, need-based facilities and opportunities for sensory training can help in meeting these challenges and leading to a stable and balanced development of a visually impaired child. This in turn will extend all educational opportunities to him/her.

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CHAPTER 7
Vocational Education And Training

I. Arivanandham

Economic independence is the key for empowerment and social mainstreaming. No matter how much we provide for other rehabilitation inputs, the process will remain incomplete, if the visually impaired persons are not enabled to earn their own living. It is in this context that the present chapter explains the concept of vocational education as a process to prepare oneself for useful economic activity. Briefly tracing the evolution of related services, the chapter presents a list of vocational education and training opportunities available in the country at the National Institute for the Visually Handicapped (NIVH) and some other government establishments as also at voluntary organizations. It reviews some important factors conducive to meaningful vocational education and training programmes.

VOCATIONAL EDUCATION-MEANING AND IMPACT

In common parlance, vocational education refers to "Instruction intended to equip persons for industrial or commercial occupations. It may be obtained either formally in trade schools, technical secondary schools, or in on-the-job training programmes or, more informally, by picking up necessary skills on the job." (www.dictionary.reference.com retrieved on 14th May 2014).

Vocational education is also called Career and Technical Education (CTE) which prepares learners for jobs that are based in manual or practical activities, traditionally non-academic and totally related to a specific trade, occupation or vocation in which the learner participates. It is sometimes referred to as technical education, as the learner directly develops expertise in a particular group of techniques or technology (www.wikipedia.org retrieved on 15th May 2014).

The category and intensity of the disability notwithstanding, one needs to be enabled to get involved in gainful economic activity to support one's self and the significant others around to gain acceptance and dignity in the society. Such activities should be socially acceptable, dignified, rewarding and satisfying. The conditions in the society will demand for performance of the social obligations from the seeing and the visually impaired alike. The societal conditions are not static but dynamic. Unless the person has the potential and is capable to meet the challenges, one cannot withstand the harsh realities in the society. The task is not

only to meet the immediate challenges, but also keep pace with the changes and growth. Therefore, it is imperative that one should become self-reliant so as to be engaged in gainful economic activity and also internalize required capacity to sustain in the dynamic mainstream. As such, vocational education activities assume paramount importance in rehabilitation endeavour.

Psychologists have found that involvement of persons in these activities, irrespective of their age, helps in development of their self-confidence. As they become successful in simple skill oriented activities, they are motivated to try more complex tasks and as and when they become successful, unknowingly their confidence level enhances. This confidence enrichment is capable of exerting positive impact on other psychological variables like self-esteem, acceptance of disability, locus of control and the like and contribute to the total personality development. Thus, Allen G. Dodds, a British psychologist, has suggested to see the self efficacy as a primary factor and opined that the early skill oriented intervention will prevent loss of competence and foster a sense of personal worth essential to successful rehabilitation (Allen G. Dodds, 1993, Rehabilitating Blind and Visually Impaired People—A Psychological Approach).

Therefore, it is clear that vocational education not only lays the foundation for gainful economic activity but also enhances the psychological health of the visually impaired persons even during the training period itself and later leads them on the path to successful empowerment and social mainstreaming.

HISTORICAL PERSPECTIVES

Vocational education as a part of the rehabilitation service category has assumed significance since the commencement of organized form of services for visually impaired persons. Schools and residential institutions were started for the visually impaired persons in the pre-independent India by Christian Missionaries and philanthropists in certain parts of this country. In all these institutions, more than literacy, vocational activities were accorded priority. The same trend existed in other countries also. It is understood that the purpose was to involve the visually impaired persons in series of vocational activities.

The post independent India saw a sudden impetus both from government and voluntary sectors. During this period, vocational education was separated from special education and it became a separate specialized activity. The Government of India in the Ministry of Education, took over the then St. Dunstan's Home and named it the Training Centre for the Adult Blind in the year 1950 in Dehradun. Following this, a Training Centre for the Adult Blind Women was also

started in the year 1957. In these Centers, constant efforts were made to provide vocational training in diversified trades to adult visually impaired men and women. These Centers later became part of the National Institute for the Visually Handicapped. Through these vocational training facilities, a large number of visually impaired persons secured gainful work opportunities in the organized sector. The Institute further started its Regional Centre in Chennai in the year 1988 with strong emphasis on vocational education/training component.

From the voluntary sector, the National Association for the Blind started vocational training units in industrial trades in early 50s. Similarly, training in light engineering and related activities was introduced at the TCAB in Dehradun and several voluntary organizations like the Blind Relief Association, Delhi; Blind Boys' Academy, Narendrapur (West Bengal); Blind Men's Association (now Blind People's Association), Ahmedabad and NAB, Karnataka Branch, Bangalore etc. Large numbers of visually impaired persons were equipped to become workers in light engineering occupations in Mumbai, Delhi, Ahmedabad etc.

On the other hand, the Government of India initiated Vocational Rehabilitation Centres for the Handicapped in the year 1968 under the Ministry of Labour. There are 21 such centres in the country at present in the States/UT's of: Andhra Pradesh, Assam, Bihar, Delhi, Gujarat (two centres), Himachal Pradesh, Jammu & Kashmir, Jharkhand., Karnataka, Kerala, Maharashtra, Madhya Pradesh, Odisha, Pondicherry, Punjab, Rajasthan, Tripura, Uttar Pradesh and West Bengal (http://dget.nic.in/content/institute/list-of-vrcs-and-addresses.php).

Training in various trades, guidance and counseling, psychological support and related services are provided at these centres through trained professionals.

In all these vocational education and training facilities run by government and voluntary organizations, initially, traditional skills like weaving, chair caning, chalk making, basket making etc. were taught. As and when new opportunities emerged in the field, certain new more modern trades were introduced.

In 1980s Braille shorthand and typewriting, light engineering and telephone operation were the trades considered modern for the visually impaired persons. The English Braille shorthand Code developed by RNIB was adopted in India. In the 80s NIVH developed the Braille shorthand Code in Hindi and training in the area was introduced at the Institute and also voluntary organizations like All India Confederation of the Blind. Subsequently, Braille contractions and shorthand Codes were developed for Tamil and a couple of other Indian languages under Research projects of NIVH in collaboration with leading NGOs.

An RNIB model Braille shorthand machine was manufactured by NIVH in collaboration with M/s ALIMCO, Kanpur. As a result many visually impaired persons were trained as stenographers and placed in offices in government and public sector undertakings.

In 1990s, computers were introduced. The first training in computers was started in 1993 at NIVH Regional Centre, Chennai with the help of a speech synthesizer provided by the Indian Institute of Science, Bangalore. This synthesizer was developed under the Technology Development Project in Mission Mode of the then Ministry of Welfare, Government of India. This Speech synthesizer was compatible to MS DOS applications and its name was CAB (Computer Assistance for the Blind). This apparatus made the word star package accessible for the visually impaired persons. Gradually computer training picked up momentum. Many young visually impaired persons became passionate computer-users. As a result, new vistas of opportunities emerged in the field of vocational education/training. Medical Transcription, call centre operations, FM Radio broadcasting and other information technology related remunerative vocations have become possible for the visually impaired persons through these advancements. In the meantime, a more progressive software called JAWS (Job Access With Speech) was made available by an American Company called Freedom Scientific. Despite its high cost, it has become very popular among the visually impaired computer-users.

VOCATIONAL EDUCATION/TRAINING FACILITIES

The National Institute for the Visually Handicapped runs vocational training programmes at Dehradun, its headquarters and in Chennai, its Regional Centre. Besides these, it runs two Regional Chapters, one in Secunderabad and another in Kolkata. In these training facilities, most modern tools are adopted to impart skill training to visually impaired persons. Approximately 280 to 300 young, highly ambitious trainees pass through its training courses every year. The courses offered, prescribed entry qualifications, duration and selection procedure are given in the following tables:

Table 1: Training Courses at TCAB (NIVH) Dehradun

Sl. No.	Name of the Course	Duration	Qualification	Selection Procedure
1	Computer Application and Progamming Assistant	1 Year	10+2	Entrance Test & Interview

2	Training Course in Front Office Assistant	9 Months	10+2 with English as a subject	Entrance Test & Interview
3	Braille Shorthand (Hindi)	1 Year	-Matriculation or equivalent -Minimum 50% marks in Hindi at Matriculation or subsequent board/ university examination	Entrance Test & Interview
4	FM Broadcasting and Journalism	I Year	Graduate	Entrance Test & Interview
5	Master trainers Course in Japanese Medical Manual Therapy	9 Months	10+2 with Diploma in Physiotherapy or equivalent	Test and Interview
6	Practitioner Course in Japanese Medical Manual Therapy	2 Years	Matriculation or equivalent	Test and Interview
7	Light Engineering	1 Year	VIII	Test and Interview
8	Disposable Paper Products , Stationary items & Handmade Paper making	9 Months	Education no bar	Test and Interview
9	Recaning of Chairs	1 Year	Education no bar	Test and Interview
10	Training in Independent Living Skills for persons with Adventitious or recent Visual Impairment	3 Months	Education no bar	Interview

Table 2: Training Courses at NIVH at Regional Centre, Chennai

Sl. No.	Name of the Course	Duration	Qualification	Selection Procedure
1.	Executive Secretaryship	1 Year	10 +2 or equivalent with 50% marks in English or higher qualification and good knowledge in English and English Braille	Entrance Test & Interview
2.	Training Course in Office Management/ Front Office Management	9 Months	10 +2 or equivalent with 50% marks in English or higher qualification and good knowledge in English and English Braille	Entrance Test & Interview
3.	Tamil Braille Shorthand & Typewriting	1 Year	10+2 or equivalent and good knowledge in Tamil and Tamil Braille	Entrance Test & Interview
4.	Chair Recaning and Fish Net Making	6 Months	Not applicable	Interview
5.	Computer Applications & Call Centre Operation	4 Months	Intermediate / +2 or equivalent with 50% marks in aggregate and 60% marks in English or higher qualification	Entrance Test & Interview
6.	Computer Operation	12 Weeks	Intermediate/ +2 or equivalent or above	On first come first serve basis
7.	Training in Adjustment Skills	3 Months	Adventitiously blind persons and those in need of O & M and DLS training	First come first serve basis
8.	Certificate Course in Reflexology	4 Months	10th std. pass	Interview

Through the Regional Chapters located in Secunderabad and Kolkata, the Institute offers, besides client services, training in computers and rural based skills.

The voluntary sector has also contributed its mite to empower the visually impaired persons through conduct of various vocational education/training courses relevant to their local areas. All India Confederation of the Blind, National Association for the Blind (Mumbai) and National Federation of the Blind (India) are NGOs having national level operations. They operate through their state branches/affiliates in different parts of the country. All these NGOs have significant vocational training components in their services at their main and state/district level branches and service points of their affiliates. These components include most modern IT related trades to traditional trades relevant to the local areas. In the same NGO sector, several micro level functionaries are also involved in vocational training activities with modern and traditional trades. In all, there are 309 service units run by different national level and local level NGOs and government including National Institutes and Vocational Rehabilitation Centers. Of these, 88.03% represent the NGO sector and 8.09% of the facilities are provided by central government including autonomous bodies. The provisions of the state governments account for 3.88%. The state-wise distribution of the organizations involved in vocational training is given in the following table. It is to be noted that Maharashtra, Gujarat, Madhya Pradesh, West Bengal, Bihar and Tamil Nadu have higher concentration of facilities compared to other states. Full details can be accessed through the on line interactive Directory of Services available in the website of NIVH.

Japanese Medical Manual Therapy Training at NIVH, Dehradun

Table 3: State-wise Distribution of Organizations Involved in Vocational Training

S. No.	Name of the State	NGO	State Govt.	Central Govt. incl. NIs & VRCs	Total
1.	Andhra Pradesh/ Telangana	10	1	1	12
2.	Assam	03		1	04
3.	Bihar	20		1	21
4.	Chhattisgarh	04			04
5.	Delhi	17	1	1	19
6.	Gujarat	27		2	29
7.	Haryana	03			03
8.	Himachal Pradesh	01		1	02
9.	Jammu Kashmir	02		2	04
10.	Jharkhand	03	1		04
11.	Karnataka	09		1	10
12.	Kerala	16	1	1	18
13.	Madhya Pradesh	20	2	1	23
14.	Maharashtra	38		1	39
15.	Manipur	04			04
16.	Meghalaya	02			02
17.	Mizoram	01			01
18.	Odisha	18		1	19
19.	Pondicherry (UT)	02	1	1	04
20.	Punjab	12	1	1	14
21.	Rajasthan	11	1	1	13
22.	Tamil Nadu	16	2	3	21
23.	Tripura			1	01
23.	Uttar Pradesh	11	1	1	13
24.	Uttarakhand	01		1	02
25.	West Bengal	21		2	23
	Total	272	12	25	309

(Source: Online Directory of NIVH and MOL VRC List)

PRE-VOCATIONAL SKILLS

Pre-vocational skills encompass a few fundamental requirements for a visually impaired person to maneuver productively into a vocational education/ training stream. There needs to be a perfect match between the individual's interests and the skill/trade for the trainee to benefit and take pleasure in doing the course. Certain pre-requisites for a successful venture are discussed here below.

Braille is a six dot system widely used world over by visually impaired persons who have no or very little vision. This tactile script made available for most of the languages in the world, is capable of breaking barriers in communication and education. It provides greater independence to its users. The visually impaired persons who aspire to join vocational stream need to have proficiency in Braille. The skills in Braille can be used for reading books available in the subject and taking down notes during instructions for future reference. Now facilities are available to download e-books and read in Braille through computers. Furthermore, those who opt for Braille stenography course need to have good knowledge and skill in Grade II Braille.

Those who have ***useful residual vision*** can use their vision for vocational education/training activities. They need to have a clear awareness on their visual limitations. They need to have training and practice in using magnifiers for enhancing their visual efficiency. Appropriate non-optical aids suitable to their conditions need to be available along with good knowledge of using them for the same purpose. It will be useful for them to undergo a functional assessment test and vision enhancement programme under the guidance of low vision experts.

Skills in ***Orientation and Mobility*** are important for the visually impaired persons. It is essential for them to relate themselves with the immediate physical and social environment for pursuing the vocational courses. Their reaching the training center from the hostel or commuting from their residence safely and gracefully depend mostly on their skills in orientation and mobility and in their ability to use cane and other navigational devices.

Good English ***communication skill*** is important to successfully navigate in the vocational stream. The business language being English, it is essential to have basic

communication skills in English particularly for those who aspire to venture into IT related occupations. Oral communication will play a major role as and when they progress and without doubt will give a boost for advancement in career.

A considerable number of visually impaired persons are those who have acquired vision loss late in life, after having seen for some time. They are called as persons with adventitious visual impairment or lately/newly blinded persons. This group faces a greater challenge in coming to terms with life without vision. For such visually impaired persons a pre-vocational adjustment training course is very essential. These courses are available in leading organizations. Through these ***adjustment training courses***, visually impaired persons are helped to adjust with vision loss and learn the necessary basic skills discussed here above. The training module for this group also includes imparting of skills in use of various educational, computational and recreational assistive devices which are essential to lead a life without vision. Above all, such training should develop confidence in their mind that normal life is possible even without vision. Hence, it is essential for those who acquire vision loss to undergo this course before venturing into any vocational training programme.

AREAS IN NEED OF CONSTANT ATTENTION

Persons with visual impairment, like their seeing counterparts, have their own likes and dislikes, innate qualities, ambitions and interests. Therefore, it is essential to see their interest and readiness before induction in vocational education/ training programmes. To address this need, a psychometric approach will be more appropriate. Occupational interest inventories and vocational aptitude test batteries are available and widely used in other countries. These vocational evaluation tools generally organize job tasks into discrete components in order to assess a person's potential for a variety of jobs and training options. Initiatives need to be taken to identify such tools so as to adopt them with modifications suitable for our conditions for use in training institutions. This approach will enable us to utilize such tools for vocational training programmes at reduced costs. It will also help us to identify and support those who have genuine abilities/aptitude for vocational training.

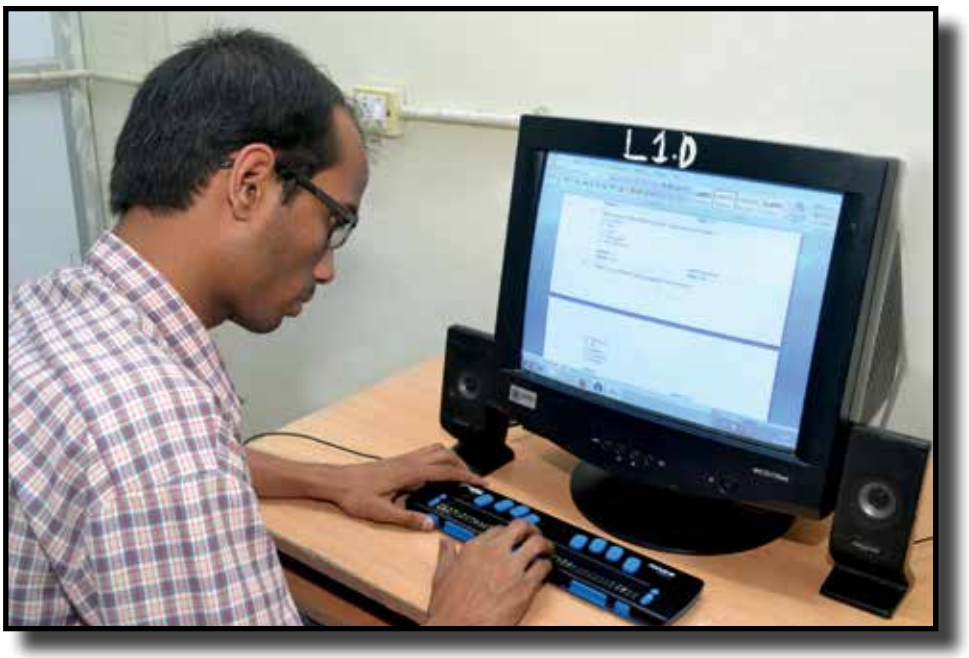
Our vocational education/training endeavors should, all the time, be flexible and keep pace with the challenges of the changing scenario. This should be a continuing process and should shed on its way, the outdated activities and technology and quickly assimilate the new avenues with foresight. The courses we introduce need to be consistent with the real potentialities of the visually impaired and actual skill set needs of the dynamic job market. Prime importance should be given to research in evolving appropriate adaptive technologies and

assistive devices. Constant efforts need to be made to continually evaluate and enrich the existing courses with modifications and adaptations.

Professional help needs to be made available to the trainees to manage and overcome psychological problems and stress situations, while pursuing training. It should be ensured that the visually impaired persons work with discipline, determination and perseverance. It is also important that necessary modules and materials are made available for employer education on the potentialities and requirements of visually impaired persons. Also, necessary steps need to be taken to educate the general public mainly on the rights of visually impaired persons and the responsibilities of the seeing persons to contribute constructively in the process of their social mainstreaming.

CONCLUSION

In the rehabilitation arena, vocational education/training, in the days to come, will assume greater significance because of its prospects for empowerment and mainstreaming. The existing IT enabled environment has set an all inclusive trend which is highly positive and encouraging. Therefore, it is the opportune time to invest more of our energy and creativity to enrich the vocational education/ training stream with diverse opportunities for the visually impaired persons who are, despite vision loss, a potential human resource.



A Trainee Learning Computer Skills

CHAPTER 8
Employment and Placement of the Visually Impaired

Bhushan Punani

This chapter presents a comprehensive overview of different facets and dimensions of employment for the visually impaired. In particular, it deals with:

- Employment for the visually impaired-Importance and conceptual framework;
- Employment opportunities in different sectors; and
- Approaches and techniques for facilitating employment-access.

The chapter focuses on employment as a basic right of the visually impaired and lists a number of legislative and administrative measures to enable the visually impaired and other categories of persons with disabilities to realize this important right.

IMPORTANCE

There is a general consensus the world over that employment is the most essential but the toughest aspect of rehabilitation. Employment of the visually impaired is a more potent problem in India due to:

- Higher incidence of visual impairment;
- Near non-existence of social security benefits;
- Higher prevalence of visual impairment in the working age group;
- Limited education and training facilities;
- Limited focus on vocational as well as professional training;
- Majority are illiterate, confined to their homes;
- High rates of unemployment and rampant under-employment.

Most visually impaired persons and their families come from the poorest rungs of society. In fact, studies have revealed a very high correlation between poverty and disability. The cost of maintaining such persons in the family adds to the financial burden. Thus their economic rehabilitation does not remain an individual need; many times, it becomes a question of survival of the family.

SOME SIGNIFICANT TERMS

EMPLOYMENT

It is essential to explain the term 'employment' which has different connotations for different people. Employment per se does not mean formal, secured or regular employment only. It also means any trade, economic activity or profession in the organized as well as unorganized sector that would provide with some monetary remuneration.

The term 'employment' used by rehabilitation planners generally ignores a vital aspect that the community itself offers a wide spectrum of opportunities where visually impaired persons may be absorbed in gainful occupations.

Work is essential for every human being, not only for the sake of money and for economic independence, but also because it contributes to self esteem and self dignity leading to an abiding joy for life. For persons with visual impairment, it is still more important as the self esteem and financial gains generated out of it would offset to a great extent, the negative impact of disdainful attitudes of society. (Pandey & Advani, 1995).

SKILL DEVELOPMENT

Training and skills development can have multiple meanings as they include wide ranging elements and are understood in broad terms to include:

- Basic education ensures each individual the development of their potential, laying the foundation for employability;
- Initial training provides core work skills and the underpinning knowledge, industry-based and professional competencies that facilitate the transition into the world of work;
- Lifelong learning ensures that individual's skills and competencies are maintained and improved as work, technology and skill requirements change;
- Different countries focus on different elements, as they see relative strengths and weaknesses in their own skills development systems, and as they learn more about innovations and experience in other countries.

ECONOMIC REHABILITATION

Economic rehabilitation aims at developing and enhancing the functional abilities of a person with disability so that he/she is gainfully occupied resulting in economic contribution to self and the family. In fact, economic rehabilitation is

the principal objective of the existing approach to Community-Based Rehabilitation (CBR)- a concept initiated and promoted by a number of NGOs all over the country. Economic rehabilitation includes any trade, economic activity or profession which enables an individual to make any tangible or intangible contribution; any monetary or non-monetary service support to the family or community in the organized as well as unorganized sector.

INCOME GENERATION

It is, on the other hand, a sub-set of economic rehabilitation and it means direct monetary or tangible gains derived on a regular basis for the services rendered or goods provided. Vocational training should generally lead to promotion of income generation or many times, economic rehabilitation.

VOCATIONAL REHABILITATION

It is an outcome of the employment process. It may be achieved through open, self or sheltered employment, gainful occupation or income generation. ILO Recommendation No. 99, Paragraph 1 (a) reads: "For the purpose of this recommendation the term 'vocational rehabilitation' means that part of the continuous and coordinated process of rehabilitation which involves the provision of those vocational services e.g. vocational guidance, vocational training and selective placement, designed to enable a disabled person to secure and retain suitable employment."

AVENUES OF EMPLOYMENT

It has been established that a visually impaired person can perform competitively in various professional, semi-professional and industrial jobs; rural crafts, trades and agricultural operations. It has been observed that when incentives for work motivation and recognition of high performance are available, his performance is comparable to that of a sighted person provided that the job does not require visual discrimination or the same has been compensated for.

I. UNORGANIZED SECTOR:

In India, the employment opportunities for visually impaired persons in the unorganized sector, particularly in the rural areas are extremely scarce. This is due to exclusive dependence on the organized sector which accounts for only a small proportion of the work-force. The unorganized sector which is the major avenue of employment for the sighted may prove to be the most appropriate avenue of employment for the visually impaired also, if suitably exploited through:

- A coordinated approach;
- Need based training; and
- An effective system of delivery of services.

SELF EMPLOYMENT

a. ***Definition***: The term self employment generally implies self initiated, developed and regulated income generating opportunities where the individual plays the role of the investor, employer and employee. Self-employed individuals earn their income through conducting profitable operations from a trade or business that they operate directly (source: www.investopedia.com/term/self-emplyed).

b. ***As a part of CBR Strategy***: In fact, experience of implementation of CBR projects across the country, establishes that there is great scope for promoting self employment of persons with visual impairment. The WHO CBR Guidelines also explain the importance and relevance of self-employment as a component of livelihood under CBR strategy. According to CBR Guidelines, self-employment provides the main opportunity for people with disabilities in developing countries to earn a livelihood.

c. ***Activities***: will involve production, providing a service, or trading; they may be individual or group, part-time or full-time; they are equally applicable in both rural and urban areas, in both the formal and informal economy. Self-employment could provide income to thousands of women and men with disabilities and a chance to contribute economically to their families and communities. CBR programmes have an integral role to play in assisting people with disabilities to become self-employed by starting or expanding their own income generating activities and small businesses (WHO CBR Guidelines, Livelihood Component, P. 153).

d. ***Advantages***:

- Vast employment potential;
- Could be carried out with the active involvement of the family members who could play a complementary role to each other;
- Requires low investment resulting in speedy returns;
- Availability of bank loans, subsidy and financial incentives;
- Training can be availed in the house or the village itself.

e. Factors Responsible for Success:

- Business acumen, foresight and knowledge of occupation;
- Capacity and willingness to work;
- Understanding environment and the individual needs;
- Availability of training facilities;
- Compatibility between training facilities and the specific requirements of the venture;
- Level of support from the family and community;
- Existence of an organizational network;
- Availability of a launching grant, micro credit;
- Provision for establishing Self Help Groups;
- Coverage of the occupation under the existing schemes;
- Prevalence of occupation in the area; and
- Financial viability of the venture.

f. Illustrations:

- Physiotherapy, Japanese Manual Medical Therapy and massage;
- Computer programming and operation;
- Marketing, salesmanship and trading;
- Petty shop keeping, vending stall;
- Music–vocal as well as instrumental;
- Courier services;
- Insurance and investment agency;
- Public call office-telephone operating;
- Internet and E-mail services;
- Plastic moulding, motor rewinding, furniture repairing, chair caning;
- Bicycle repairing and hiring out; and
- Travel agency.

HOME WORKERS

a. ***Definition****: The Helen Keller International has defined industrial home work as "A service to be rendered by an accredited agency-designed and developed with the intention of adhering to health and labour laws-to offer regular work training and remunerative work opportunities to those eligible disabled persons who cannot for physical, psychological or geographical reasons leave their homes to travel to and from a place of business."*

b. ***Essential Features****: According to the ILO publication "Employment of Disabled Persons-Manual on Selective Placement" some essential features of a good home workers' programmes are:*

- Adequate transport facilities for the supply of raw material and collection of finished products;
- Availability of raw material, equipment and tools;
- Availability of training facilities;
- Effective sales organization;
- Sufficient supervisory staff to visit the stakeholders at their homes;
- Variety of suitable work to suit skills and aptitude of workers;
- Support of family members and community;
- Prevalence of occupation, production activity or craft in the area;
- Availability of micro credit, launching grants and subsidies etc.;
- Adequate remuneration for the work;
- Financial viability of activities;
- Professional approach;
- Availing of benefits of bulk buying, low cost of investment, financial assistance for initial training;
- Identification of occupations specially for the visually impaired;
- Legislative support to the activity;
- Institutional and administrative support to the activity.

c. ***Importance***: Home-work is the most important avenue of economic rehabilitation for the visually impaired who are home-bound due to:

- Nature and Extent of their disability;

- Age of individual and age of onset of blindness;
- Lack of mobility;
- Physical incapacity;
- Social constraints, particularly in case of women;
- Lack of education or specific production skills.

d. ***Limitations***: In a module initiated and implemented at the Blind People's Association, Ahmedabad for the training and employment of persons with disabilities of all categories in domiciliary occupations as home workers, the following problems have been identified:

- Limited choice of products;
- Scattered target group;
- 83 percent visually impaired persons are above the age of 45, hence lack of motivation amongst them;
- Non-availability of space at home for carrying out production activity;
- Lack of uniformity of quality of finished products;
- High cost of material distribution;
- Lack of availability of any government assistance
- No coverage of such schemes under the Central Scheme of Assistance to Voluntary Organizations;
- Pilferage of finished products;
- Damage to products in transit.

One needs to take measures to address these problems so that domiciliary occupations can be turned into successful activities.

COOPERATIVES

a. ***Definition***: The ILO publication "Vocational Rehabilitation and Employment of the Disabled: A Glossary" defines cooperatives of the disabled as an association of the disabled which aims to promote their vocational and social rehabilitation by their gainful employment in a common enterprise run on co-operative self management lines within the framework of the national economic plan, and also to engage in social and educational activities for the purpose of:

- Preserving and enhancing physical efficiency;
- Restoring them to social activity;
- Enabling them to earn a living;
- Satisfying the social needs; and
- Improving standards of living.

b. ***Important Features****:*

- Unity of ownership;
- Forming a self controlled organization;
- Voluntarily joining together to achieve a common end;
- Similarity in production activities;
- Proximity of work place;
- Bulk buying and bulk selling;
- Making equitable contribution to the capital required;
- Accepting a fair share of risks and benefits;
- Statutory recognition to the duly constituted cooperatives; and
- Availability of incentives, credit and other facilities.

c. ***Limitations***: The cooperatives exclusively for the visually impaired have not performed well, probably, due to following limitations:

- Scattered target group;
- Limited choice of products;
- Diversity in backgrounds of the target group;
- Lack of unity of operations;
- At times, lack of initiative, risk taking ability, awareness and self confidence;
- Lack of infrastructure and organizational support; and
- Lack of special scheme of encouraging cooperatives of the visually impaired.

WORK OPPORTUNITIES THROUGH COMMUNITY BASED REHABILITATION

a. ***Traditional Definition of CBR:*** "CBR is a goal-oriented, individual need-based, cost effective and result-oriented strategy of providing time bound and appropriate services within the community, with its active participation, involvement and with fullest use of its resources. CBR strategy aims at confidence building of the community, bringing out efficiency of individual and promoting active participation, involvement and integration of the individual in community life. It seeks community participation at the planning, execution, management and monitoring of CBR programme. It ensures community's support to protection of human rights, equal participation, equity, social justice, and complete development of the individual."

b. ***CBR Guidelines:***

i. ***Purpose:*** The purpose of these guidelines is to provide support on how to initiate a CBR programme or how to strengthen an existing CBR programme. The target group for the Guidelines is CBR managers as well as personnel from local and international NGOs, government ministries, development organizations, primary health care programmes, education programmes and organizations of people with disabilities. These are designed as a practical guide to strengthen the delivery of CBR and promote inclusive development as a life cycle approach.

ii. ***CBR matrix****:* According to these Guidelines, a comprehensive multi-sectoral CBR programme should cover the key domains of well-being: health, education, livelihood, social development and empowerment of people with disabilities and their families. In the light of the evolution of CBR into a broader multi-sectoral development strategy, a matrix was developed in 2004 to provide a common framework for CBR programmes. The matrix consists of five key components–health, education, livelihood, social and empowerment components. Within each component there are five elements. The first four components relate to key development sectors, reflecting the multi-sectoral focus of CBR. The final component relates to the empowerment of people with disabilities, their families and communities, which is fundamental for ensuring access to each development sector and improving the quality of life, enjoyment of human rights for people with disabilities and their inclusion in the mainstream of social life.

CBR programmes are not expected to implement every component and element of the CBR matrix. Instead, the matrix has been designed to allow programmes to select options which best meet their local needs, priorities and resources. In addition to implementing specific activities for people with disabilities, CBR programmes will need to develop partnerships and alliances with other sectors not covered by CBR programmes to ensure that people with disabilities and their family members are able to access the benefits of these sectors and attain appropriate inclusion.

iii. ***Livelihood Component****:* Livelihood is part of CBR because "It is essential to ensure that both youth and adults with disabilities have access to training and work opportunities at community level." The learning of knowledge and skills begins in the family at an early age– children watch and learn how to do things from parents and other family members. Children with disabilities should also be encouraged to learn, participate and make a contribution in the family. Likewise, disabled family members of working age should be assisted and encouraged to develop skills and start or return to work. A CBR programme that does not address the skills development and livelihood needs of youth, adults and senior citizens with disabilities in a community is incomplete and limits the sustainability of other efforts.

The livelihood component, like every other component of the CBR matrix, has very strong linkages with the other components. There are necessary linkages between efforts to promote and facilitate livelihood in CBR and efforts to enhance access to health care, education services and social opportunities. An individual with a disability needs to be healthy and may need an assistive device in order to work. Future work opportunities are greatly enhanced for children and youth who have access to primary and secondary education, as well as opportunities for skills training. Likewise, a person with a disability who is working is empowered and better able to obtain the necessities of life, maintain a family and participate lifelong actively in the social, cultural and political life of his/her community (Based on Livelihood Component of CBR Guidelines, Page 5).

CBR MATRIX
HEALTH
EDUCATION
LIVELIHOOD
SOCIAL
EMPOWERMENT
PROMOTION
PREVENTION
MEDICAL CARE
REHABILITATION
ASSISTIVE DEVICES
EARLY CHILDHOOD
PRIMARY
SECONDARY & HIGHER
NON FORMAL
LIFE-LONG LEARNING
SKILLS DEVELOPMENT
SELF EMPLOYMENT
FINANCIAL SERVICES
WAGE EMPLOYMENT
SOCIAL PROTECTION
RELATIONSHIPS MARRIAGE & FAMILY
PERSONAL ASSISTANCE
CULTURE & ARTS
RECREATION LEISURE & SPORTS
ACCESS TO JUSTICE
COMMUNICATION
SOCIAL MOBILIZATION
POLITICAL PARTICIPATION
SELF-HELP GROUPS
DISABLED PEOPLE'S ORGANISATIONS

II. ORGANIZED SECTOR—OPEN EMPLOYMENT:

The realization of the dream of economic independence of the visually impaired persons would necessitate their employment in the organized sector. It requires preparing them for employment and convincing the employers to extend to them suitable employment opportunities.

PROFESSIONAL EMPLOYMENT

a. ***Definition***: Professional employment refers to open employment or self placement of qualified and trained individuals in various professions.

b. ***Importance***:

- Ideal avenue for educated persons;
- Higher social status;
- Easy social acceptance;
- Higher earning;
- Appropriate use of skills;
- Easy career growth;
- Ideal for competitive employment; and
- Wider choice of employment opportunities.

c. ***Factors Conducive for Success;***

- Initiative and hard work;
- Good mobility and suitable orientation skills;
- Acquiring of specific skills through higher education and appropriate training;
- Use of technology, access to computers, mobile and other devices;
- Communication skills and use of English and local languages;
- Availability of appropriate assistive devices, softwares, adaptations, equipment and techniques;
- Involvement and coordination of research, industrial training and higher education institutes and universities in the process;
- Recognition of courses by accrediting agencies; and
- Governmental, administrative and institutional support.

d. ***Illustrations***:

- Teachers, music teachers, vocational instructors;
- College and university faculty, researchers;
- Administrative Services;
- Masseurs, physiotherapists;
- Stenographers, computer programmers, data entry personnel, internet and E-mail operators;
- Lawyers, solicitors, legal advisors;
- Business managers, marketing executives, management consultants, public relation officers;
- Interpreters, employment interviewers, social workers and psychologists;
- Medical Transcriptions and website management; and
- Business Processing and Managing Call Offices.

INDUSTRIAL EMPLOYMENT

a. ***Definition***: This refers to the placement of a person in wage employment in the organized sector in various types of companies, factories, production units, industrial establishments etc.

b. ***Institutional Support Required:***

- Developing suitable training programmes;
- Seeking appropriate government intervention;
- Effective and appropriate advocacy;
- Creating awareness among captains of industry and business houses;
- Developing vocational guidance and counselling services;
- Motivating the visually impaired to compete for open employment.

c. ***Involvement of Agencies and Groups***:

- Trade Unions;
- Employers' Federations;
- Chambers of Commerce & Industries;
- Local administration;

- Service Clubs; and
- Disability Advocacy Groups.

d. ***Ensuring availability of***:

- Suitable employment aids, adaptation of machines, and equipment, wherever necessary;
- Adaptations in production processes and tasks, as required; and
- Appropriate technology and software, if needed.

e. ***Illustrations***:

(Source: Captain H.J.M. Desai's Planning Employment Services)

S.N.	Industry	Operations Suitable for the Visually Impaired Persons
1	Textile	Cellophane wrapping, packing, ribboning, labelling; bobble cleaning; borah stitching; sorter - waste department, stamper; packers, hoistmen.
2	Machine Shop	Machine Operators - Capstan lathe, Central lathe, drilling, power punch, hand fly press, hand tapping, threading, milling, shaping, shearing, plastic moulding; coil winders, filing; inspection, core makers, assemblers, tube benders.
3	Pharmaceutical	Making droppers and cartons; packers, Assemblers, labellers; bottle washers and bottle sealers; conveyer belt operators and wooden case nailers.
4	Telephone	Operators, power press, pin-vice hand drill, kicker press.
5	Assemblers	Armature, wiper, single and double piercing; riveting, gagging, rumbling springs, fixing and removing coils to plate; swaging.
6	Cycle Assembly	Hub, brake, pedal; wrapping - mudguard, frame match; inner and outer cover making, chemical grinding.

7	Plywood	Operating hand cutting machine, feeding veneer gluing and drying machines.
8	Electrical:	All sorts of assembly.
9	Tea	Packeting, packing, operating drying machine, dhool fermenting.
10	Metal Box	Wadding and lidding, inspection of can top counting and packaging, assembly of necks and shoulders.
11	Soap	Operating die stamping machine, counting and packing.

Based on this list, similar production operations may be identified in other industries. It is pertinent to mention that with suitable adaptations, it is possible to employ the visually impaired in a variety of other operations.

III. SPECIAL EMPLOYMENT:

Special employment in our country could be classified thus:

SHELTERED WORKSHOPS

a. ***Definition***: Sheltered workshop is a work-oriented rehabilitation facility with a controlled working environment and individual vocational goals which utilizes work experience and related services for assisting a visually impaired person to progress towards normal living and a productive vocational status.

It is also considered a permanent or semi-permanent vocational placement for individuals who are unable to find jobs in the community. It is a vocational setting, geared to take advantage of whatever vocational assets a client might have. It is meant to provide a resource in which an individual can make a contribution to the community.

b. ***Distinguishing Features***:

- Suitable for a visually impaired person who due to age, other disability or physical constraints, cannot avail of open/industrial employment;
- Keeps him confined without any hope for integration in society;
- Advocates 'segregation and over-protection' and has a limited coverage;

- Has limited admission due to capacity constraint; and
- Limited choice of production activities and products.

c. ***Limitations***:

- Lack of legal status;
- Trades selected have no compatibility with the existing job scenario due to controlled environment;
- Most undesirable and undignified way of providing rehabilitation to the visually impaired who are, otherwise, capable of availing professional/industrial employment.

This approach is suitable for the aged and severely visually impaired persons with multiple disabilities.

TRANSITORY EMPLOYMENT

a. ***Definition***: Employment in a transitory workshop is a work related rehabilitation strategy within a controlled working environment with the ultimate objective of professional/industrial employment.

b. ***Distinguishing Features***:

- Emphasis on movement of the individual whether his destination is the open labour market or extended employment;
- Specifically structured as a work setting leading to regular employment;
- Offers vocational exploration and intensive on-the-job training; and
- Middle path approach of providing on-the-job training for a limited duration.

c. ***Merits***:

- Encourages open employment provided the trades selected are compatible with the employment opportunities;
- Training is provided in simulated industrial settings, it becomes easier for a person to adjust to new environment when placed outside; and
- Initial financial support as the person is rewarded on the basis of production performance.

d. ***Benefits over Sheltered Workshops***:

- Thus the transitory employment has the benefits over the sheltered

workshops in terms of:

- Initial financial assistance;
- Work-oriented facilities;
- Possibility of social integration on completion of on-the-job training;
- Compatibility between training facilities and employment opportunities;
- Leads to employment outside;
- Movement of individuals;
- Extension of facilities to a larger number; and
- Wider choice of products.

This is to very strongly emphasize that, if possible, sheltered workshops should be transformed into transitory employment workshops. At the same time, regular employment outside is the most desirable mode of providing economic rehabilitation and restoring dignity to visually impaired persons. The transitory employment must not be considered a type of employment in itself. It is merely a tool of expediting employment elsewhere.

ON-THE-JOB TRAINING CENTRES

a. ***Explanation***:

The On-the-Job training centre aims at providing work placement in simulated industrial settings. It is a production activity and resembles an industrial set-up which has the primary objective of imparting employment oriented and task-based training to the individuals.

It is a step ahead of sheltered workshop in respect of nature of placement and training opportunities. In this case, placement is provided for a limited duration which depends upon nature of production activities or skills of individuals. Its major focus is imparting skill training and actual work experience to individuals who due to lack of requisite qualification and age, cannot be enrolled under the formal vocational training programmes.

b. ***Distinguishing Features***:

This approach is a programme which provides training on a developmental continuum for the individual who does not yet possess the motor skill necessary to perform work tasks. It provides progressive and appropriate training until the individual is ready to take a competitive employment or ready to live and operate in a vocational community (Manual). Such

approach has the following distinguishing characteristics:

- Rehabilitation agency assumes the financial obligation during the period of training;
- Purpose is to impart specific job-oriented training for a limited duration;
- Such programme is supported with employment & placement services;
- Individual is expected to perform production and services activities similar to a formal production unit;
- The programme undertakes sale of its products on preferential or competitive basis;
- It tends to be economically viable;
- The production activities at the centre are in consonance with the open employment opportunities; and
- The centre generally extends training activities to persons with all categories of disabilities.

c. ***Merits***:

Such programme is more desirable--socially as well as financially. It has the following advantages as compared to sheltered workshops as well as transitory employment:

- Economically more viable;
- Promotes appropriate self as well as other forms of employment;
- Enables selective training and placement of individuals;
- Provides training on a developmental continuum;
- Provides progressive training until individual is ready to seek appropriate employment;
- Results into realistic vocational development;
- Ensures instilling social behaviour and social integration; and
- Encourages training motor capabilities necessary to perform requisite works/tasks.

d. ***Limitations***:

- The programme may give more importance to its profitability than quality of training;

- The quality of on-the-job training may not be up to the mark;
- The nature of training may not be in tune with employment opportunities;
- Such programme may tend to emerge either as sheltered workshop or merely a production centre;
- Such programme may attract provision of Indian Factories Act, Minimum Wages Act, Industrial Disputes Act or other such labour and industrial laws;
- Many times, it may be difficult to sell products of such centres at remunerative prices; and
- Higher overheads due to training activities may render it difficult to attain economic viability.

SOME IMPORTANT TIPS

For the special workshops to be more effective, some realistic and researched tips are:

- To reduce per capita cost on training, vocational training should be time limited, placement oriented and realistic;
- Focus at development of appropriate skills of the individuals and enhancing production of the centre;
- Apply for Value Added Tax benefits on the purchase of raw material and sale of finished products;
- Encourage bulk and direct purchases, talk to manufacturers and get raw material at ex-works;
- Introduce proper inventory control ;
- Try for preferential sale to State departments, mass production, effective marketing etc.;
- Proper production planning and man-job balancing is essential for efficiency; and
- Multi-category approach would also render the training more cost effective.

The latest trend which is welcoming is to admit the blind persons in regular ITIs, technical school or professional training centres which ensure integration of the individual.

FUTURISTIC APPROACH

Like inclusive education, the existing placement services in the organized sector must emerge as centres of excellence for initiating, promoting and coordinating integrated training of the target group. This should be our ideal but, it should be progressively achieved on a time-bound programme in the following sequence:

a. Wherever possible, sheltered workshops must redefine their roles and progressively emerge as skill development centres aimed at promotion of gainful occupation of the individual.

b. A nation-wide study on evaluation of the existing employment services must be carried out for establishing and evaluating their objectives and the strategies. The centres should redefine their objectives; modify their strategies and approach to emerge as employment oriented, skill development, economically viable units. It may require introduction of new vocations, new equipment, new curricula and new procedure of evaluation and certification. These centres should emerge as skill development cum placement centres.

c. A time-bound Plan of Action should be evolved to convert these Skill Development Centres in a phased manner to be promoters of inclusive training and becoming resource centres.

d. New programmes of vocational training, income generation, skill development or economic rehabilitation should adopt inclusive approach from the beginning itself. In this case, developmental organizations for the visually impaired should become the resource centres, programme implementation centres, advocacy agencies or support systems. The placement centres should develop and supply special equipment, carry out task analysis and provide information, extend individual preparatory services and coordinate admissions, supply of educational material and promote appropriate employment.

These centres must emerge as properly equipped, well maintained, appropriately staffed training and placement centres with structured training and suitable certification. There should be in-built provision for continuous evaluation and self-monitoring of the process and outcome of the activities. While core staff should be appointed on regular basis, part time and visiting professionals should be involved for upgradation of services.

MODERN PLACEMENT TECHNIQUES

The economic independence and social integration of the visually impaired should generally be achieved through their competitive and open employment. It certainly requires preparing them for appropriate employment through suitable training and exploring all avenues of employment. Apart from administrative measures and legislative, constitutional and institutional support, it requires adoption of the following appropriate, result-oriented and relevant modern placement techniques:

VOCATIONAL ASSESSMENT AND WORK PREPARATION

Vocational rehabilitation may be achieved with or without work testing, aptitude testing, psychological testing, extensive and prolonged vocational guidance, reconditioning or vocational training.

SERVICES

The promotion of vocational rehabilitation in the organized sector will necessitate provision of the following services:

a. ***Assessment***: Obtaining a clear picture of a person's remaining physical, mental and vocational abilities and possibilities.

b. ***Evaluation***: Evaluating level of skill, aptitude, functional and occupational abilities.

c. ***Guidance***: Advising the person accordingly in the light of vocational training and employment possibilities.

d. ***Training***: Providing any necessary reconditioning, toning-up or formal vocational training or work preparation.

e. ***Assistive Devices***: Organizing appropriate vocational assistive devices to enhance mobility, functioning capabilities and capacities of the individual.

f. ***Placement***: Assisting individual to find appropriate and suitable work or service opportunities in the open or sheltered environment.

g. Follow up until complete rehabilitation is achieved.

OUTCOME: VOCATIONAL ASSESSMENT OF THIS NATURE CAN:

- Evaluate work performance under actual work conditions;
- Indicate the degree of work tolerance, the hours a person can work without

fatigue, his ability to stand noise and other environmental stresses, interruptions etc.;

- Assist to develop his self-confidence, self-reliance and personal adequacy;
- Assist the person to realize and accept his own potentials and limitations;
- Assist in vocational orientation.

AIMS

The procedure followed for vocational assessment, work preparation and placement would achieve the following objectives:

- To assist a person to gain or recover the habit of work;
- To give advice on any social problems which emerge in the process;
- To provide physical reconditioning;
- To provide medical, physical, psychological and vocational assessment of work capacity;
- To build up person's morale, help him to recognize his abilities and to think positively about his future;
- To place the person in employment or in suitable course of vocational training as a prelude to employment.

PRE-REQUISITES

In order to benefit from the procedure of promoting employment in the organized sector, an individual should:

- Be of working age, or approaching it, but not too old to secure appropriate placement at the end of the course;
- Have, or likely to have at the end of the procedure, the physical and mental capacity to work;
- Have reasonable prospects of getting a job at the end of the course.
- The benefits of vocational assessment and work preparation would be lost unless the person concerned obtains appropriate placement on termination, either with or without suitable vocational training.

SELECTIVE PLACEMENT

a. ***Introduction***: Selective placement involves using all the normal services and provisions; and adjusting them as necessary to their known and carefully

assessed needs. It is the next step after assessment, vocational guidance, vocational training or on-the-job training and involves three distinct processes:

i. Knowing the individual

ii. Knowing the job

iii. Matching following qualities of the individual with the job:

- Educational background, work experience and age;
- Family background, economic and social status and occupation; and
- Level of training in orientation and mobility and activities of daily living.

b. ***Basic Principles:***

- Meeting the physical requirements of the job;
- Compatibility between the training availed and job provided;
- Matching between the potentials of the individual and job requirement;
- Placement not resulting in any occupational hazard or risk to the visually impaired or fellow workers;
- Enhanced social integration;
- Conducive working conditions and environment; and
- Placement on grounds of suitability for the job, not pity, charity or sympathy.

JOB CLUBS

a. ***Introduction***: A group of visually impaired persons meet every day, in a structured meeting supervised by a counsellor using a 'lesson plan' schedule of daily activities. Half a day is spent in obtaining job leads and interviews in the office; the other half is spent in going out to these interviews. The counsellor closely observes and supervises as the client is engaged in obtaining leads, calling employers and writing letters.

b. ***Essential Features***

- Train the counsellor to provide adequate counselling;
- Emphasize creation of job leads;
- Encourage a person to maintain the job once he is placed;
- Rapidity of obtaining job is dependent upon: consistency of attending sessions, number of new job leads created, number of interviews

attended, interest of counsellor; and

- Involve other employment agencies, concerned Government departments, voluntary developmental organizations and employers' federations actively.

WORK STATIONS

a. ***Introduction***: The Work Station is a step between open placement and the training or the sheltered employment. The aspirant is placed under the conditions of actual employment but without formal employment. He is expected to perform actual work and follow all the rules as applicable to other workers in terms of timings, uniform, work performance and other conditions of employment. However, the employer has no obligation in terms of:

- Payment of wages;
- Maintenance of attendance cards;
- Incidental expenses;
- Compensation for hazards; and
- Insurance coverage.

The payment in terms of stipend, local transport, incidental expenses and insurance coverage may be provided by the local implementing agency or the government department. At the end of the training, it has been observed that the employer normally absorbs the person in his firm or unit.

b. ***Merits***:

- Demonstrates production potentials of the visually impaired;
- Convinces the co-workers regarding his production skills;
- Enables the employment officers to perform task analysis, do individual planning and assist the visually impaired person to adjust to the job;
- Economical and cost effective as compared to other modes of training;
- Ideal for a person who had no formal training;
- Reduces the gap between on-the-job training or transitory employment and open placement; and
- Establishes direct contacts between the trainee and the prospective employer and improves chances of open employment.

c. ***Factors Affecting Success***: While the work station approach seems to be practical, result-oriented and cost effective, its success depends upon the following aspects:

- Proper selection of the job depending upon ability, skills, potentials and interest;
- Proper supervision by the employer and the placement officer;
- Willingness of the employer to extend open employment on completion;
- Involvement of the concerned officials;
- Willingness of the implementing agency to incur expenditure on stipend, transportation and incidentals; and
- Most important, adoption of this approach by the Employment Exchanges, Vocational Rehabilitation Centres, District Rehabilitation Centres and voluntary placement organizations.

SOCIAL REINFORCEMENT

a. ***Definition***: The Social Reinforcement approach portrays the employment process as an informal job information net-work in which the person with early knowledge of job openings selectively passes this information on to unemployed persons who are then likely to reward the job informant in a social way.

b. ***Merits***:

- Prevalent for employment in unorganized sector, small units where recruitment process has not been streamlined;
- Effective where employment per se does not pose a very serious problem;
- May be adopted as a supplementary tool for encouraging employment; and
- May enable the aspirants to seek employment under legal provisions for which they are otherwise eligible.

JOB CAMPS

a. ***Definition***: These involve inviting the prospective employers and unemployed disabled persons en masse and providing them appropriate conditions for mutual interaction for expediting the employment process. The approach has been adopted by Special Employment Exchanges and voluntary organizations for person with disabilities.

b. ***Merits***:

- Employer gets to meet, examine and interview a large number of disabled persons and to select the most suitable ones;
- Person with disability faces a large number of interviews on the same day; and
- Suitable for developing countries where there is lot of unemployment and lengthy selection procedures are involved.

c. ***Limitations***:

- A strong 'employer-pull' is essential;
- Not a complete process by itself;
- Merely one aspect of the employment process; and
- Incentives, motivation and follow-up are essential.

INSTITUTIONAL PLACEMENT SERVICES

Procedure*:*

- Circulate a detailed résumé of the individual giving information among the prospective employers regarding educational qualification, past experience, area of specialization, age and areas of interest;
- Display the offers received from the employers;
- Encourage the individuals to apply for the job;
- Provide facilities and infra-structure for the interviews; and
- Arrange initial interviews.

This approach has proved very effective for the placement of various professionals, particularly in case of well-established and reputed institutions and universities offering professional courses. The development institutions and placement agencies may adopt this technique for expediting employment in the following areas:

- Physiotherapy, massage;
- Stenography, touch typing;
- Telephone operating;
- Computer programming, data entry;
- Social work, office management, marketing.

USE OF WEB PORTAL

All organizations and government departments and employment agencies should upload profiles of persons with visual impairment who are seeking employment opportunities with details of qualification, age, experience, expectations etc. on the website. Jobs Anytime–a web portal on employment has started uploading profiles of more than 200 persons with visual impairment with the purpose of promoting their inclusive employment http://www.recruitatanytime.com/SDSPL/Admin/DisplayFilterCatalogue.aspx?RD). Similarly, the Confederation of Indian Industries has started uploading profiles of persons with visual impairment on their website to promote their employment (www.ciispecialabilityjobs.in).

a. ***Merits***: It is the least expensive, speedier way of providing employment opportunities. It is easier for the prospective employers to use data for first round of screening on line itself. It is easier to update the data and relevant information.

b. ***Limitations***: Only such employers who believe in online screening of applicants would benefit. There may be initial cost involved which may be difficult for persons with visual impairment to bear. It is difficult to keep data in absence of availability of latest information about concerned job aspirants.

All these techniques on promoting employment are not mutually exclusive. A combination of various approaches may be very effective in expediting employment. Whatsoever approach is selected, the focus should always be the individual. The client-centred approach is most essential. The economic rehabilitation should definitely be the ultimate objective of any rehabilitation programme.

EMPLOYMENT–A MATTER OF RIGHT

One of the means of creating employment opportunities for the disadvantaged groups is enactment of suitable legislation in terms of job reservation, designation of specific types of jobs and allocation of priorities or preferences in employment.

a. Arguments in favour of legislation are:

- Creates jobs for the target group;
- Demonstrates government support for employment;
- Creates law enforcing agency which may force the employers in this respect;
- Recognizes potentials and accords due status to the target group;
- Supports other techniques of expediting employment;

- Ensures promotion of support services like training, assistive devices and human resource development;
- Enables State to make budgetary allocations for this purpose;
- Promotes emergence of institutional network on employment promotion;
- Meets the objective of equality of opportunities in employment; and
- Encourages education and employment-oriented training of the target group.

b. Arguments against such legislation are:

- Legislative compulsion is wrong in principle;
- Against the constitutional right of freedom of employment;
- Individuals so placed may feel they are employed on sufferance and not on merit;
- May encourage them for the jobs for which they are not suitable;
- Effectiveness of legislation as a social measure of promoting competitive open employment is doubtful;
- May pre-empt other measures on encouraging employment; and
- Effective implementation of legislation is doubtful.

Whatsoever may be the limitations of the legislative measures; their existence and implementation always support other measures.

THE PERSONS WITH DISABILITIES (EQUAL OPPORTUNITIES, PROTECTION OF RIGHTS AND FULL PARTICIPATION) ACT, 1995

The Parliament of India enacted this Act on 22nd December, 1995 to give effect to the Proclamation on Full Participation and Equality of the People with Disabilities in Asia and Pacific Region. The President of India gave his assent to the Act on 1st January, 1996 and it came into force with effect from 7th February, 1996.

Provisions: Chapter VI on Employment envisages the following provisions:

- Identification of posts in the establishments which can be reserved for such persons (S-32).

- Job reservation to the extent of 3 percent of the vacancies in every establishment in the posts identified for each disability (S-33).
- Seeking information from each establishment relating to appointment of such persons in such vacancies (S-34).
- Empowering Special Employment Exchanges to have access to any relevant record or documents in the possession of establishments as regards such reservation (S-35).
- Provision for vacancies not filled to be carried forward (S-36).
- Maintenance of records by the employers as regards filling of identified posts (S-37).
- Formulation of special schemes by the local authorities and the appropriate governments for ensuring employment of such persons (S-38).
- Reservation of 3 percent seats in all the educational institutes receiving grants from the government (S-39).
- Reservation of 3 percent in all poverty alleviation schemes for such persons (S-40).
- Incentives to employers in both public and private sectors to ensure that at least 5 percent work force is composed of such persons (S-41).

Similarly, a number of State Governments have enacted legislation on job reservation. In Gujarat, reservation of one percent of jobs in the establishments and undertakings employing more than 250 workers has resulted into employment of a large number of persons with disabilities in the factories (Gujarat Law on Employment of Persons with Disabilities in the Factories, 1981).

UN CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES (UNCRPD)

India ratified the UNCRPD on October 1, 2007 and it came into force on May 3, 2008. Article 27 of the Convention which deals with 'Employment and Work' has the following important features:

- Recognizing the right of persons with disabilities to work in environment that is open, inclusive and accessible to them;
- Prohibiting discrimination on the basis of disability with regard to all matters concerning all forms of employment;
- Protecting the rights of persons with disabilities to just, safe, healthy and favourable working conditions;

- Protection from harassment, and providing redress of grievances;
- Ensuring that persons with disabilities are able to exercise their labour and trade union rights;
- Enable persons with disabilities to have access to general technical and vocational guidance programmes, placement services, vocational and continuing training;
- Promoting opportunities of self-employment, entrepreneurship, development of cooperatives, and starting one's own business;
- Employing persons with disabilities in the public sector;
- Promoting the employment of persons with disabilities in the private sector and taking necessary affirmative action including incentives for the purpose;
- Ensuring that reasonable accommodation is provided to persons with disabilities in the workplace;
- Promoting opportunities of work-experience for persons with disabilities in the open labour market;
- Promoting vocational and professional rehabilitation, job-retention and return to work programmes for persons with disabilities;
- Ensuring that persons with disabilities are not held in slavery, and are protected from forced or compulsory labour.

RIGHTS OF PERSONS WITH DISABILITIES BILL 2014

The Bill, currently before Parliament, makes the following major provisions on employment:

- Framing of schemes and programmes including provision of loans at concessional rates to support employment for persons with disabilities (S-18);
- Non-discrimination against any person with disability regarding employment, provided that any establishment be exempted from this provision under specified conditions (S-19) (1);
- Providing of appropriate environment to employees with disabilities (S-19) (2);
- No promotion to be denied to a person merely on the ground of disability (S-19) (3);
- No person acquiring disability during his/her service to be reduced in rank nor his/her services be dispensed with; (S-19) (4);

- Every establishment to notify equal opportunity policy detailing measures to be taken in pursuance of the employment-related provisions (S-20) (1);
- Every establishment and employment exchange to maintain records of persons with disabilities regarding employment and allied matters (S-21) (1 and 2);
- Every establishment to appoint and notify to the concerned Commission a Grievance Redressal Officer for complaints of an aggrieved person who shall investigate such complaints (S-22) (1 to 4);
- Granting unemployment allowance to persons with disabilities registered with Special Employment Exchanges for more than two years and who could not be placed in any gainful occupation (S-23) (3 h);
- Appropriate governments to identify posts to be reserved for persons with benchmark disabilities and review and update such lists at periodic intervals not exceeding five years (S-32);
- Every appropriate government to reserve not less than five percent of the vacancies meant to be filled for persons or class of persons with benchmark disabilities, one percent of which to be reserved for persons with blindness and low vision, provided that under certain special conditions and through separate notification, government may exempt an establishment from this provision;

  Computation of reservation of vacancies for persons with benchmark disabilities to be done on five percent of total cadre strength;

  Procedure also specified for carrying forward an unreserved vacancy and its exchange among other categories of benchmark disabilities etc.

  Relaxation of upper age limit (S-33);
- Appropriate government and local authorities to provide incentives, within the limit of their economic capacity and development, to employers in the private sector, to ensure that at least five per cent of their work force is composed of persons with disabilities (S-34);
- Framing of schemes for persons with benchmark disabilities, to provide for them, five per cent reservation in allotment of agricultural land and housing, in all poverty-alleviation and developmental schemes, in allotment of land at concessional rates for specified purposes (preference to be given to women with benchmark disabilities in these reservations) (S-36).

STANDING COMMITTEE RECOMMENDATIONS

The Standing Committee on the Ministry of Social Justice and Empowerment, which examined the Bill, has made the following recommendations on the above sections:

Section 33:

The National Commission should have powers to review the proportion of vacancies for different disabilities in the various cadre strength of any organization and make recommendations accordingly.

Section 34:

Some broad category of incentives may be specified in the Bill itself which will motivate the private sector to give suitable employment to the person with disabilities. Further, the phrase 'within the limit of their economic capacity and development' may be deleted.

SOME IMPORTANT INITIATIVES

a. The Department of Disability Affairs, Ministry of Social Justice and Empowerment has identified and notified a list of posts suitable for persons with disabilities including persons with visual impairment. The latest list of posts identified for persons with blindness, low vision, locomotor impairment and hearing impairment was issued vide Ministry's Notification dated 29th July, 2013. This Notification also states that the list of posts as notified is not exhaustive. A comprehensive list of identified posts is available on website www.socialjustice.nic.in. A list of posts identified for blind and low vision persons can be seen at website www.aicb.org.in.

b. Various Ministries, Departments and instrumentalities of the Central Government have adopted and implemented the job reservation in various degrees. Now, most advertisements on new vacancies notify posts reserved for persons with disabilities.

c. The Chief Commissioner for Persons with Disabilities (CCPD), many High Courts and the Supreme Court of India have delivered several judgments validating provisions of sections on employment, directing Central and State Governments to implement these provisions and ensure clearing of backlog in respect of reservation in employment. These judgments are available on the websites www.ccpd.nic.in , www.disabilityindia.org, www.punarbhava.org, www.aicb.org.in and various sites of law publishers and NGOs.

d. Due to various advocacy related initiatives of a number of NGOs, DPOs and persons with disabilities themselves, various poverty alleviation programs have started covering persons with disabilities. Most significant coverage in this respect has been especially under Mahatama Gandhi National Rural Employment Guarantee Scheme (MNREGA), Indira Gandhi Awas Yojana and such other schemes.

e. A significant contribution of chapter on employment under PWD Act 1995 has been in respect of 3% reservation in all educational institutes. After High Court of Gujarat Judgment in the matter of *Palak Jain versus Union of India* and Supreme Court Judgment in case of *All Kerala Parents Association versus Union of India*, implementation of this Section has become quite effective.

f. The provision of Section 47 of the PWD Act 1995 on continuity of employment on acquiring disability during employment has benefitted a number of persons with disabilities. After the bold judgment in the matter *Baljeet Singh versus Government of Delhi*, implementation of this Section has been effective.

g. The Department of Disability Affairs has notified a Scheme for providing incentives to employers of persons with disabilities in terms of contribution by the Central Government in respect of employer's contribution to Employees Provident Fund as well as Employees State Insurance Scheme in case of appointment of an employee with disability (Details of this Scheme are available on the website www.socialjustice.nic.in). As this contribution is only for 3 years and only in case of appointment after the date of notification, the Scheme has not got much response so far.

h. National Livelihood Mission has initiated process of imparting training and support to persons with disabilities. The Government of Rajasthan has already established a "Disability Cell" under its State Livelihood Mission.

i. Many State Governments have started covering persons with disabilities in various initiatives on skill development. The Government of Gujarat has taken lead in establishing "Kaushalaya Vardhak Kendra (Skill Development Centres)" for the persons with visual impairment which are imparting skill development in the areas of scientific massage, plumbing, anchoring, basic computer operations and mobile repairing.

j. Skill development and employment have also been recognized as eligible activities for extending support under the Scheme of Corporate Social Responsibility as per amendment to Indian Companies Act, 2013.

k. The Director General of Employment & Training, Ministry of Labour has constituted a Working Group on strengthening /enhancing the functioning of the Vocational Rehabilitation Centres.

l. The Department of Empowerment of Persons with Disabilities, Ministry of Social Justice and Empowerment, in collaboration with Ministry of Skill Development & Entrepreneurship has launched a National Action Plan for skill training of persons with disabilities on 21st March 2015 in New Delhi. The proposed National Action Plan (NAP) aims to provide quality skill training with high employability and extensive urban and rural coverage. The Plan envisages use of Information Technology for content generation, training delivery, monitoring of training and employer connect. The Plan has the target of providing skill training to 2.5 million persons with disabilities in next 7 years. For implementing the NAP, comprehensive guidelines have been prepared by the Department, which are available on the Department's website: (1) **www.disabilityaffairs.gov.in** and (2) **www.socialjustic.nic.in.**

m. The Department of Personnel and Training (DoPT) issued detailed instructions on reservation for the persons with disabilities vide their Office Memorandum No.36035/3/2004- Estt.(Res.) dated 29.12.2005. (Can be seen on website www.aicb.org.in). According to these instructions, 3% of the vacancies in case of direct recruitment to Group A, B, C and D posts stand reserved for persons with (i) blindness or low vision (ii) hearing impairment and (iii) locomotor disability or cerebral palsy in the posts identified for each disability. These instructions also provide that 3% of the vacancies in case of promotion to Group D and C posts in which the element of direct recruitment, if any, does not exceed 75% are to be reserved for persons with disabilities of which one percent each shall be reserved for persons with (i) blindness or low vision (ii) hearing impairment and (iii) locomotor disability or cerebral palsy in the posts identified for each disability. The Memorandum provides detailed instructions on how to fill up reserved posts.

n. A landmark judgment was delivered by the Hon'ble Supreme Court on 8th October, 2013, in the matter of Civil Appeal No. 9096 of 2013 (arising out of SLP (Civil) No. 7541 of 2009) titled Union of India and Anr. Vs. National Federation of Blind and Ors. In the judgment, the Hon'ble Court has, inter-alia, held: "Thus, after thoughtful consideration, we are of the view that the computation of reservation for persons with disabilities has to be computed in case of Group A, B, C and D posts in an identical manner viz., computing 3% reservation of total number of vacancies in the cadre strength."

o. Based on the above directions of the Hon'ble Supreme Court, certain modifications were issued to the said instructions of 29.12.2005 on 3rd December, 2013 and 6/7 January, 2015. Further, in accordance with the said Court direction, para 14 of the OM dated 29.12.2005 was amended to the following extent: "Reservation for the persons with disabilities in Group A or Group B posts shall be computed on the basis of total number of vacancies occurring in direct recruitment quota in all the Group A posts or Group B posts respectively, in the cadre.

p. Thus, after the judgment of 8th October, 2013 of the Supreme Court as in the case of Group C and D, the number of vacancies of both the identified and unidentified posts is being computed. In Group A and B, the vacancies were being computed on the vacancies arising in the identified posts only, not the unidentified posts. After the Supreme Court judgment, instructions have been issued to compute the vacancies of both identified and unidentified posts.

q. Department of Personnel and Training (DoPT) have vide their O.M. dated 31st March 2014, issued guidelines for providing certain facilities in respect of persons with disabilities who are already employed in government for efficient performance of their duties.

r. DoPT vide their communication dated 22nd May, 2015 have also dealt with the subject of special recruitment drive to fill up the vacancies for persons with disabilities.

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CHAPTER 9

Services for the Elderly Blind, Newly Blinded, and Blind with Multiple Disabilities

Nandini Rawal

HELEN KELLER
1880-1968

Through three imaginary characters, this chapter provides insights into the challenges faced by three special groups of persons with visual impairment. It also brings out specific educational and training needs of these groups and lists services available for them. As the title suggests, the groups covered are: newly blinded persons, old age visually impaired persons and persons having visual impairment and other disabilities.

INTRODUCING OUR REPRESENTATIVE CHARACTERS

Mr. Amit Kumar, 45 years, is a professor of languages in a college in a city in Gujarat. He has recently gone on long leave as he lost his eye sight due to an accident. Mrs. Girija Devi is 75 years old and is now largely to be seen in a rocking chair in her bedroom due to her failing sight. Girija Devi has been

diagnosed with Glaucoma. Saroj, aged 5 years, lives in a village in Gujarat. Her parents are running from pillar to post trying to get solutions for their daughter who is not able to hear or see.

All the people described above, have very different problems and concerns. The uniting thread in these three persons is lack of eye sight. Even the eye conditions and residual eye sight of these persons may be totally different. All of them could have varying degrees of vision loss.

These three people may have either total blindness or low vision. However their coping with their blindness will depend on many other factors:

- Age of the person
- Age when the person lost or started losing sight
- Whether the loss is total or the person has usable sight
- The background of the person--rural, urban, socio economic background, community, religion etc
- Whether the person has an additional impairment.

With this background, let us move on to consider each of our separate groups forming the subject-matter of the present chapter.

NEWLY BLINDED/LATELY BLINDED PERSONS

Visual impairment is the consequence of a functional loss of vision, rather than the eye disorder itself. Eye disorders which can lead to visual impairments can include retinal degeneration, albinism, cataracts, glaucoma, muscular problems that result in visual disturbances, corneal disorders, diabetic retinopathy, congenital disorders, and infection (NICHCY, 2004). The broad definitions of "blindness" and "low vision" have already been discussed in an earlier chapter of this Resource Book.

VISUAL IMPAIRMENT--CONGENITAL/ADVENTITIOUS

All persons with blindness or low vision have certain issues that are common, like obvious physical losses, such as the ability to read a book, drive a vehicle, or get oriented to one's surroundings and move around independently.

Blindness also has more abstract losses, such as visual proprioception, understanding and contact with the environment, and the psychological associations we have with darkness (emptiness, sadness, isolation) which come to have special concern for those who are totally blind or lose sight later. Persons who are blind

since birth or very early in life--congenitally blind--and persons who become blind later on in life (adventitiously blind--like Amit Kumar and Girija Devi--have different adjustments to make to their conditions. Persons who are congenitally blind, do not mourn their loss of sight as persons who lose their sight later on. While both types of vision loss are challenging, the adjustment in acquired conditions creates unique psychosocial impact and concerns. Apart from the physical challenges imposed by their visual impairment, both congenitally and adventitiously blind or low vision individuals may also have to face the constant challenge of psychologically and socially adjusting to their disability.

ABOUT ADJUSTMENT

The definition, process and phases of adjustment have already been explained in another chapter of this Resource Book and are, therefore, not repeated here. We must emphasize here that while there is no direct relationship between impairment and psychopathological disorders (Harrington and McDermott, 1993), the heterogeneous nature of conditions and the possible differences in family life, education, social and economic status suggest that adjustment is idiosyncratic--it is personalized, peculiar and dependent on the life experiences of the individual. The education of both the self and society is essential for positive adjustment. Society has general misgivings about visual impairment and these are partly responsible for the perpetuation of myths and misconceptions regarding the character and abilities of people who have visual impairment.

It has been demonstrated by researchers and successful people who have visual impairment that confidence and self-esteem are deeply connected to the ability to navigate and should be regarded as constructive elements for success after losing eye sight. The age of onset of blindness or impairment can have significant effects on the affective development of individuals (Rosa, 1993). Some students who were congenitally blind or visually impaired observed that they were actually happy by the fact that they were born with an impairment and not lost their vision later in life because they felt they were not missing anything as they had no idea what it actually meant to see. Some blind students say that it is more comforting than having "something that did not function properly". The view that being congenitally impaired (usually congenitally blind) is easier to come to terms with, is often mentioned in literature (Morse, 1983; Warren, 1984) but should not be over-generalized.

Affective development is individual and context dependent. Clearly there will be differences in the adaptation of congenitally and adventitiously blind or visually impaired. Time is an important variable to consider. First, a congenital impairment forces an almost automatic acceptance of the condition. An adventitious

impairment, on the other hand, is often accompanied by an element of surprise, trauma and depression that requires a certain accommodation period. Trauma and depression can affect both the individual and the family. There is most certainly, at least an initial shock. Functional and positive self-development will depend on the individual's proficiency in the use of other senses and/or residual vision for the organization of information and active participation in society.

Thus, the challenges faced by Amit Kumar will be different from those for our older character, Girija Devi. Amit Kumar is in his prime, is the breadwinner for his family and a role model to his wife and children. On losing his sight, Amit Kumar is faced with a sense of bereavement, shock, disbelief and sense of self pity. He keeps asking himself "Why me?" He is no longer able to drive his car or drop his children at school. These losses create severe trauma and conflict. Amit Kumar is facing problems in meeting people, greeting them or even engaging in a conversation that involves talking about his blindness. Unless he accepts the fact that his blindness is irreversible and starts confronting his problem positively, this position will not change.

People like Amit Kumar, who are newly blind, are more traumatized because they have been sighted earlier and have lived as sighted people do using their eyes more than any other sense. Clearly, there will be differences in the adjustments of people who are blind at birth and people who acquire blindness later on in life. As time passes, as is usually the case with other factors, grief, shock and bereavement decreases. Thus, time, coupled with intervention strategies, is an important variable to consider.

We have to ensure that people who acquire visual impairment come to terms with facing their vision loss, or becoming blind, but not spend too much time on negative thoughts, so that the person can re-enter society and become a productive member.

SELF-CONCEPT

Individuals differ in how they accept their disability. In some cases, the inability to cope leaves the individual feeling detached from the general society. In other situations, individuals detach themselves because they feel they cannot fit in or are being pitied by others. Negative self-concepts are usually associated with isolation, depression and mental and health problems. An important aspect of psychosocial adjustment is the development of a positive self-concept. It has important implications on the personal, professional and social life of an individual. A positive self-concept is usually associated with the ability to cope and overcome

the consequences of a disability. It gives an individual a positive outlook on life, satisfaction and commitment. Those that go through life with a negative attitude will find it difficult to find happiness. On the other hand, those that have a positive attitude will find some happiness in living every day. Losing vision or becoming blind is a hard thing to go through but with the right attitude clients can go through this challenge. According to Harrell (2003), "The next time you are faced with a difficult challenge, focus on staying positive. Remember that your setbacks can be setups for even greater opportunities." The million dollar question is how does one have or create a positive attitude. The answer to this question is quite simple. Harrell suggests that people have to have a positive inner dialogue. Harrell (2003) stated, "The key to ridding yourself of this attitude of helplessness is to clear your mind of negative inner conversations and replace them with more hopeful messages."

SERVICES

The genesis of services for the newly/lately blinded persons in the country, can rightly be traced back to 1943, when the St. Dunstan's Hostel for the Indian War Blinded was established in Dehra Dun. While lately blinded individuals were admitted to the Training Centre for the Adult Blind since its inception in 1950, organized services for the group really gained momentum at NIVH with the appointment of a professional designated as Field Officer (Crisis Management) around 1983. Earlier, on April 1, 1978, the National Association for the Blind (India) started running a series of rehabilitation courses which included three-month courses in basic rehabilitation and adjustment for the newly blinded. Around 80's and thereafter, several other organizations-All India Confederation of the Blind, Delhi; Blind People's Association, Ahmedabad; Blind Boys' Academy, Narendrapur etc.-also undertook training for these groups.

While imparting training to clients to deal with their adjustment to blindness, it is important to make them understand their negative thoughts/attitudes and help them disregard these negative perceptions and come up with a positive thought/ attitude. One of the best approaches is to enable the individual to meet other blind persons and learn of their jobs and the techniques they use in doing things without sight. Membership in an organization working with the blind and participation in its activities will provide a common meeting ground and, even more importantly, a sense of belonging and restoration of confidence.

People who are **newly blinded**, like Amit Kumar, could benefit by following the under-mentioned steps:

- Visit an ophthalmologist who will give an accurate diagnosis of whether he

needs to exercise special care on account of his eye-condition;

- Counseling for reinstatement of his self-confidence and self-esteem;
- Counseling to family members and loved ones;
- Reassurance by his family that he is still the same Amit Kumar and that their relationship with him is unchanged in spite of his blindness;
- Reference to an organization having training programmes in adjustment and rehab skills like daily living, orientation and mobility, written communication etc.

If it is diagnosed that Amit Kumar or someone like him has **low vision**, the following steps are necessary:

Psycho-Social Support: A person with low vision needs to understand his/her own abilities and communicate these to the environment. Self-esteem needs to be built up as much as possible.

Integration: Visual training programmes need to be integrated as much as possible in regular activities, at home, at work.

Family Involvement*:* All the people in the individual's life need to be involved.

Low Vision Devices: Fitting of optical and non-optical low vision devices.

Eye Checkup: Yearly/regular eye check and follow-ups where needed.

Rehabilitation Inputs: Continued inputs from rehabilitation personnel where needed.

Systematic Assessment: It is very important to find out what the individual can do with his vision, and to teach him how to make the best use of it.

People like Amit kumar need to be made aware of their rights that people with disabilities (PwDs) are entitled to. They will need to be given information about various Sections of the Persons With Disabilities (PWD) Act 1995 particularly Section No. 47 of the Act which specifically says "No establishment shall dispense with, or reduce in rank, an employee who acquires a disability during his service:

Provided that, if an employee, after acquiring disability is not suitable for the post he was holding, could be shifted to some other post with the same pay scale and service benefits:

Provided further that if it is not possible to adjust the employee against any

post, he may be kept on a supernumerary post until a suitable post is available or he attains the age of superannuation, whichever is earlier."

"No promotion shall be denied to a person merely on the ground of his disability:….".

The individual's family will also need counseling and reassurance that visual impairment does not, in any way, reduce his/her status in any family relationship.

THE ELDERLY BLIND

Generally, in our country, persons 60 years or above, are considered to constitute the elderly or the geriatric group. According to the 2011 disability Census figures, there are 13,59,385 elderly persons with visual impairment (M:6,34,136, F: 7, 25,249). Coping with her condition for Girija Devi and others like her will be different from Amit Kumar's. The level of her remaining eye sight will determine her level of independence in her day to day life. As she is an elderly person, she is likely to have other associated problems like Arthritis, Hypertension, Diabetes or a heart malfunction.

In a typical Indian situation, the rapid disintegration of the joint family system may tend to create conditions of isolation and neglect for her. Willingly or otherwise, she may have been forced to give up her erstwhile active roles in the family, resigned to her fate of dependence. These issues are emerging in a far more pronounced manner in semi-urban and urban areas. Hence, the need for some special consideration for these older groups. Thus, Girija Devi may need training in mainly looking after herself and managing her day to day activities independently and safely. She may also be part of a religious group in a temple or may be attending Satsang.

Older blind and visually impaired people like Girija Devi will need to learn new ways to accomplish their daily routine tasks. In particular, they may need the following services/support:

Counselling for self and other members of the family;

Identifying their actual needs in terms of the nature and extent of the requisite additional training in skills of independent living;

Making such training available with due deference to the individual's age;

Reassurance by her family that the individual is still the same person and that their relationship with her/him is unchanged in spite of blindness and old age;

Arranging some form of financial help to provide them a feeling of a degree of independence.

These new support measures will enable Girija Devi and others like her to live with some degree of independence and lead productive lives, as more costly in-home or nursing home care or institutionalization is not very prevalent in India.

SERVICES

The first major initiative to support older blind persons was undertaken by the National Association for the Blind (India) with the establishment of the NAB-Lions Home for the Ageing Blind in Khandala on 29th march, 1970. The institution caters to about 82-85 persons. This marked a major break-through in the sector at that time. Unfortunately, due to the cost and other factors, the initiative could not be replicated elsewhere. Now, there are a few, though sporadic instances of a few older blind persons being enrolled in regular homes for the elderly.

Since 1980's these groups are also getting some attention under CBR programmes being conducted by several non-governmental organizations. It is to be hoped that such activities will become regular components of these programmes and our senior citizens will get the attention they need, as a matter of human right.

Some organizations like the HelpAge India provide small amounts as pension under certain conditions, through NGO's for supporting indigent older persons, including the disabled. Most state governments operate disability pension schemes which, obviously, cover the elderly as well. Persons like Girija Devi could also benefit from these provisions, if they could be systematically covered under ongoing CBR projects.

As has been illustrated in the case of Amit Kumar, Girija Devi and her older counterparts are in no way hampered in any social responsibility or relationship. Girija can still be the Head of her family and keep it together as she has done in the past. What is needed is the right kind of supportive environment.

DEAFBLINDNESS

Saroj presents a different scenario altogether. In addition to blindness or visual impairment, she has an additional disability of not being able to hear. Children like Saroj are called "persons with deafblindness."

Deafblindness is a combination of visual and hearing impairments and comes in varying degrees. Because 95 percent of all one learns comes through one's eyes and ears, deafblindness causes unique problems in communication,

mobility and accessing information. A person who is deafblind must somehow make sense of the world using the limited information available to him or her. If the person's sensory disabilities are great, and if people in the environment have not made an effort to order the world for him or her in a way that makes it easier to understand, this challenge may be overwhelming. Behavioural and emotional difficulties often accompany deafblindness and are the natural outcomes of the child's or adult's inability to understand and communicate.

Children who are deafblind are educationally isolated because impairments of sight and hearing require thoughtful and unique educational approaches in order to ensure that children with this disability have the opportunity to reach their full potential.

For a young child who is deafblind, the world is initially much narrower. If the child is profoundly deaf and totally blind, his or her experience of the world extends only as far as the fingertips can reach. Such children are effectively alone if no one is touching them. Their concepts of the world depend upon what or whom they have had the opportunity to physically contact. If a child who is deafblind has some usable vision and/or hearing, as many do, her or his world will be enlarged. Many children who are deafblind have enough vision to be able to move about in their environment, recognize familiar people, see sign language at close distances, and perhaps read large print. Others have sufficient hearing to recognize familiar sounds, understand some speech, or develop speech themselves.

SERVICES

The Helen Keller Institute for the Deaf and Deafblind was established on July 11, 1977 with 2 deafblind children, 1 deaf child, 3 teachers, a group of Committee members and Rs.150/-, in the home of one of the teachers. It is a pioneering Institute to start a programme for deafblind children. It is also the first Institute in India to follow the philosophy of "Total Communication" in teaching the Deaf, Deaf Multiply Handicapped and Deafblind. Its vision is to create, build and develop services for the Deaf/Deaf Multiply Handicapped/Deafblind children and young adults through Day-Care/Residential Facilities and other ancillary services.

The Institute has helped educate and train 32 Deafblind children and 130 deaf children, since its inception in 1977. At present, the Institute has 25 deafblind and 64 deaf children on its roll. The Institute is now recognized nationally and internationally and is aided by the Ministry of Social Justice & Empowerment, New Delhi and Women, Child and Handicapped Development Office, Maharashtra.

It has two separate schools -- one for deaf, another for deafblind children, and a special residential unit for deafblind children residing outside Mumbai.

Sense International India marks a significant landmark in providing services for the group. It was set up in the country on January 1, 1997. According to Sense India, the number of persons with multiple sensory impairment is estimated to be about 5,50,000. The organization runs 22 programmes for the group in collaboration with 51 partners in 22 states, covering 60,000 persons with multiple sensory impairments. The services offered by the organization are:

- Education through the Individualized Educational Plan (IEP);
- Training of parents and family members;
- Special schools/units in partner NGOs;
- Partnership with Sarva Shiksha Abhiyan (SSA);
- Training to earn livelihood (trained nearly 224 deafblind individuals for gainful employment, so far);
- Care and rehabilitation built around communication through just simple sounds, facial expressions, words, signs, Braille or print;
- Training in daily living skills and mobility;
- Home-based programmes and CBR services;
- Respite care;
- Advocacy at different levels and influencing policy issues.

VISUALLY IMPAIRED WITH ADDITIONAL DISABILITIES

There are many people who have visual impairment with additional disabilities (VIAD) or multiply disabled visually impaired (MDVI). These persons could have a visual impairment along with other disabilities such as cognitive, developmental, or mobility impairments. Such a person has a combination of two or more certifiable handicapping conditions whose impact is so severe that the educational needs of the person cannot be met in a programme designed for the separate handicapping conditions.

Each combination of disabilities presents a unique situation, with challenges that add up to more than the challenges of a single disability put together. People who do not have visual impairments, but who have deafness or cognitive disabilities use adapted techniques that rely on their vision to function. Many of the strategies

that people without vision use to orient themselves, move safely around obstacles and on stairs, cross streets, and communicate require normal cognitive functioning, normal hearing, and/or good mobility. Many of these strategies present challenges for deafblind people, or for those who cannot understand or process the information, or cannot move safely.

APPROACHES

People like Saroj or any person who is blind and has an intellectual or other disability will need help learning to understand the world. Without vision, or with reduced vision, he or she will not only have difficulty navigating, but may also lack the motivation to move outward in the first place. Helping such a young child to learn to move may begin with thoughtful attention to the physical space around him or her, so that whatever movements the child instinctively makes are rewarded with interesting stimulation that motivates further movement.

Every person with multiple disabilities presents a unique educational challenge. Teachers need specialized training and skills to understand how these persons experience and understand the world. The persons with multiple disabilities and a visual impairment do not form a homogenous group. The true extent of the visual functioning of such a person is frequently unknown and may vary depending on person's general health and physical condition. As a result, guidelines for working with this population often offer only a general framework for appropriate intervention (Mc Linden, 1997). Every such child has a unique set of learning problems and his appropriate learning modes are different from other children. Faced with such a diverse population, a multipronged and multi-option approach has to be adopted. Paul (1995) also supports this contention and feels that such a person presents such a wide range of needs that no single professional or individual can cater to their needs alone.

Therefore, a team approach should be used to design and implement a comprehensive programme for each individual.

So what would Saroj and those like her, need? The first step would be visit by a Community Based Rehabilitation (CBR) staff to Saroj's house and explaining her condition to her parents and other key persons in the household or community. In the absence of a CBR worker, we assume that Saroj is identified and reaches an eye clinic or a rehab institute. If Saroj has very little hearing, and also little or no vision, a specialist in the education of the deafblind will need to be involved. A professional with relevant specialization would be of help in cases of vision loss with additional disabilities. The steps would be:

- Visit to an ophthalmologist who will give an accurate diagnosis of whether there is any residual sight;
- Visit to an ENT or other specialist concerning additional disability to get an accurate diagnosis of her condition;
- As in other cases of disability, helping them to get a Disability Certificate which will enable them to access social security schemes and entitlements;
- Admission as necessary, to the local primary school;
- Collaborating with Sarva Shiksha Abhiyan to access entitlements like scholarship, assistive devices, uniform, medicines and other stipulations;
- Providing help to get access to the needed devices, outside SSA;
- Reference to a rehabilitation institute or rehabilitation therapist to teach the individual skills to cope with disabilities;
- Detailed assessment of the individual's abilities and needs; and
- Development of an individualized education plan (IEP).

Mislabeling a visually impaired child with an additional disability is a common problem. Saroj may be labeled as being mentally disabled because she may not answer questions or may not be able to perform in standard evaluation on par with her peers. However with training and development of alternative assessment, Saroj can succeed as well as her peers.

SERVICES

There are no reliable figures available about visually impaired persons with additional/multiple disabilities. Enumeration of multiply disabled persons was undertaken as a part of 2011 Census. According to the figures thus available, the number of multiply disabled persons in the country as in 2011 is 21,16,487: (M-11,62,604; F-9,53,883). Services for these groups have been available in a sporadic manner since 1980's with NIVH and organizations like the Blind Relief Association, Delhi, Blind People's Association, Ahmedabad etc. taking the lead.

The National Association for the Blind (India) introduced home-based services for the benefit of multiply disabled visually impaired persons in 1995 benefiting 100 children in and around Mumbai. NAB (India) is, now, running this programme in 8 different locations in the country, covering 55 MDVI children.

The National Institute for the Empowerment of Persons with Multiple Disabilities (NIEPMD) was set up by the Union Ministry for Social Justice and

Empowerment at Muttukadu, Chennai in 2005. The Institute has been established to serve as a national resource centre for persons with two or more disabilities. The disabilities covered are those included in the PWD Act (1995) and the National Trust Act (1999).

THE SERVICES PROVIDED BY THE INSTITUTE ARE:

- Rehabilitation Medicine
- Physical therapy
- Occupational therapy
- Sensory Integration
- Prosthetics & Orthotics
- Special education
- Psychological Assessments and Interventions
- Speech, Hearing & Communication
- Vocational training
- Vocational Guidance & Counseling
- Support for the Deafblind
- Community based Rehabilitation
- Special Clinics (Psychiatric, Neurology & Ophthalmology).
- Family Cottage Support.

Voice & Vision, Mumbai is a project of Hilton/Perkins Programme of Perkins School for the Blind, USA. It was set up in 2001 when Hilton/Perkins Programme recognized the leadership of professionals in India, and decided to bring agencies and individuals together to work in cooperation to improve services for children who have vision impairment with additional disabilities, including deafblindness across the country.

Voice and Vision conducts training programmes and develops/disseminates information/ materials on the education of children who have vision impairment with additional disabilities, including deafblindness in India.

Its focus is to build leadership and expertise among educators, caregivers and families so that children who have vision impairment with additional disabilities, including deafblindness get appropriate and effective services.

Their goal is to increase educational opportunities for children who have

vision impairment with additional disabilities, including deafblindness, throughout India. This is achieved by utilizing a cadre of highly skilled professionals, paraprofessionals, families and caregivers of children who have vision impairment with additional disabilities, including deafblindness.

The organization provides training to educators and caregivers who work with children who have vision impairment with additional disabilities, including deafblindness through:

- Intensive training for master trainers followed by mentorship
- Short courses for CBR workers, Teachers and Families
- Need-based training for staff at organizations.

Voice and Vision has already produced a training manual for teachers and an awareness Creation film on the needs of children who have vision impairment with additional disabilities, including deafblindness.

An information booklet on starting services for children who have vision impairment with additional disabilities, including deafblindness, is available in 2 languages-English and Hindi.

The National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation & Multiple Disabilities carries out various schemes of capacity building, training and care & shelter through its registered organizations. Some of the major schemes of the Trust are given below:

- Gharaunda or Group Home and Rehabilitation Activities is a new scheme for providing life long shelter & care to persons with disabilities in group homes.
- Sahyogi is a new & revamped scheme of caregivers training & deployment.
- Samarth is a Centre Based Scheme (CBS) which was introduced in July 2005 for residential services-both short term (respite care) and long term (prolonged care). Activities in a Samarth Centre should include early intervention, special education or integrated school, open school, pre-vocational and vocation training, employment oriented training, recreation sports etc. The facilities in the home are to be available to both-men and women--on 50-50% basis and cover all the four disabilities under the National Trust.
- Aspiration is an early intervention programme for school readiness for children with developmental disabilities of 0-6 years.
- Niramaya is a Health Insurance Scheme to provide affordable health

insurance to persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities. The Scheme is implemented in all the districts of the country (except J & K). The health insurance cover under the Scheme is provided up to Rs.1.0 lakh.

- Remote Area Funding Scheme seeks to stimulate National Trust activities in unrepresented districts. Under the Scheme, fund is provided to set up an NGO, including parents association and then to carry out activities for the welfare of persons covered under the National Trust.
- Uddyam Prabha is an Interest Subsidy Scheme for self-employment. A person with disability who takes a loan from any bank or NHFDC can get interest subsidy of 5% for BPL or 3% for APL on loan amount up to Rs. 1 lakh.
- Gyan Prabha Scholarship Scheme for doing post schooling, any employment oriented course. Under the Scheme, a monthly scholarship of Rs. 1000 is paid for up to 1 year.

CONCLUSION

In terms of adjusting to blindness and vision impairment, much depends on the age when the impairment occurred, the extent of the impairment (did it result into total or partial loss of vision). It is very important that these special groups-the newly blinded, the elderly blind and the multiply disabled visually impaired persons-maintain a positive state of mind. All stakeholders-the visually impaired, family members, community, institutions, governmental bodies and others, will have to collaborate together to do what is best and right for these special groups. Organizations will have to move away from a charitable approach to a rights-based approach where the person with blindness/multiple disability decides what is best for him and his future.

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CHAPTER 10

Braille and Other Reading Materials for Visually Impaired Persons

A. K. Mittal

As is well-known, reading and writing are at the core of literacy skills which in turn, pave the way to meaningful education, which, ultimately, leads to empowerment. This is as much true for the visually impaired as for their sighted counterparts.

So, this chapter makes an attempt to outline various systems, materials, devices available to the blind, through the years and with the emergence of various technologies, to have access to the print word. It deals with how the visually impaired persons are being helped to keep pace with the veritable "Explosion of knowledge" of today through a combination of touch and audio reading material--the subject-matter of this chapter. Both historical perspectives and modern-day technological advances in the field of reading material for the visually impaired, are sought to be covered here.

EARLY READING MODES

Of course, in our country, as is well-known, knowledge was handed down from generation to generation by word of mouth. So, we have instances of some outstanding blind luminaries. We know that several "Richas" (verses) of the Rig Veda were composed by some blind seers, called "Rishis" or "Manishis". Dirghatamas is reported to have been one such distinguished blind sage, the author of Suktas (hymns) 140 to 164 in the first Mandala (Section) of the Rig Veda (https://en.m.wikipedia.org).

Outside India, we have reports of the great philosopher, Didymus of Alexandria in the 4th century A.D., of making an attempt to have some reading material for himself. He is said to have carved out of wood, letters of the alphabet, joining them together to make words and sentences.

In the years and centuries that followed, various methods were adopted to facilitate reading for the blind. These included:

- Letters carved on thin tablets of wood;

- Engraving the letters on larger blocks of wood;
- Using letters made of tin;
- Wax coated tablets in which letters could be cut with a stylus-like instrument;
- Using a kind of string alphabet with seven main knots of different construction;
- Letters cut out of paper;
- Letters formed by sticking pins into a cushion;
- Letters pricked through cardboard;
- Ordinary large type printed in relief, using the italic form of two sizes of type (a system devised by Valentin Hauy, the founder of the school for the blind in Paris).

LOUIS BRAILLE

However, most of these systems represented rather crude and cumbersome modes of touch-reading. Moreover, writing still remained a big challenge.

The great breakthrough came our way with the advent of Braille. Before speaking of the Braille system, however, let's take a brief look at the life of the man who invented it and how the invention came about.

LOUIS BRAILLE

Source: http://www.bbc.co.uk/programmes/b05wc8wz

Louis Braille was born on 4th January, 1809, at Coupvray, a small village about 35 Kilometers east of Paris, France. His father, Simon-René Braille, was a harness and saddle maker. The family had three other children. At the age of three, Louis injured his left eye with a stitching awl from his father's workshop. This destroyed his left eye, and sympathetic ophthalmia led to loss of vision in his right eye. Louis was completely blind by the age of four. Despite his disability, Louis continued to attend village school, with his father supporting him by making for him letters of the alphabet, by driving round headed upholster's nails into a wooden board.

Louis Braille was unhappy in school, because his blindness prevented him from reading books. When he was ten years old, he was sent to Paris to live and study at the Institution Royale des Jeunes Aveugles (Royal Institute for Blind Youth), the world's first school for the blind. Here, children were taught how to read by feeling raised print letters, which was a system devised by the school's founder, Valentin Hauy. Louis Braille continually thought that there had to be a better, easier and faster way of reading and writing for the blind and he was determined to invent it.

From age 12 to 15, he experimented with codes, using a knitting needle to punch holes in paper to represent letters. He shared his progress with officials at the Institute, but wasn't taken seriously.

Meanwhile, in 1821, Hauy's Institution was visited by Charles Barbier, an ex-captain of the French artillery, who had two years earlier, invented a twelve-dot raised system, which he claimed, would enable soldiers to communicate with each other in darkness. The system caught the fancy of students like Louis Braille, because it could be read more rapidly than Hauy's system. When Louis was fifteen, he developed an ingenious system of reading and writing by means of raised dots. Taking a cue from Barbier's system, he conceived the idea of using only the upper half of the Barbier's cell and designed an alphabet within the basic six-dot cell, two rows of three dots. Thus, he used the pattern of six raised dots to represent letters, numbers, punctuation marks and mathematical symbols. Louis showed his method to his classmates who liked it and began using it, in spite of the fact that it was banned in the Institute.

At the age of 17, Louis graduated, became assistant teacher at the Institute and secretly taught his method. Braille accepted a full-time teaching position at the Institute when he was nineteen.

Braille later extended his system to include notation for mathematics and music. The first book in Braille was published in 1827 under the title "Method of

Writing Words, Music, and Plain Songs by Means of Dots, for Use by the Blind and Arranged for Them". After some slight modification, it reached its present form in 1834, which has since borne his name.

Louis Braille had always been plagued by ill health, and he died in Paris of tuberculosis on 6th January, 1852. He was buried in Coupvray in his family grave. Although he was admired and respected by his pupils, his Braille system was not accepted at the Institute till two years after his death.

Coinciding with his hundredth death anniversary, on June 20, 1952, Louis Braille's body was exhumed and France honored one of her great heroes by placing his remains in the Pantheon among the nation's immortals.

Louis Braille Home (13, Rue, Louis Braille, Coupvray, France) has since been converted into a museum and is maintained by the French Federation of the Visually Handicapped, with partial support from the World Blind Union.

WHAT IS BRAILLE?

Louis Braille has provided to us a most versatile system for the blind. In brief, Braille is a tactile system of reading and writing for the blind. The system is derived from an arrangement of six dots in quadrangular spaces referred to as a Braille cell. Each arrangement of dots and each blank space occupies a cell. To aid in identifying dot positions which comprise the various Braille characters, the dot positions of a cell are numbered--one-two-three downwards on the left and four-five-six downwards on the right, while reading. Sixty-three formations of Braille symbols plus the blank space can be had by arranging the dots in different positions by combination and permutation.

For the sake of symmetry and ease of learning, Louis Braille grouped the sixty-three **s*ymbols in seven symmetrical lines.***

The first line consists of ten letters formed of the top four dots.

Line 2 adds dot three to each of the characters of line 1.

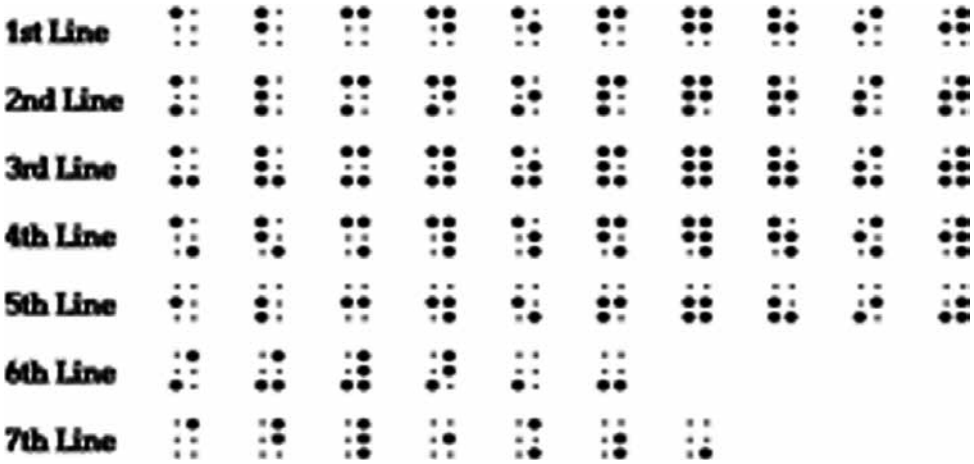
Line 3 adds dots three-six to each of the characters of line 1.

Line 4 adds dot six to each of the characters of line 1.

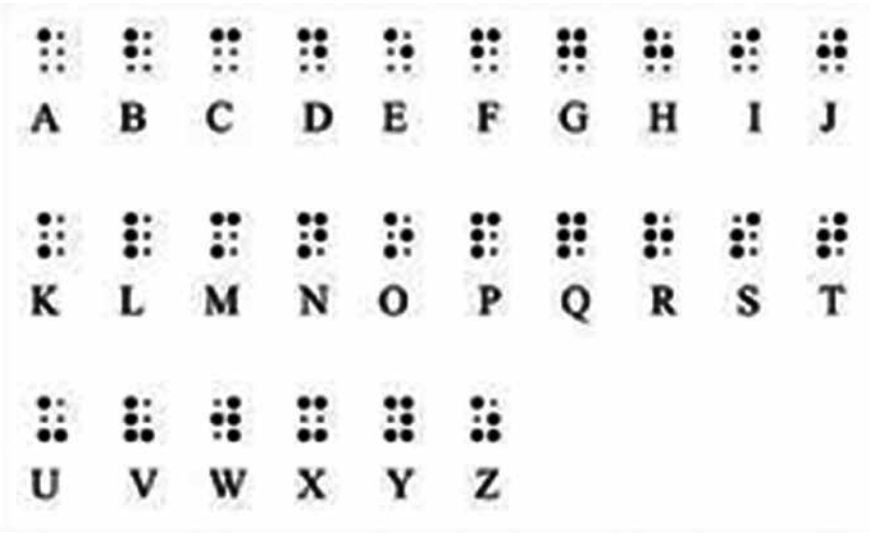
Line 5 repeats the characters of line 1 in the lower position of the cell, using dots two-three-five-six.

Line 6 comprising 6 characters is formed of dots three-four-five-six.

Line 7 comprising 7 symbols is formed of dots four-five-six.



SEVEN- LINE SYSTEM
Source: http://www.clovernook.org/information_center_braille.php



ENGLISH BRAILLE ALPHABETS

Source: http://www.compassbraille.org/images/ stories/compassbraille/braille/alphlayout77pt.jpg

After assigning some of the symbols to the letters of the alphabet, (lines 1, 2 and partly line 3), the remaining are used for punctuations and contractions developed to facilitate space economy. Numbers are represented by letters of the first line preceded by a numeric indicator.

This, then, is the basis of the Braille system. The seven-line arrangement enables the beginner to learn the Braille symbols for the Roman alphabet with ease and speed.

RELEVANCE OF BRAILLE

It would be no exaggeration to state that Braille occupies the same status in reading and writing for the blind as print for the sighted. Just as recorded books/e-texts cannot replace hard copy books for the sighted, similarly, books in Braille are integral components of meaningful education and rehabilitation for the blind.

That is why, Braille has stood the test of time and competition from various quarters for about 160 years, since its acceptance by the French in 1854.

Continuous Braille reading holds the key to learning good spelling. Also, Braille is essential for subjects requiring intensive study like mathematics, science, geography, grammar, semantics, phonetics, etc. No wonder, then, the Braille Council of India, an apex Braille body under the National Institute for the Visually Handicapped, has resolved that blind children from Class I to Class X must be provided textbooks in Braille and not in audio form.

Braille will remain the doyen of systems for giving to the visually impaired access to knowledge which is the main source of empowerment. Rightly has Braille been called a super script, "The queen of all scripts". For, it is the only script in the world in which any language of the world can be read or written. No other script has this unique capacity.

Besides, once the child has gained mastery over the script, Braille reading and writing tends to build a kind of emotional and cultural bridge between the blind and the sighted counterparts. Some researches have even shown that a blind student's critical faculties seem to be most alert in touch reading (Manual on Bharti Braille,1980). Hence, the continuing and enduring relevance of the system.

While the importance of Braille for developing countries like ours is widely recognized, it is often contended that Braille is fast declining in more advanced countries. One wonders if that is really correct, though!

The "Braille 21" World Congress held in Leipzig in September 2011, has given out a clarion call for the continuing relevance of Braille throughout the world. Those of us who have visited noted Braille production units such as the ones at Peterborough (RNIB), American Printing House for the Blind, Louisville, The Central Library for the Blind (DZB) in Leipzig, have been pleasantly surprised to find that these facilities still produce thousands and thousands of hard copy Braille pages a day. Some of them even bring out magazines containing information about the week's radio and T.V. programmes.

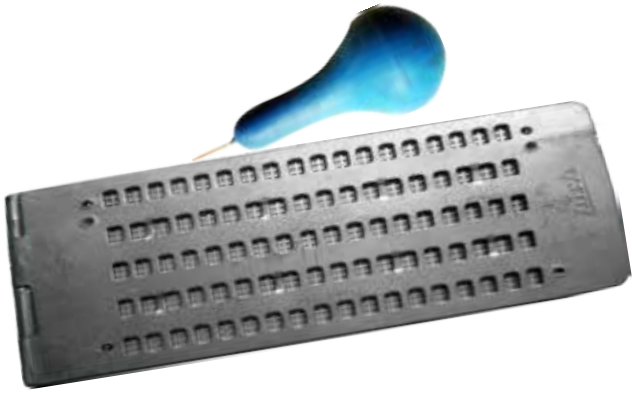
In these advanced countries, there is also a movement to have Braille labels

on pharmaceutical products and consumer items. So, why not promote Braille usage in a big way in our country, too?

Let us, then, conclude this section, by quoting from "An Open Letter to Louis Braille" composed by the former Secretary-General, World Blind Union, Pedro Zurita: "And you know what, Louis? ... I exhibit your invention everywhere. I read material the way you invented it standing, lying down, sitting, in any position, ... Because your code, Louis, has afforded many, many blind people--myself among them, naturally--dignity, freedom, and many hours of incomparable spiritual enjoyment."

BRAILLE WRITING DEVICES

A wide range of simple as well as sophisticated Braille writing equipment are now available. The simplest, the most convenient and affordable device is the conventional **Braille slate/frame and stylus**. The earliest form of the device as developed by Louis Braille is kept as a sample, at the Louis Braille Home in Coupvray. Writing is undertaken through this equipment from right to left with a pointed object known as stylus.



FRAME AND STYLUS

The dots punched by the stylus appear on the other side of paper and have, therefore, to be read from left to right by turning the sheet over. The device is available in the form of a stand-alone frame or as a metallic guide placed on a Bakelite or wooden board. These come in various sizes and dimensions, including single-line to seven-line Guides/Frames. Further, there is the popular Marburg Braille Frame which produces interpoint Braille on both sides of the sheet, resulting in considerable saving of costly paper. The device has been slightly adapted and produced in India also.

The production of basic Braille and other devices commenced in India with the establishment of a workshop for the Manufacture of Braille Appliances (MBA)

in Dehradun at what is now the NIVH. These devices are available at the Institute at subsidized costs while these are also produced by a few private agencies/NGO's, albeit at higher prices.

The invention in 1893, of a **mechanical Braille Writer** by Frank H. Hall in U.S. marked an important milestone in the field of Braille-writing. Several other models of such mechanical writers followed. The most widely used among them has been the Perkins Braille Writer.

PERKINS BRAILLER SHOWING DOT POSITIONS ABOVE CORRESPONDING KEYS

Source: http://www.dotlessbraille.org/Brailler2.JPG

It has the twin benefit of being upward writing and easy to use, as it is written from left to right. We have had a number of other versions of the device, the latest being the Smart Brailler, a new Braille learning and teaching device, developed by the Perkins Products. Happily, in our country, we have an organization in Tamil Nadu, which assembles and provides Perkins Braille Writers to users here.

We have now entered what is, sometimes, called the era of "Paperless Braille". **Braille Notetakers and Refreshable Braille Displays** fall in this category.

Each cell on a panel called "Braille Display" has 6 metal or nylon pins that are driven electro-mechanically. The user reads a line of Braille cells not on paper, but by touching the pins on each cell as they pop up. Additional text can be read by changing lines. Braille Notetakers have all word-processing features with both Braille and speech outputs. These have usual Braille keyboard and simple command structure with facility of converting (translating) print into Braille and vice versa.

BRAILLE NOTETAKER

Source: http://www.pathstoliteracy.org/sites/pathstoliteracy.perkinsdev1.org/files/uploaded-files /brailleNote_mpowerBT32.jpg

A Refreshable Braille Display is another electronic device which can be connected to a computer to produce into Braille the material available on the computer screen.

Information on Braille Notetakers and Refreshable Braille Displays is also available in another chapter of this Resource Book.

The high, almost prohibitive, cost of these high-tech devices (ranging up to about $5,000) is a major barrier, especially in the context of developing countries like ours. Of late, there have been some attempts to address the problem to some extent. Thus, there are reports of a Braille Notetaker being available for about $1,500 from China. There is also the need to provide the facility of Braille to print and vice versa translation in the case of Indian languages for these devices.

BRAILLE PRODUCTION

Let's now move on from writing to devices for large-scale production of reading material in Braille. The process of Braille production on a larger scale picked up momentum with the invention at the turn of the 20th century of Braille stereotyping machines invented by Frank Hall. By 1911, these could be electrically operated. These were used for a long time for preparing master copies in Braille on metal plates and taking out Braille copies on paper through pressure technology. For this purpose, the stereotyping operator had to be well-versed in Braille and transcription rules.

SOME OF THE OTHER METHODS IN VOGUE INCLUDED:

i. A Braille Duplicator which involved inserting pegs into plates to form Braille characters;

ii. The technique of vacuum forming of plastic sheets with the help of Thermoform machines, the master copy being prepared on a Brailler.

The advent of Braille translation softwares and computer-aided Braille embossers have, now, brought about a veritable revolution in the field of Braille production through the application of modern technology. As pointed out earlier, translation softwares facilitate instant conversion of text into Braille and vice versa. One of the most widely used translation softwares is that of Duxbury Systems. The big advantage here is that the operator does not have to have knowledge of Braille and should be proficient in the use of computers. There are some other similar softwares also. Such translation facility is now beginning to be available for Indian languages as well.

In addition, there is also the device for sighted or blind transcribers who prefer to use the six-key Braille system for preparing material in Braille without using the Translator. Braille can be viewed and edited on-screen.

A wide spectrum of electronic Braille embossers is available today. These include light and portable printers of the speed of 8 to 40 characters per second, to heavy-duty machines having the amazing speeds of printing 400 to 800 Braille characters per second.

Thus, whereas only about two and a half decades or so back, we needed personnel proficient in Braille and its rules and whereas the entire process used to take a long time for producing Braille material, it can now be completed with the greatest of ease and speed. Braille production has become so much easier.

In India, the first unit for producing Braille was set up in the form of the Central Braille Press in Dehradun in 1951, at what is now the NIVH. The first Braille press in the voluntary sector was set up by the National Association for the Blind (India) at Jogeshwari, Bombay, in 1958. The country now has a large number of small as also well-equipped large Braille presses, though the requirements of textbooks and other reading material in Braille is still far from being properly addressed. The Department of Disability Affairs, Government of India announced a comprehensive scheme for the Establishment/Modernization/ Capacity Augmentation of Braille Presses in the country 2014. The Scheme would, it is hoped, contribute significantly towards meeting the requirements of Braille books in the country.

BRAILLE LIBRARIES

There are a number of big libraries for the blind across the world. These include: The library of Congress, Physically Handicapped Section, Washington D.C.; Central Library for the Blind--Leipzig, Germany; National Library for the Blind of RNIB,U.K.; Japan Braille Library—Tokyo; CNIB Library for the Blind—Canada. Some of these libraries undertake to provide books internationally as well. The International Federation of Library Associations (IFLA) runs a section of Libraries for the Print Disabled (LPD). The World Blind Union, through the World Braille Council, is attempting to draw up a list of major national libraries for the blind in its member-countries.

The main function of libraries for the blind is to stock books in Braille and audio formats and provide them on loan to readers.

The National Library for the Blind was set up in Dehradun in 1962. It has since developed into a Library for the Print Handicapped under NIVH, with a reported membership of 34,000.

An important development in the library movement for the blind in India has been the establishment of Braille sections at several mainstream public libraries. The first such section was introduced at the Delhi Public Library around 1964. Since then, several such sections have come up at the public libraries at Chennai, Mumbai etc. A number of NGO's like the National Federation of the Blind (Delhi), Blind Boys' Academy, Narendrapur

(West Bengal) etc. also have useful lending library services. Many institutions for the blind run in-house libraries for their students/trainees.

TEACHING BRAILLE

We must hasten to clarify that our objective here, is not to present a detailed exposition of the principles, methods and techniques of teaching Braille. That will call for much greater space, an independent chapter in itself. We just wish to give a few important tips for teaching Braille reading and writing. It is hoped that this will stimulate our readers to study the subject in depth by consulting various professional writings and publications on Braille teaching. A plethora of useful reading material is available for the purpose for those who wish to acquire greater insights and knowledge on Braille-teaching.

WRONG METHODS IN PRACTICE

Before moving forward, we must strongly caution against some misplaced

methods of introducing Braille currently in vogue in some of our institutions. We find in many institutions the practice of starting Braille-teaching by just **making children memorize and "Recite" dot-combinations** of different letters of the alphabet. This is done without any prior readiness training, without providing children any motivation, throwing to the wind all psychological and logical considerations regarding Braille-teaching. This militates against building the necessary base for effective reading or writing of Braille.

Also, in many places, instead of introducing dots of normal size on paper, children are made to "read" pegs/pins inserted into wooden boxes or large-size marbles placed on slotted wooden or metal plates/boards. Transfer from these large-size dots to the usual dots on paper creates unnecessary and damaging confusion for children and must be avoided. Symbols of normal size must be used.

IMPORTANT FACTORS

a. In addition, we must have a clear understanding of the following factors while commencing Braille teaching:

b. As Nolan has stressed, the tactual skills of perception, basic to Braille reading, appear to get fully developed by the time the child is eleven or twelve years old-- (Nolan, 1975). So, the earlier we start, the better.

c. Touch is likely to become blunted in the absence of proper stimulation (Frampton, 1955). It is, therefore, essential to continuously provide interesting reading material to the child to facilitate his uninterrupted tactual development.

d. For effective reading, the child should, at least initially, be helped to use both hands. The suggested process is that the left hand should move half way across a line and then drift back to hold position at the beginning of the next line. After finishing the first line above, the right hand should, quickly, return to meet the left which is holding the place to start reading the next line. This practice should be encouraged until it becomes a fixed habit.

e. While there are some similarities in reading by touch and by sight, since the visual cortex regulates both these processes, there are marked differences also. In print reading, the movement of eyes from one stopping point to the next takes just a fraction of a second, so that the view of words in a line seems to be continuous. In touch reading, on the other hand, because of the narrowness of the perceptual window (part of the finger) only a serial

READING BRAILLE

Source: http://www.britannica.com/topic/Braille-writing-system

perception is possible and hence the temporal gaps tend to get much more marked. The implication for the teacher, here, is that he/she should provide maximum opportunities to the child for finger and hand-movement, so that the child starts getting habituated to various tactual shapes.

f. We must never view Braille teaching and language teaching as separate processes. Both are closely inter-related. For, the blind child can read and write language when he knows Braille. Therefore, our school time-tables must either have the same time-slot (period) for both language and Braille-teaching or we should look at Braille as an extension of language-teaching and then have separate periods for the two. It would be helpful if we have the same teacher for both language and Braille-teaching. However, if we must have separate teachers for the two areas, then there must be close co-ordination between the two.

g. Because of experiential deficits, the blind child could, initially, take longer time in acquiring tactual concepts. Therefore, our teaching activity must be based on repetition and continual practice for the child.

OBJECTIVES

Apart from these important factors concerning Braille pedagogy, we must also keep in mind the main objectives of teaching Braille. One might ask: what's so special about objectives here? After all, Braille must lead to good reading and writing competencies. However, our objectives must be far more broad-based.

What we wish to achieve through this teaching activity is that children should accept Braille as an integral and indispensable part of their learning processes as well as their reading abilities and written communication. Through our teaching endeavours, children should be able to:

i. Develop and form good reading habits by co-ordinated finger-movement and use of both hands;

ii. Read and write Braille with requisite comprehension, accuracy and speed;

iii. Get motivated towards reading and writing and feel attached to their books.

READING

Teaching of Braille must begin with reading followed by writing. Before undertaking training in reading per se, children must be provided, what is called, "reading readiness training". Such readiness denotes activities aimed at maximum development of the child's tactual abilities, so that he could, in due course, perceive and recognize tiny Braille dots and differentiate between the shapes of different letters. This is not training in reading per se. Let's dwell a little more extensively upon various aspects of this readiness training, since it receives scant attention in our teaching institutions much to the detriment of the blind child's learning process.

It is relevant to point out here that many reading readiness skills are common for blind and sighted children. Both need to be adequately prepared for reading--physically, intellectually and emotionally. Thus, before actual reading, the child should be enabled to develop the following basic skills:

a. Requisite manual competence and muscular control for operations like holding, grasping, turning or otherwise manipulating learning material by using both hands;

b. Ability to give attention to an activity of interest lasting for a few minutes;

c. Auditory and tactile discrimination;

d. Ability to speak clearly in the language in use;

e. Willingness to take turns in the group;

f. Awareness of objects around him;

g. Ability to understand the sequence of a simple story;

h. Ability to follow simple directions;

i. Adequate memory span.

Braille-specific reading readiness training seeks to provide a rich variety of experiences and concepts to the child. These should enable him to:

- Find similarities and differences;
- Classify and categorize objects;
- Learn comparative terms, directions and positional differences;
- Tactually discriminate textures and name basic classical shapes.

Many games can be worked out to facilitate these learnings using local and simple materials--fruits, vegetables, textile etc.

SOME OTHER IMPORTANT AREAS OF TRAINING WOULD INCLUDE:

i. Providing experiences of books to the child so that he could recognize fronts and backs of books, turn a page, tell right from left and top from bottom etc;

ii. Ensuring ample exposure to Braille by placing labels in Braille on objects around him;

iii. Providing the child experiences of various types of smaller and larger embossed lines containing a variety of dot-combinations.

The above experiences can be provided through a set of loosely bound sheets having embossed lines and placing labels in Braille on easily accessible objects--furniture, toys, doors, windows, classroom, plants etc.

FIRST BRAILLE WORDS

Once the child is able to follow embossed lines without losing his position on the page through readiness training, He/she may be introduced to his/her first Braille words. This should be attempted through the usual method--selecting words from the child's vocabulary or the introductory language book, followed by a group of short sentences and then paragraphs. For this purpose, the approach involving the word-method or a combination of word and letter-methods, as required according to the child's abilities, may be followed.

WRITING

Instruction in Braille-writing must commence when the child has acquired sufficient competence in reading and the required muscular control. This could start either by the end of the first or some time during the second year of Braille-

teaching, depending on the child's interest and abilities.

Braille writing can be started either with a mechanical Braille writer or the conventional slate and stylus. The Braille writer is still quite costly in our country, rather noisy and also not so portable as compared to the slate and stylus, which is far more cost-effective. However, other things being equal, a mechanical writer may be preferred for beginners, if cost is not a prohibitive factor. Fortunately, Braille writers are now covered under the Government's revised ADIP Scheme and can be obtained at reduced costs.

If a slate and a stylus are used, the child must be trained in grasping the stylus correctly and moving it rhythmically from cell to cell from right to left. The finger/fingers can be used as the point of reference.

Braille-writing may also begin with punching whole word forms. The teacher should, ideally, in the initial stages, guide the child's hand for indenting simple words of the child's choice. With repeated hand-guiding and practice, the child's responses become automatic and he/she is gradually able to take over writing on his/her own. Dot-calling has to be avoided.

AUDIO VIDEO RESOURCES

Before we wind up this Braille section, we must refer our readers to two important audio-visual resources. The first of these is an eighteen-minute-long film prepared by the Films Division of India to commemorate the Bi-Centenary of Louis Braille's birth in 2009. It depicts Louis Braille's life and the education for the blind in India.

The other useful resource is a film prepared in Hindi in two parts, under the auspices of NIVH, which deals extensively with various facets of teaching Braille reading and writing. This film is of the duration of about one hour. NIVH has a proposal of having the film dubbed in some other Indian languages also.

Full information about these two films can be had from NIVH.

OTHER READING MODALITIES

Braille, of course, is a major tool and medium of education and communication for the blind. But, listening is yet another channel or modality for gaining access to the print word.

Through the ages, blind children and adults have depended upon others--parents, siblings, volunteers--called readers, for reading out books to them. In some advanced countries, a few organizations undertake to make available readers

to blind persons needing such assistance. Such arrangements are still to gain momentum here. In our country, students from a large number of colleges and universities utilize their specified hours under the National Service Scheme to work as volunteer-readers for the blind. However, in most cases, in order to cope with the heavy load of study material and to ensure regular service, most blind persons have to engage readers on paid basis. That is why the government schemes of scholarships for persons with disabilities make provision for a small amount as reader's allowance for blind students/scholars.

The advent of tape recorders and other systems added a new dimension to providing reading materials for the blind, for, these marked the beginning of the era of recordings for the blind.

Organizations working with the blind started setting up studios equipped with the usual microphones, recording/editing/mixing equipment and duplicate copiers. Individuals called narrators, read out into the microphone material of use to the blind which was recorded and subsequently edited and converted into duplicate copies for distribution. The narrators worked on a voluntary or paid basis.

Initially, recordings were provided to users on reel tapes to be played back on traditional rather large-size tape recorders. One still recalls the time and effort expended in threading reels of thin tape into the specified slots for getting play-back.

Then came the period during late 50's and 60's when material started getting recorded on 4-6 track disks containing about 6 to 8 hours of recording. The disks were played on special machines at 16/33 RPM's without any voice/speech distortions. These were called "Talking Books" for the blind.

As is obvious from what we said above, Talking Books required special arrangements for recordings as well as special machines for play-back. As such, the system did not make much headway. A new dimension was added with the arrival on the scene of the cassettes and cassette recorders which were both so much easier to procure and use, apart from being quite affordable as well. So, material started getting prepared on cassettes on a large scale. Recordings on cassettes could also be undertaken with just the recorder in near noise-free environments. This was a great blessing, since volunteers, family members or friends could record study material for the blind at their homes at the time of their convenience. Of course, the quality of recording undertaken in such situations was not of professional standards.

ROLE OF DIGITIZATION

In the meantime, efforts continued to be directed towards mobilizing new and innovative technologies for producing reading material for the blind according to certain standards/specifications. Thus, we started moving from the analogue to the digital format for the purpose.

In 1996, an important breakthrough was achieved with the creation of a new organization called "DAISY Consortium." The organization was the outcome of the coming together of several talking book libraries and Braille production centres. This introduced the era of Digital Accessible Information System or DAISY, which, actually stands for standards. DAISY standards define the rules that ought to be followed while producing reading material in various formats--Braille or talking books. DAISY Consortium undertakes the important task of creating and maintaining these standards. It also works intensively for promoting reading material for the blind across the world and thus mitigate the present "Book Famine".

DAISY has contributed significantly towards paving the way for digital production of reading material. We now have, what are called "DAISY Books" that is, books prepared according to set standards. We need a mobile phone or a computer or a special DAISY Player to read these books.

The DAISY system seems to have two big advantages: firstly, navigation through the book is much easier; we can move to and locate the previous or the next sentence, page, section, or chapter, and, secondly, once the source document is produced as per the set standard, Braille, talking book, large print or e-text versions can be prepared very fast--(Dipendra Manocha, 2009). Further detailed information on DAISY material has been presented in another chapter of this Resource Book.

E-BOOKS

Reading material available in MS Word, PDF, E-pub and similar other formats are classified as e-Books. These are, obviously, created digitally and are transferred electronically and thus distributed through the internet. These e-Books can be easily accessed through computers etc. through speech conversion or Braille Display systems.

STATUS IN INDIA

The movement of recorded books for the blind was introduced in our country in 1963. It was in that year that the National Association for the Blind (India) established the first Talking Book Centre in the country at Worli, Bombay (now,

Mumbai). Another watershed development in this direction was the conversion of the existing National Library for the Blind at NIVH into what is now called "The National Library for the Print Handicapped". One of the objectives of the new unit at NIVH was to produce and distribute on a large scale recorded educational and recreational reading material for blind and other print disabled children and adults. For this purpose, special Recording Studios and Group-Listening Rooms were constructed in the Institute's Helen Keller Building. Talking Books on disks and other recorded equipment were gifted to the Institute by UNICEF. However, for unavoidable reasons, the recording unit could get underway in the real sense only around late 80's.

In the meanwhile, a number of NGO's working with the blind have also set up recording studios and provide books on cassettes/CD's to blind readers. All India Confederation of the Blind(Delhi), Blind Relief Association (Delhi), Blind People's Association(Ahmedabad), Blind Boys' Academy (Narendrapur, West Bengal) and many other organizations are running recording services for the blind in the country. India has also embarked upon digitization of reading material for the blind. Thus, the formation of the DAISY Forum of India in 2007 has marked an important milestone in this direction. The Forum, now has about 150 members and strives to provide DAISY books. The DAISY Special Player required for making full use of DAISY books is, now covered in the country's Revised ADIP Scheme of April 2014 and can be obtained without any charge to the eligible user. In addition, the On-Line Library of NIVH inaugurated about four years back, seeks to provide access on-line to a number of college and university books.

Outside the country, Bookshare is a major resource of digital books. This is a library which has a collection of over 9,000 books in Texts Only DAISY format. Membership of this library can be had in India by paying a small amount per year.

RECORDED MATERIAL--IMPORTANCE

We now come to the obvious question: there are books in Braille as also in audio format recorded as per DAISY standard or otherwise. Which is to be preferred? As we have already discussed in an earlier section, the Braille Council of India has stipulated the use of books in Braille or enlarged print for visually impaired students up to Class X. There is, unfortunately, no reliable research study in the country to verify which method is superior for blind students--Braille or recordings. NIVH in late 80's had conducted a study to ascertain comprehension levels of blind students through the two formats. The study had a sample of 85 blind students from Classes VI, VII, and IX and lessons in the subject-areas of Hindi, English, Science and Social Studies were presented in Braille and on

cassettes. The study could not come up with conclusive evidence except to state that comprehension through Braille was found to be slightly better than comprehension through the auditory mode while taking the total sample into consideration. It was found that, during the data collection process, many experienced educators of the blind expressed the view that the use of recorded material at the expense of Braille may adversely affect the learning of spelling, use of punctuation marks etc. The study, therefore, recommended that reading through the audio mode should only supplement our educational activities--(N.K. Rai, 2001).

Despite its limitations, recorded material has several advantages also. Modern technology facilitates recordings with greater ease and speed. It involves less storage space for the user and it is much more convenient to handle because of the portability of the playback equipment, viz. the cassette recorder or the CD player of today.

Large-size texts and reference books become far more easily accessible in recorded form as compared to Braille. So, It is ideally suited for pursuing courses of higher education. Rapid reading material including fiction, drama, biographies, journals of general nature, etc. prove most enjoyable when presented in audio format.

Thus, recordings and Braille do not compete, but supplement each other and are both essential for helping the visually impaired reader to keep himself/ herself to keep pace with the modern-day explosion of knowledge and information. Of course, recordings become the sole reading medium for persons who have difficulties in tactile perception.

GUIDELINES FOR NARRATORS

It must be mentioned, here, that the success of recordings depends, to a great extent, on the quality and skill with which material is read out into the microphone for being recorded. Clearly, narrators or those who read out books, must exercise great caution and competence in performing their task.

Some factors to be kept in mind while reading books aloud, are common for all recordings-whether undertaken for the general audience or for the blind. Good voice quality, normal reading speed, correct pronunciation, proper voice modulation and pauses as per the context and punctuation signs are essential attributes for any effective recording and must be followed by all narrators.

However, narrators of material for use by the blind must also be alert to some additional guidelines/considerations as well. Thus, while reading out, they should:

a. Describe briefly and meaningfully all pictures or graphics;

b. Read out footnotes just after the word/sentence these relate to, irrespective of where these occur in the chapter/lesson;

c. Spell out, as far as possible, proper names, especially in the event of material being in English or any foreign language;

d. Announce the page number of each new chapter/lesson to facilitate easy cross-referencing with the print edition;

e. In the case of tabular presentations, announce the column heads first and then read out the entries in the same sequence. If the tables are very long or complicated, consult the programme coordinator/administrator;

f. Let the reader know when the chapter/lesson comes to a close by announcing "End of chapter/lesson number --."

g. Indicate the unnumbered section/sub-section of the chapter/lesson in a manner that enables the reader to make it out and differentiate it from the subsequent text. This facility helps in better comprehension of the subject-matter and in making notes, wherever required.

COPYRIGHT RESTRICTIONS

Producers of books in Braille or audio mode and other similar accessible formats had been facing a major copyright-related challenge. They had to obtain prior permission of the right-holder (author or the publisher) before converting the material into Braille etc. Two positive developments have taken place in this behalf at the international and national levels during the last two years, which need to be mentioned here.

The World Blind Union (WBU) with support from some other organizations had drafted a Copyright Treaty providing for copyright exceptions in favour of reading material converted into accessible format for the blind and other print disabled persons. A few Latin American countries tabled the Treaty at a session of the Standing Committee on Copyright and Other Rights (SCCR) of the World Intellectual Property Organization (WIPO) in Geneva in 2008. After protracted discussion, even argument, the Treaty was, finally, adopted with some modification, on June 28, 2013, at the Diplomatic Conference convened by WIPO in Marrakesh.

The Treaty is titled: "The Marrakesh Treaty to Facilitate Access to Published Works by Visually Impaired Persons and Persons with Print Disabilities." The Treaty will enter into force three months after twenty countries have ratified it. Happily, India is among the first countries to ratify the Treaty. One of the big

advantages of the Treaty is that Article 5 permits import and export of accessible versions of books and other copyrighted works, without the copyright holder's permission—cross-border exchange of accessible format copies will be a reality now. This will help to avoid the duplication of transcription efforts in different countries and also allow those with larger collections of accessible books to share these collections with visually impaired people in countries with fewer resources. (Maryanne Diamond, 2013).

At the national level, our parliament has enacted the Indian Copyright Amendment Act 2012. The amended Section 52 relating to exceptions for persons with disabilities reads as follows:

"The following act shall not be an infringement of copyright, namely: (zb) the adaptation, reproduction, issue of copies or communication to the public of any work in any accessible format, by –

i. any person to facilitate persons with disability to access to works including sharing with any person with disability of such accessible format for private or personal use, educational purpose or research; or
ii. any organization working for the benefit of the persons with disabilities in case the normal format prevents the enjoyment of such works by such persons:

Provided that the copies of the works in such accessible format are made available to the persons with disabilities on a non-profit basis but to recover only the cost of production:

Provided further that the organization shall ensure that the copies of works in such accessible format are used by persons with disabilities and takes reasonable steps to prevent its entry into ordinary channels of business."

Amendment Rules 76 to 78 prescribe the required documentation, the text of notice to be carried with each accessible format and arrangement for third party work in respect of preparation of accessible format material.

CONCLUSION

As would be seen from what we have been saying here in above, we have come a long way in our quest to provide accessible reading material for the visually impaired. We have, of course, still a long road ahead to traverse. At present, only about 5% of all published works are accessible to us, especially in the developing regions. Our dream, our vision is: "The same book, the same cost, the same day, for the visually impaired as for their sighted counterparts." All our efforts need to be directed towards the fulfilment of this laudable goal, which is very much attainable, given the present state of technology, the overall conducive environment and the removal of copyright restrictions.

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www.socialjustic.nic.in

www.wbu.ngo

CHAPTER 11

Special Modern Devices for Person with Visual Disability

Sam Taraporevala

This chapter focuses primarily on providing the reader a bird's eye view of the immense empowering potential of technology for totally blind and low vision users. With a view to facilitating a broader and more holistic appreciation of the subject, specific products and their features are not highlighted. Rather, the effort is to provide the reader a general understanding of the 'how' and 'what' of these technologies in the lives of the visually impaired. Wherever specific products may be mentioned, these are to be read as being merely illustrative rather than as an endorsement of the same. The reader is urged to make a more in-depth evaluation before investing in any specific product. The technologies explored in this chapter will be those utilizing at least some degree of electronics/digital interface.

BRAILLE- ITS CREATION AND ACCESS

An entire range of technologies are available for those who wish to create Braille documents, as also read them. We list here some key pointers to the creation or reading of Braille.

- ***Conversion Softwares*:** Thanks to modern technology, a standard Word document can, with the help of Braille translation software, be instantly converted into soft copy Braille. This soft copy can be fed into a Braille embosser, be it a simple personal machine or a heavy-duty embosser capable of generating many thousands of pages an hour. The advantages of these Braille translation softwares are that they allow for setting the page parameters (number of lines per page, characters per line, margin size, etc).

  These softwares are available both free as also on payment basis. In a country like India with linguistic diversity, most of the major languages have Braille conversion software. The challenge, however, is to get a source document which is in Unicode-compliant font if the Indian language conversion is to be successful. In the alternative, one would have to manually use the 6-key input method to actually feed in the Braille cell configuration corresponding to the text which is being fed in.

- ***Electronic Braille Embossers*:** These come in multiple variants. They can be part of an Electronic Braille Typing-Embossing Unit or a larger embossing machine. Many of the personalized Braille typewriters come along with speech capability. In effect, one can actually word-process a document on such a system. It can be carried by the user. Some of these devices have the capability of being also used by an untrained sighted person in Braille as it is possible to connect a standard keyboard and generate the Braille output. The reverse process, namely, a standard print out being generated by the blind person typing in Braille, is also possible. This can prove very useful in situations where quick Text-to-Braille or reverse translation is required. A few Braille Embossers also come with the capability of producing standard print on the Braille page.

ELECTRONIC BRAILLE EMBOSSERS
Source: http://www.braillo.com/

- ***Refreshable Braille Displays*:** It is possible to use a dynamic Braille display and have the user read the content by scrolling up and down a document. Such displays can be paired with computers as also Tablets and Smart Phones. Such a system provides direct Braille access to the vast reservoir of e-databases. It also has the added advantage of being a major space-saver as on account of it being a refreshable system, voluminous content does not need to be physically stored. The downside of Refreshable Braille Displays is the fact that currently they are very expensive. However, research is currently underway to develop a low-cost Refreshable Braille Display with

REFRESHABLE BRAILLE DISPLAY

Source: http://hims-inc.com/products/braille-sense-u2/

the targeted price of USD 300 for a 20-cell unit. The device is expected to be released early 2016.

- ***Braille Note-Takers*:** A Braille Note-Taker is much like a laptop. Unlike a laptop such a unit will not have a visual display but rather a refreshable Braille display. Content is worked on with the help of standard Braille keys. Some note-takers provide the QWERTY interface instead. The added benefit that these note-takers offer is that they have an embedded speech synthesizer, thus allowing the user to both feel and listen to content as it is being brought up. It is possible to pair these note-takers with monitors and standard keyboards, thus allowing for a great deal of versatile usage. Data transfer through memory devices is also possible. In the Indian context, one can utilize these note-takers for Braille typing and reading, using the Refreshable Braille Display. However, currently none of these displays support an Indian language text-to-speech engine or Braille conversion.

BRAILLE NOTE TAKER

Source: http://www.sightandsound.co.uk/

SCREEN READERS

Screen readers are softwares which enable standard computer / mobile phone to have speech capability. The person using a screen reader would be able to receive speech feedback on whatever text appears on the screen. This enables the individual to actively engage with the content of the file in question. Thus, a screen reader would provide full functionality by allowing for content to be typed, edited and read out—all with constant speech output. Screen reader softwares allow for the effective navigation of text. This permits the user to read all the content if so required or focus on a specific part of the text—for instance, character, word, sentence, paragraph and so on. Over and above a standard default screen reader which is available with various operating systems, a user can also opt to install a supplementary reader. Some of these come for a price, while others can be installed for no fee. Both the IOS and the Android platforms have their built-in overall very efficient screen readers. The Windows Narrator on the Windows platform is useful; however it has certain limitations. The Linux platform's default screen reader is Orca.

JAWS

Source: http://www.sightandsound.co.uk/

The audio clarity of the content of the screen reader depends on its text-to-speech (TTS) engine. Most paid TTSs have extremely clear, and some very human-like, sounding voices. The Open Source TTS, however, may sound extremely robotic and incomprehensible to a first-time user. Repeated usage and practice results in higher levels of comprehensibility. Most TTSs on screen readers allow for setting of speed, pitch and other parameters.

Although currently we have very many good English TTSs, the Indian language variants are not too distinct except for Hindi.

OPTICAL CHARACTER RECOGNITION (OCR)

For a blind person, one of the biggest challenges is access to standard print content. This hurdle can be overcome in various ways, chief among them being:

- **Reading Machines**
- **Accessible Computer-Based Scanning and Reading Options**

READING MACHINES

A reading machine is a stand-by-itself unit which has the capability to capture the image of a page, process it, save it, as also read it aloud to the user. Such a unit typically deploys a scanning system (can be a flat-bed scanner or a camera-based system). This image is then processed by the Optical Character Recognition System (OCR) and then with the help of a text-to-speech engine rendered in voice to the user.

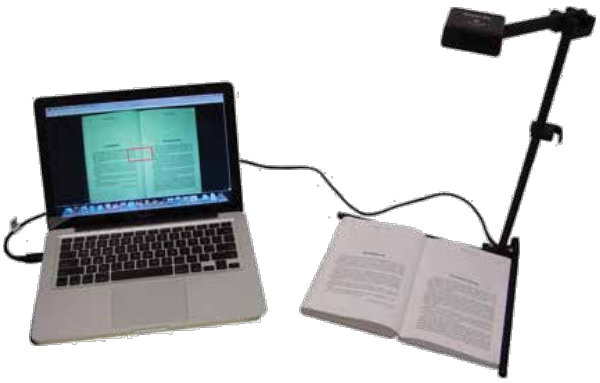
Modern reading machines are generally table-top mounted with an ergonomic design and button layout. These machines can be worked almost out of the box and given their generally well laid out keys, are easy to learn for the beginner—be they a child, a senior citizen or anybody for that matter who is not tech-savvy. The in-built memory capacity on these machines allows the user to save large quantities of data (literally thousands of books). What is more, the file management capability as also the other features allow the user to generate audio files which can be played back on an audio player. The USB slots also allow for data transfer and thus scanned content can be loaded onto a computer for editing purposes.

Most reading machines have the capability to be connected to a monitor where the user can manipulate font size, colour contrast and other visual display parameters as per need.

Although reading machines are a very convenient option their pricing tends to be prohibitive-generally more than the cost of a PC/laptop, scanner and OCR software combined.

ACCESSIBLE COMPUTER-BASED SCANNING AND READING OPTIONS

The second alternative for those who are comfortable using a PC/laptop is to load an OCR software and utilize the aid of an external scanner, be it flatbed or camera-based. The user can choose from a wide range of general OCR softwares available in the market and by using a screen reader, gain access to the wide range of capability these OCRs are able to deliver. In the alternative, dedicated scanning/reading solutions by way of software are also available. With the help



ZOOM-EX
Source: http://www.nelowvision.com/

of these, the users can scan, edit and utilize the document in a manner which best suits them. This could mean that they either read the material (with full navigation features) on the computer itself or transfer the same to a portable device be it a portable book reader or phone. Data can be transferred either as a document or an audio file as these softwares also allow for audio conversion. The user can with the help of file management systems create and maintain a well-managed library of reading material.

Modern Smart Phones also allow for image capture and subsequent OCR conversion of printed material which is analyzed subsequent to the phone's camera capturing the image. The current feedback on these softwares is mixed.

LOW VISION AIDS

Low vision persons can utilize a wide variety of assistive technologies (both software and hardware). Such technologies help convert text, images and objects into magnified images of appropriate size and colour contrast so as to come as close as possible to user requirements. We can best understand low vision aids through the following:

- ***Computer-Based Magnifiers*:** These are softwares that can be used to manipulate what is on the screen in terms of its magnification as also background and foreground colours, brightness, etc. Most computer operating systems have their built-in magnification software by way of assistive features contained within the package. Users can also opt for paid versions. These softwares are far more feature-rich and give the user multiple customizable options to choose from.
- ***Video Magnifiers*:** Video magnifiers come in various sizes and capacities. Some of these are table-mounted and require to be connected to a display (either directly or through a computer). The user can see what is being focused on through the display which could be a computer monitor or even a large television screen. The system can be configured to build into it different levels of magnification as also other customizable settings such as background and foreground colours, brightness, etc. One can actually even work on 3D objects by placing them under the camera.

Video magnifiers also are available as portable hand-held units. These generally run on rechargeable batteries. Display screens are of various sizes generally from 3 inches and above. The quality of these units depends on a number of variables including the number of mega-pixels on the camera, screen quality, etc. They allow the user to zoom, freeze, increase font, play with contrast, etc.

Some of these units can also be connected to larger displays for higher quality images. A few even allow for an image to be transferred to a PC for an OCR to convert the image into machine-readable text.

Some high-end video magnifiers can be connected to a laptop/desktop and allow the user to focus its camera on a distant object within the room, say a person, an image, a blackboard, etc. The user can thus keep track of live content as it is being created on a blackboard and read it in a font size and contrast most suited to one's needs.

MOBILITY DEVICES

The standard white cane can be significantly supplemented with the help of add-ons as also other navigation aids:

- ***Ultrasound Obstacle Location:*** These are devices which can be independently held in the hand, worn on a wrist, mounted on the head or fixed onto a cane. They are designed to send out ultrasound audio signals whose echo is converted into a vibratory signal which input is provided to the user. The frequency and intensity of these vibrations can warn the user of environmental obstacles which can be avoided. They prove very useful as they can inform the person of potential hazards which are higher than knee-high and which the standard cane may not detect in time. The Smart Cane currently available in the country comes closest to this kind of technology.

ULTRA CANE
Source: http://ultracane.com/

- ***Talking Compass*:** These are available as dedicated hand-held devices or within other portable devices. They are also available as Apps on many phone operating systems. With the help of such a compass the user can pinpoint cardinal positions as also angular deviations from these points. In case the user is clear about changing to specific directions en route, a talking compass can prove very useful.

TALKING COMPASS
Source: http://www.beyondsight.com/

- ***GPS-Based Maps*:** These maps which are generally mainstream products and are available on phones and tablets can be made accessible with the assistance of screen reading software. The blind user can thus navigate a route, find places of interest, understand their vicinity, etc, like their sighted counterparts. Though many of these maps have accessibility features, some of them are not fully accessible.

MATHS AND SCIENCE

Mathematics and science learning has often been considered to be challenging for students with blindness and low vision. Several traditional aids and appliances have been used to ensure easy access and learning. However, just as in the areas of reading and writing, advent of technology has ensured increased independence and access in the case of mathematics and science learning as well.

Whilst technological advances have made a significant contribution in creating access in the field of mathematics and science, they have also posed some challenges as compared to their assistive technology counterparts in the areas of reading and writing languages. Below are key ideas on the role that assistive technology (AT) has played in this field and what remains to be desired.

Learning and practice of mathematics and science can be viewed from the perspective of 5 key areas:

- ***Concept Building and Rough Work;***
- ***Writing Mathematics and Science Content Independently;***
- ***Reading Mathematics and Science Content Independently,***

- ***Accessing Graphs, Diagrams & Pictures; and***
- ***Accessing Science Practicals.***

Assistive Technologies have made significant contribution to further each of the above 5 areas of learning.

In the area of Concept Building and Rough Work, technology alternatives to paper-pen writing are available in terms of specialized softwares aimed at Algebra and Arithmetic writing and practice. These provide audio-based learning experiences along with work in print version which the sighted teacher can correct. In addition, talking calculators (including talking scientific calculators) and audio labelling systems with tactile graph paper can also be used for calculations and rough work. Computer Word and Excel programs with screen readers permit basic mathematical work. The challenge with higher-level mathematics comes in the way of screen readers not being able to lend complete meaningful read-back of mathematical content. For this purpose, specialized formats and software can be used.

For writing and reading mathematics and scientific content independently, there are three major formats available-Audio, Braille or Digital. Technology today makes it possible to have human audio recorded books to be played back on several MP3 or DAISY players. Braille in its refreshable version can permit writing as well as printing content both in print and Braille versions. Softwares that convert refreshable mathematical content into print formats are also available. For electronic options, mathematical and scientific content entered through the LaTex or Tex formats can be converted into print formats, stored in MATH ML versions and accessed through read-back tools. Mathematics electronic books created in MATH DAISY and MATH ML formats lend them to effective reading as against the limitation experienced by other format books and use of screen reading programmes.

Accessing Graphs, Diagrams and Pictures has been revolutionized with the advent of technology. What could have been made with traditional threads, glue, etc can now be printed. Tactile diagrams can be printed and mass produced. This can be done through various processes such as heat-sensitive paper which raises only those sections of the page which are marked or drawn upon. What are also available are audio graphing solutions that enable construction of electronic graphs with audio feedback and verbal descriptions of the same for studying and understanding purposes.

Practical lab work, taking readings, measurements, etc. has often been considered a big challenge for students with blindness and low vision. AT experts

have been doing significant research and development in this area to develop technology solutions that could overcome the sight barrier. Several innovative tools are available today that permit data recording and read-back in a lab set-up that students with blindness and low vision can operate independently. Self-voicing software has been developed which can be loaded on to specialized lab equipment to which multiple sensors or probes can be connected. These can feed data to the base unit and depending on the sensor, the user can listen to a readout of a wide range of parameters ranging from temperature and pressure, magnetic field, relative humidity, measures of reflection and refraction, intensity of light, levels of oxygen and carbon dioxide in the atmosphere, ambient sound levels measured in decibels, blood pressure, pulse rate, etc. These readings can also be captured on one's data tabulation chart onto a laptop for subsequent processing and analysis.

What is the key to recognize is that whilst AT is taking significant steps in making Science-Technology-Engineering-Mathematics (STEM) subjects accessible to blind and low vision persons independently, given the nature of STEM studies it is extremely critical to be aware of the limitation of technology in learning. Technology has to be used to aid learning and not supplant the teacher-student experience. Often technology solutions in the STEM field get regarded as replacement of teacher explanations. Just as for sighted students, a teacher will always be needed to explain concepts of addition, subtraction, light, sound, etc., so will a teacher always be needed for a blind and low vision student. AT will help overcome the barrier of not having accessible teaching-learning aids (TLA's) and resources. Also, for AT TLA's to work effectively based on the level and aptitude of learners, it is imperative to supplement them with non-AT aids. For example, whilst tactile diagrams with AT permit mass scale publication, these may need to be used along with 3-D live objects to reinforce learning. Whilst electronic programmes can be used for writing mathematics in formats that the blind students and their sighted teachers can access together, it is important to supplement the same with a Taylor Frame or similar other tactile boards that permit understanding of columns, rows, ten's, hundred's and other such concepts at the initial stage of learning.

AT holds great promise for making STEM subjects more accessible and enjoyable for maximum students with blindness and low vision. However the same needs to be used in conjunction with their non-AT counterparts to ensure most effective results.

AUDIO PLAYERS AND RECORDERS

There is a very high degree of audio-dependence among blind persons. Given this reality, it is very essential that the blind have available to them audio playback software or hardware which can provide effective playback options. What is also very important is the provision of suitable navigation points so that listening can be made very focused and as per the demands of the user. Digitally Accessible Information Systems (DAISY) provides this capability. If the material to be read has been appropriately marked up, the user can actually navigate to a specific section simply by clicking a few buttons.

DAISY material is available in various formats such as full-text, full-audio, full-text-full-audio and so on.

Today, a wide range of portable as also table-mounted playback hardware are available with the help of which a blind / low vision person can listen to content either as a DAISY media, a MP3 / Wave audio file or even as a Word file. Some of these units are as small as a small cellphone and comfortably fit in the pocket. They generally have their own internal memory which can further be supplemented with a micro SD card. Others are generally table-top models and read data from a pen drive, SD card or CD.

PLEX TALK

Source: http://www.shinanokenshi.com/

What is important about these players is that many of them offer the capability for book-marking as also the ability to speed up or down the rate of reading, change voice inflection and even repeat selected portions. Data is generally transferred to these units via a USB connection to a PC. The more

advanced units even have Wi-Fi capability thus allowing the end-user the ability to download from the Web.

Some of these units have a small display mounted on them, allowing for a few low vision friendly settings. It would thus allow a low vision user the ability to read and listen to the chosen material at the same time.

Many of these units also have a good recording capability allowing the user to custom-set various audio recording parameters. The portable unit can thus function as a very powerful personal aide.

Many modern cellphones also have softwares and applications which can perform similar functions, including the ability to read DAISY books as mentioned in the previous paragraphs.

DAILY LIVING AIDS

Blind and low vision persons can today draw upon various technological aids to function more effectively and independently. These devices can find useful applications in the home as also at work. These assistive aids can inter-alia help with the following:

- Assistance in the kitchen: Over and ab ove tactile signages, one can use talking microwave ovens, measuring cups, kitchen weighing scales as also programmable talking lids for containers.
- Within the home, one can also install a talking thermostat, clock, room thermometer and weighing scale. Some countries like the UK also have text-to-speech voices that make televisions accessible. Talking set-top boxes have also come into the market. Blind persons who use landline phones can also make effective use of talking phones which have a talking phone book and caller ID facility.
- Persons who are keen to monitor their fitness conditions can use a talking pedometer, glucose meter and digital BP machine.

  With the help of a talking / labeling system, one can organize a medical case with one's medications duly labelled.
- Colour is no longer a barrier for the blind. Speech-enabled colour organizers can, with the press of a button, speak out the colour of the object it is in contact with. This can help recognize clothing and appropriately match it for usage. Talking pegs and labels can help by installing a description of that colour on the particular object for future reference.

DETAILS OF VENDORS/MANUFACTURERS OF SOME ACCESS TECHNOLOGIES

NATIONAL SOURCES:

1. **BarrierBreak**: Website: www.barrierbreak.com
2. **Karishma Enterprises:** Website: www.karishmaenterprises.com
3. **Saksham Charitable Trust:** Website: www.saksham.org
4. **Sparsh Products:** Website: www.sparshproducts.com
5. **Vision Aid Charitable Services Society (Regd.):** Website: www.visionaidindia.org
6. **WORTH Trust**: Website: www.worthtrust.org.in

INTERNATIONAL SOURCES:

1. **Ai Squared:** Website: www.aisquared.com
2. **American Printing House for the Blind, Inc.:** Website: www.aph.org
3. **Dolphin Computer Access Ltd.:** Website: www.yourdolphin.com
4. **Freedom Scientific, Inc.:** Website: www.freedomscientific.com
5. **HumanWare:** Website: www.humanware.com
6. **Independent Living Aids Inc.:** Website: www.independentliving.com
7. **LS&S, LLC.:** Website: www.lssproducts.com
8. **Maxi-Aids Inc.:** Website: www.maxiaids.com
9. **Optelec International:** Website: www.optelec.com
10. **Perkins Products:** Website: www.perkins.org
11. **Royal National Institute of Blind People (RNIB):** Website: www.rnib.org.uk
12. **Vision Aid Inc.:** Website: www.visionaid.org

The above list is an illustrative list as there are many more manufacturers and suppliers in the market. The lists are organized alphabetically.

CHAPTER 12
Barrier-Free Environment

Nirmita Narasimhan

This chapter highlights the concept and importance of barrier-free environment and provides useful information on making public buildings/places/ transportation systems/ICT etc. accessible through suitable modifications and use of appropriate material. It discusses the existing policy on accessibility and proposed legislative measures and explains the process of access audit.

WHAT IS A BARRIER-FREE ENVIRONMENT?

A barrier-free environment is one which is free from obstacles of any kind and allows all persons, irrespective of age, sex, disability or any other condition, to navigate, function and access all facilities and services with freedom, safety, independence and dignity. For an environment to be truly barrier-free, it must not have any obstacles for persons to access facilities and services both in the physical as well as virtual space. A barrier-free environment includes the absence of both environmental as well as attitudinal barriers hindering full and effective participation. However, this chapter focuses primarily on environmental barriers for persons with blindness and low vision, where 'environment' refers to the space surrounding us comprising roads, pathways, parks, buildings, transportation services, products of daily use etc. The chapter also presents some basic information regarding access to ICT products/services along with relevant inputs on how to audit whether the environment is really accessible.

The relationship between persons and their surrounding environment is a dynamic one. It varies from person to person and also keeps changing during different stages of their lifetime. The elderly, the disabled, small children and pregnant women may all find it difficult to negotiate roads with uneven or high pavements, or read signs which are long or have small lettering. An illiterate person may also similarly not understand a written sign, but would have no difficulty in understanding a symbol which is placed beside the sign. Hence, having a barrier- free environment will not only benefit persons with disabilities, but all categories of people throughout their lifetime.

WHAT IS ACCESSIBILITY AND WHY IS IT IMPORTANT?

Accessibility is the test to measure whether all requirements and needs of persons with disabilities can adequately be met by a product, facility or service. If a product or service is accessible, it can be used by all persons, including persons with disabilities. For a product or service to be completely accessible, it must be usable to the same degree and extent, without any extra effort by a person with disability, as it can by a person without disability. However, if it falls short in a couple of requirements, it may still be partially accessible. If it cannot at all be used by a person with disability, it is absolutely inaccessible. Accessibility covers the ability to enjoy the range of purposes which a product or service is intended to serve. Accessibility implies access, while access does not necessarily imply accessibility. It primarily refers to having physical access to something, while accessibility denotes that a person having access to something will be able to recognize, understand, navigate or use it.

A facility or service can be made barrier-free or accessible: by ensuring that it is created in an accessible manner from its inception, in accordance with the principles of Universal Design, or by retrofitting it or making reasonable accommodations to render it accessible. The former approach is the preferred one since it treats accessibility as a matter of right, rather than a supplement. In order to ensure that products and services are uniform in their accessibility, standards have been evolved for all aspects of design and development and represent the industry consensus on the critical components which are required to implement accessibility. Adherence to these standards will ensure that the product or service is accessible to all users and will also give the users an idea of what to expect from a facility/ product/ service which conforms to a particular standard. For instance, adherence to the Web Content Accessibility Guidelines will ensure that a website is accessible to all users and a blind person can safely expect from a website conforming to this standard that the images will be accompanied by an alternative description. Another way of ensuring accessibility of products and services is at the stage of procurement. A procurement policy which mandates that all equipment procured/ services contracted must conform to standards of accessibility will help to ensure that accessibility is part of all present and future contracts. Procurement policies in several countries in the European Union, The United States and Canada are following this approach.

There is a very good business case for making products and services accessible from their very inception, since the range of persons who can access these increases manifold. Integrating accessibility from the initial design may not

cost, say, more than 2% of the estimated project budget; on the other hand, retrofitting it would often cost a lot, sometimes even the cost of recreating the entire structure. In many cases, it may not even be possible. For instance, in the case of many old buildings, the architectural designs are such that it would be impossible to incorporate accessible design considerations without bringing down the building. Another advantage to having a product accessible from the very inception, as in the case of websites, is that it would develop the internal capacity to create and maintain accessible products and services.

Since the topic of barrier-free access is vast, this chapter will limit itself to the surrounding spaces, facilities and services which we access on an everyday basis. The attempt here will be to give examples of the kind of accommodations or design features which must be adopted in order to make the space accessible to blind persons and not to give a detailed list of all the accessibility features required. Also, given that this resource book is targeted towards persons with low vision and blindness, this chapter will not focus on guidelines of Universal Design which address the needs of persons with other disabilities.

WHAT IS UNIVERSAL DESIGN?

The concept of universal design began in the 1950s when there was a large increase in the number of disabled persons post the two World Wars. It urges designers, planners, developers, architects and manufacturers of products, spaces, buildings and services to take the diversity and vulnerabilities of human beings into consideration while conceptualizing their work. It recognizes that human abilities are dynamic and affect the ways in which people negotiate or interact with their surrounding physical and virtual environments. Accordingly, products, environments and services designed and developed in accordance with principles of universal design are accessible to all persons.

Article 2 of the United Nations Convention on the Rights of Persons With Disabilities (CRPD) recognizes the importance of universal design and provides for the promotion of universal design as a general obligation of States Parties as follows:

"Universal Design" means the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. "Universal Design" shall not exclude assistive devices for particular groups of persons with disabilities where this is needed.

Universal design seeks to simplify life for everyone by making products, communications, and the physical environment more usable by as many people as

possible at little or no extra cost. It is based on seven design principles:- equitable use, flexibility in use, simple and intuitive, perceptible information, tolerance for error, low physical effort and size and space for **approach and use**[1]. The incorporation of universal design will ensure unhindered participation of citizens in all aspects of socio-cultural development of a nation. Since universal design of the built environment is inclusive by its very nature, relatively very little cost is incurred in renovation of buildings as they become old.

REASONABLE ACCOMMODATION

Closely tied in with the concept of UD is the concept of reasonable accommodation, since in many cases, persons with disabilities may be unable to use a product or service unless a reasonable accommodation is made. Hence, denial of reasonable accommodation may be treated as discrimination on the basis of disability since it prevents persons with disabilities from enjoying their human rights.

In line with UNCRPD, the Rights of Persons With Disabilities Bill 2014 defines 'Reasonable accommodation' as necessary and appropriate modification and adjustments, without imposing a disproportionate or undue burden in a particular case, to ensure to persons with disabilities the enjoyment or exercise of rights equally with others. The parliamentary Standing Committee on Ministry of Social Justice and Empowerment which examined the Bill, has suggested vide Section 3.21 of their report that the words 'without imposing a disproportionate or undue burden in a particular case' be substituted with the words 'to the maximum of its economic resources'. Alternatively, the Committee has recommended to the Ministry to consider the following definition:"Reasonable Accommodation means necessary and appropriate modification and adjustments, where needed in a particular case, to ensure to persons with benchmark disabilities the enjoyment or exercise on an equal basis with others, of all human rights and fundamental freedoms and also to ensure their full participation in society."

'Reasonable accommodation' is, then, a most relevant concept recognized by our above-stated Parliament's Standing Committee also. It is so integral to accessibility that it finds mention in several Articles of the CRPD as well.

[1]http://www .design.ncsu.edu/ cud/about_ud/udprincipleshtmlformat

PHYSICAL ACCESSIBILITY

This section outlines the guidelines for the accessibility of different aspects of the physical environment. The following themes are common across all guidelines for accessibility for the visually impaired and are an essential part of any accessible environment:

- ***Simplicity and lack of clutter*** – The space needs to be designed and planned in a manner that is simple and logical and can easily be understood. A clear space should be available for navigation and protrusions and obstacles need to be minimised.
- ***Consistency*** – It is important to follow the same guidelines across the board and do things the same way. If a particular texture is used to indicate a hazard in one place, the same texture must be used for all hazards, as this will be immediately understood. For instance, if the switchboard is to the right of the entrance in one room, the same convention should be followed throughout, so that visually challenged users automatically know where to look for it.
- ***Contrast*** -- For people with impaired vision, orientation can be eased by the use of contrasting colours and textures in building materials. These can be used to convey warnings, identification of specific elements such as doors, stairs, steps, ramps, pedestrian crossings, etc. as well as identify the path of travel through the means of a guide strip.
- ***Tactile and auditory feedback*** - Since people with impaired vision has difficulty reading signs and printed information, all signage and materials must be made available in tactile or audible formats. Braille and visual information should be combined with audible information, for example, in airports, lifts and buses there could be Braille signage as well as audio messages to help persons with visual disabilities navigate their journey.

LIGHTING

Lighting should be evenly distributed and present at frequently used entrances, access routes and facilities. As bright lighting can be distracting for persons with low vision, walls and work surfaces should not have a reflective glare. This can be achieved by strategically placing light sources, installing blinds on natural light sources and installing task lighting.

PATH OF TRAVEL/ACCESSIBLE ROUTE

The path of travel, whether it is located at the exterior of a building, along a path through a park, on the walkway to a home, or along the interior halls or corridors of an office, school or home, should be accessible to all users. To be safe for everyone, the path of travel needs to be stable, firm and slip resistant.

WIDTH

Every route should be at least 920 mm wide. However, routes that are wider and at least 1400 mm, are preferable because they allow persons using mobility aids to pass.

SLOPE

A route that is as level as possible, with a running slope at a maximum of 1:20 (5%), and a cross slope no greater than 1:50 (2%) is easier for people to use safely.

TEXTURE

- The path of travel should be easy to detect by a blind person using a long white cane. This can be done by providing a guide strip with a contrasting floor texture running parallel to main pathway.
- Flooring materials such as carpets and tiles should be glare free, slip resistant and not heavily patterned as they can be disorienting.
- To differentiate pathways from adjacent level and even surfaces, they should be given a different texture and colour finish for differentiation.
- The texture of the floor material at doors, stairs, steps, ramps and pedestrian crossings could be different for blind persons to be able to identify them easily while walking on their own.
- Warning blocks of different textures should be provided at the beginning, end and the landings of the stair cases and ramps. Intersecting pathways should blend at one common level.
- Any carpets installed should have a low pile and be firm as it makes it easier for people using mobility aids to pass over them.

HAND RAILS

- These should be provided on sides of stairs and ramps.
- Should be properly designed in terms of length, size, colour and grip.

GUIDE STRIPS

- Guide strips should be laid out simply and logically and should not be located close to manholes or drains.
- They should also have a colour that is in contrast with the surrounding surface so that it is easier for persons with low vision to spot them.

GUIDE STRIPS IN CONTRASTING COLOURS

Source: http://www.bfahk.com.hk

PEDESTRIAN CROSSINGS

- In order to provide safe places for persons with visual impairments to cross roads, pedestrian crossings should be present in all crossroads and at least at every 500 m, with guide strips to identify their position.
- There should be an audible indication as to when the pedestrians can cross the road.
- Pedestrian bridges should be provided on both sides in order to cover ditches.
- The time interval for crossing should be suitably programmed to give enough time to the blind person to go across using his white cane.
- Spaces below the stairs must be blocked out using rails or a different textured surface.

PROTRUDING HAZARDS

Any object that protrudes or sticks out from a wall, column, or pillar, more than 100 mm, could be a hazard, especially for people who are blind or visually impaired who use a long white cane as it could cause tripping.

Some protrusions which are hazards include signs, telephone enclosures, drinking fountains, fire extinguishers, and the underside of stairways or escalators. In the outdoors, these could include traffic and direction signs, trees, shelters for watchmen, water pumps, shop-stalls and advertising boards, street furniture, lampposts, etc.

Some of the guidelines specific to overhanging objects and protrusions are:

- The bottom edges of signs or objects that hang from the ceiling should not be lower than 2030 mm so that to it may not hit the head of a blind person.
- Where an object protrudes more than 100 mm, a barrier at ground level must be provided.
- Obstructions on a pathway must be indicated through tactile warning markings on the ground around the obstruction, extending at least 60 cm outside of the projected area at the base of the obstruction.
- Supporting wires, poles of electricity and telephone are to be properly grounded.
- The trees near externally accessible pathways should be pruned so that their branches do not pose a hazard.

ENTRANCES

- Entrances to buildings should be placed logically within the routes that serve them and be in contrast to the façade so as to be easily distinguishable.
- They should also be connected with an accessible pathway to access indoor or outdoor areas.
- Turnstiles and revolving doors should be avoided.
- Thresholds should be removed wherever possible.
- Completely glazed doors should be avoided and some contrasting colours should be provided on glass doors in order to indicate their presence to persons with low vision.

ENTRANCE TO A BUILDING HAVING HAND RAILS

Source: http://www.hotel-magazine.co.uk/

ELEVATORS

- Elevator equipment should use contrasting colours.
- Numbers should be embossed in Braille in order to be identifiable by touch and, for persons with low vision, should be displayed in colours that are in contrast with the background.
- All control buttons should also be in Braille.
- The elevator should signal their arrival to each floor by means of a bell and a light as well as an audible prompt identifying the floor.

STAIRS

- Stairs should be of uniform height and width with a line of a different colour marking the beginning of each step, to help people with low vision distinguish one step from another.
- The edge of the steps should be flush or rounded and sharp edges and protruding rims should be avoided.
- A textural marking strip should be provided at the top and bottom of stairs and at intermediate landings.
- Handrails must be installed on both sides of the stairs and should be extended at least 30 cm before the first step and 30 cm beyond the final step in the staircase.

SIGNAGE

There are four main types of signage:

- Information signs: e.g. maps, explanation for use of different equipment.
- Directional signs: these direct the user to a destination with arrow marks along with text.
- Identification (or Location) signs: these are installed at specific individual destinations and indicate the location of a room, service, desk etc.
- Warning signs: installed for the safety of users (either warning or prohibitive signs), for example, fire exit signs.

Different types of signage can be indicated using different shapes and colours. In addition, the following guidelines should be kept in mind:

- All signs should be visible, clear (easy to see and to understand), concise (simple, short and to the point) and consistent (signs meaning the same thing should always appear the same manner).
- Obstructing Signage such as those placed on the sidewalks or pathways (overhanging signs and pole-mounted signs) should be placed outside the accessible path and warning blocks that are detectable by blind and low vision people should be provided.
- Signage should be placed openly and prominently at nodal positions.
- It should be simple in syntax and must be well lit in ambient low light conditions.
- It should not obstruct any movement path and, if suspended, should have minimum clear headroom of 2 m from the finished floor.
- If the signage is floor-based and freestanding, then there should be a detectable barrier at the floor level for the white cane users.
- Signage should not use glass as it causes reflection and be relief cut as opposed to engraving.

In addition, Braille and/or auditory signage also should be provided as follows:

- Braille signage may be given on the handrails at appropriate places.
- Braille signage is to be fixed at a reasonable height, at eye-level, depicting each and every room in the building.

BRAILLE SIGNAGE
http://www.securitysafetyproducts.co.uk

- Grade 1 Braille should be used for single word and contracted grade 2 Braille for multiword signs.
- Where Braille forms part of a sign, an indicator such as a notch should be located at the left hand edge of the sign to help locate the Braille message.

RESTROOMS

- Restrooms in public spaces should be clearly identifiable and in a place which can be accessed easily.
- Ensure that tiles with colour contrast and different texture are used.
- Standard and easy to use sanitary ware which can be felt and operated should be used.
- Everything should be at a standard height so that a person with low vision or blindness can estimate where to expect different things within the restroom.
- There should also be a tactile map at the entrance to help in orientation.
- All written and visual information should be made available in Braille and audio formats.

TRANSPORT

- Bus stops as well as train stations should have their names and the bus/train numbers displayed in Braille in addition to the local languages.
- Handrails should be provided for easy boarding.

- The names of the bus stop/train station should be shared in an audible format before it is due to arrive.
- Information on the names of all bus stops along the route should be indicated inside the bus by displaying text in a suitable position and through audible announcement.
- The final destination should be displayed outside the bus in large text, especially on the front and side of the bus. This information should be in a contrasting colour and be well illuminated at night. On arrival of the bus its final destination should be announced for the benefit of blind persons.

VISUAL CONTRAST

There must be sufficient visual contrast among the elements of the environment to enable persons with low vision to distinguish between them. Some of the important guidelines are:

- Visual Contrast between the colours of the walls and the flooring by choosing appropriate colour combinations based on the brightness, and hue.
- Colours of the doors should be selected so that they are in contrast to flooring and background walls.
- Glass doors should be marked by a white or coloured band so that persons will not bump into them.
- Door handles and locking system also need to differ in colour.
- Doors should be fully open or fully closed and tightly hinged to a wall.
- The colour of the sanitary ware as well as the grab bars in toilets should be sufficiently different from surrounding wall.
- Hand rails should be in contrast to the supporting wall
- The electric switchboard should be larger and in contrasting colours as compared to the wall.

TACTILE MAPS

Tactile maps and models should be provided to help visually impaired people comprehend large, complex buildings:

- A tactile map of the building should be provided at the entrance.
- As it is difficult to depict the complete building in one tactile map, the main tactile map may be a simple layout and it should be supplemented with

A TACTILE MAP WITH BRAILLE AND LARGE PRINT

Source: http://www.cjwalsh.ie

more maps in detail of a particular area at key points such as stair case landings, lift lobby landings and intersections along the primary circulation route of the building.

- These tactile orientation maps should match the layout of the building at the location in which they are placed.
- Pocket maps should be made available at the reception, highlighting circulation routes, location of accessible features etc.

AUDITORY WAY FINDING

In order to help persons with visual impairments navigate, auditory signs can also provide information in different ways:

- Providing auditory cues with pre-recorded spoken message at regular intervals can be used at key points in the building.
- Speaking signs which are infrared audible that give a pre-recorded spoken message activated by the detection of body heat of an approaching person, are an excellent way of orienting visually impaired persons.
- Auditory signals should be provided at cross roads and at Zebra crossings.

ORGANIZING AND ARRANGING HOMES

There are many steps that can be taken within a house also, to make it easier for the visually impaired person to navigate:

- The doors and windows should be arranged to be opened to the wall without protruding.
- The doors can be painted in different colours.
- The lights, bulbs etc. should be placed in such a way that they do not create deep shadows.
- Usage of large electric switch panels with Braille signage should be encouraged.
- Tactile cues for labeling the clothes may be used.
- Encourage organizing clothing storage to make it easy to find clothes e.g. placing matching outfits together on one hanger and grouping similar clothing.
- Plastic Zip bags may be used for storing various small items like hankies, socks etc.
- Specific locations should to be identified for keeping different things and these should be kept in the same place after use.
- Different types, sizes and shapes of storage jars may be used to store various items in the kitchen and also labelled in Braille.
- A coding system also may be followed for colours and clothes with help of stitches/ buttons etc. one stitch blue, two stitches red etc.
- Use of the clock concept in arranging items/ articles on a table will help.
- Electronic audio assistive devices such as talking calculator, talking thermometer, talking watch, talking weighing machine etc. will be very helpful.
- Keeping the travel space clear of items and centre tables, lamps/ candle stands may be arranged in such a way that they are near the wall and not in the walking area.

ACCESSIBILITY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT ACCESSIBILITY)

While ICT accessibility is a separate field of study itself from accessibility of the physical environment, given that navigating the physical environment around us requires interaction with and operation of electronic elements such as

elevators or bus/ train/ flight information on display boards, we need to ensure that all these elements are accessible for persons with disabilities as well. There are standards of accessibility for various components of ICT such as website accessibility standards **(WCAG 2.0)**[2] and electronic documents (such as **Daisy**[3] or **Epub**[4]) and the use of **Unicode**[5] for fonts. Examples of some really basic ICT related accessibility requirements are:

- Alarm systems should be both seen and heard.
- Print materials and signs should be in large size and accessible formats.
- Raised lettering, Braille and auditory announcements should be used in elevators, so that persons with different degrees of vision can access them.
- Auditory signs and displays, including on television or computers should be in contrasting colours and large and easy to read fonts.

WEB ACCESSIBILITY

Inaccessible websites result in the inability of persons with disabilities to use them. Hence, given the situation today where a website is a must for all information, communication and transactions, denying access to information on websites can prove a tremendous barrier to persons with disabilities. The Web Access Initiative (WAI), a wing of the World Wide Web Consortium (W3C) has formulated a set of guidelines known as the Web Content Accessibility Guidelines (WCAG, currently version 2.0) which is the de facto standard for website accessibility around the world. These have been incorporated in some form or the other in the internet and electronic accessibility policies of different countries. In India, the National Policy on Universal Electronic Accessibility mandates adherence to these guidelines. In general, if a website is completely accessible through the keyboard, including forms and rich media, then it should be fully accessible to persons using all kinds of assistive technologies. WCAG stresses on properly marked up and tagged html. The guidelines require that all elements on a web page must be perceivable, understandable, operable and robust.

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ii. Please see www.w3c.org/wai

iii. www.daisy.org

iv. Please see http://en.wikipedia.org/wiki/EPUB

v. Please see http://www.unicode.org/standard/WhatIsUnicode.html

MOBILE ACCESSIBILITY

Perhaps one of the biggest revolutions in the field of ICT is the coming of the mobile phone which has become a significant tool of empowerment in the hands of all persons, especially persons with disabilities. It provides features and services for persons with all kinds of disabilities.

What is perhaps of most relevance to this chapter is the availability of voice aided navigation and the use of maps to guide persons with vision disabilities to navigate independently. There are other facilities such as OCR, currency reader etc. which can be extremely useful. The mobile phone hence has made a tremendous contribution towards the independence and mobility of persons with vision disabilities--merely the possibility of being able to call for help and guidance at any place and any time, without even looking at the other features makes it an empowering tool for navigation. The accessibility of mobile phones has been covered in a very detailed report published by the International Telecommunication Union (ITU) which is provided in the reading list to this chapter. Hence, the role of ICTs in removing obstacles to independent navigation and mobility of the blind is undeniably a big one.

ACCESSIBILITY OF ELECTRONIC DOCUMENTS

Documents both in the print form, as well as electronic ones often pose a significant barrier to persons with vision disabilities to access information. With printed matter, the usual procedure is to scan the documents, use optical character recognition software to recognize the content and read it using a screen reader. However, there is hardly any OCR software for languages other than English in India. Hence, regional language content cannot be read and the only way of making them into electronic copies is by typing them. With electronic documents, where they are in an Unicode based font, they can be read by text to speech software in languages where software has been developed.

For Indian languages there is very little choice of TTS and at the most, e-Speak, an open source TTS software is available for some of the major languages such as Tamil, Telugu, Hindi, Malayalam and Bengali. However, in many cases, electronic documents on the web (such as government orders and notifications) are uploaded as scanned image files and hence not readable by any assistive technology. Therefore, it is important to bear in mind while publishing electronic documents that they must be in Unicode and uploaded in an open standard based format such as EPUB.

Where it is not possible for any reason to have an accessible document,

then the concept of reasonable accommodation comes into play and an alternate Word or text document may be provided giving the content of the original document. If these principles are not followed, a vast amount of content on the internet remains unavailable to persons with vision disabilities.

DO WE HAVE ANY POLICIES IN INDIA MANDATING ACCESSIBILITY?

We have mention of accessibility in the National Building **Code**[6] and in guidelines of the **CPWD**[7]. However, the accessibility requirements under the NBC need to be adopted by the states individually since it is a state subject. Till now, 18 states have adopted accessibility in their bye-laws. However, it is to be remembered that these are voluntary guidelines and that these are applicable only to new buildings. Almost all old buildings in the states, especially, public buildings, remain inaccessible since they are not bound by the **bye-laws**[8]. Furthermore, while the plans for the new buildings have to show adherence to accessibility guidelines, there is often a lacuna in the implementation. For electronic accessibility, a national policy titled the National Policy on Universal Electronics Accessibility was notified in October 2013 by the Department of Electronics and Information Technology, MIT, which requires websites and electronic infrastructure to conform to standards of **accessibility**[9].

The Rights of Persons With Disabilities Bill 2014 deals with accessibility under Sections 39 to 45. The major provisions are:

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vi. See the National Building Code of India, 2005, available at https://law.resource.org/pub/in/bis/S03/is.sp.7.2005.pdf

vii. Guidelines and Space Standards for Barrier Free Built Environment for Disabled and Elderly Persons, Central Public Works Department, Ministry of Urban Affairs & Employment, http://moud.gov.in/sites/upload_files/moud/files/92.pdf

viii. Action Plan for Implementation of Action Points identified for Ministry of Urban Development for the Empowerment of Persons with Disabilities, http://moud.gov.in/sites/upload_files/moud/files/pdf/actionplan_barrierfree.pdf

ix. Notification on "National Policy on Electronics" (NPE) for Electronics System Design Manufacturing sector of India, issued on November 19, 2012, available at http://deity.gov.in/sites/upload_files/dit/files/NPE_Notification.pdf

- The National Commission to formulate regulations for persons with disabilities, laying down the standards of accessibility for the physical environment, transportation, information and communications, including appropriate technologies and systems, and other facilities and services in urban and rural areas.
- Bus stops, railway stations, and airports to conform to accessibility standards relating to parking spaces, toilets, ticket counters and ticketing machines.
- All modes of transportation to conform to design standards.
- Facilitating personal mobility for persons with disabilities.
- Access to information and communication technology to include: All contents available in audio, print and electronic media to become available; provision of audio description, sign language interpretation and close captioning for the electronic media; Electronic goods and equipment meant for everyday use to be available in universal design.
- Measures to promote development, production and distribution of universally designed consumer products and accessories.
- All existing public buildings to be made accessible in accordance with National Commission's regulations within five years with time extension possible on case to case basis.
- Service providers to provide services in accordance with regulations formulated by the National Commission within two years with an extension possible as per laid down standards.

The Standing Committee on MSJE which examined the Bill, vide Section 3.126 of their report, has, on the subject of accessibility, desired that: "Types of small infrastructure be specified in the Bill and time period for their completion should be five years. Similarly, types of huge infrastructure be also specified in the Bill and extension for their completion be given on case to case basis. The Committee also desire that the Ministry explore the feasibility of bringing the private sector, being service providers, also under the ambit of Clause 45."

ACCESS AUDIT

Before concluding, let us take a brief look at how best the accessibility of a building or space can be measured to ascertain whether it is disable-friendly in the real sense-the process of Access Audit.

An Access audit is a test to measure accessibility and usability of a building

or environment in order to determine whether it can be used by a diverse variety of users, especially persons with physical and sensory disabilities. An access audit serves many purposes:

- To identify access challenges with respect to that building and suggest appropriate solutions with tentative costing. The audit report may also further classify the changes on the basis of priority for rectification, which is useful especially in cases where there are budgetary constraints, changes which are minor, or those which require major structural modification or may propose alternative accessibility solutions.
- To identify where the building stands in relation to the 'building by-laws,' accessibility requirements and to other buildings of a similar nature.
- To identify modifications required for future action.
- To minimize cost of litigation for the building owner if he/ she is able to demonstrate concern for accessibility of the building for seniors and persons with disabilities by contracting an audit of the building and taking appropriate action for rectification.

The scope of an access audit is primarily determined by the purpose for which the building/space is used and any other case specific consideration. Generally, an access audit will take into consideration all aspects of use of a building, starting from the parking space to approach, entrance, signage within and outside the building, corridors, stairs/ramps/lifts, seating spaces, toilets, public rooms, lighting, placement of furniture, navigability within the building, communication and work equipment, information dissemination materials/ practices, announcement systems, exits, fire escapes and attitude of the people working there. It is usually carried out by consultants who have specialized in access audits, very often persons with disabilities themselves. Access audits are useful for persons with disabilities to identify in advance places they would like to visit such as hotels or theatres, schools or colleges where they would prefer to study, and business houses they would like to do business with.

WEB RESOURCES

Availability and accessibility of government information in the public domain: http://cis-india.org/accessibility/blog/availability-and-accessibility-of-government-information-in-public-domain

Barrier-Free Design Guidelines v1.1, City of Hamilton: http://www.hamilton.ca/CityDepartments/CorporateServices/Procurement/Barrier-FreeDesignGuidelines.htm

e-Accessibility Toolkit for Policy Makers: www.e-accessibilitytoolkit.org

Government of India. National Policy on Universal Electronic Accessibility.2013: http://deity.gov.in/sites/upload_files/dit/files/National%20Policy%20on%20Universal%20Electronics(1).pdf

Guidelines for planning a barrier-free environment: A practical manual to improve physical accessibility in Afghanistan: http://www.undp.org.af/Publications/KeyDocuments/2005_cdap_guidelines.pdf

http://accessability.co.in/access/Services/Access-Audit

http://www.disabledaccess.co.uk/Our_Services/Audit.html

http://www.w3.org/TR/egov-improving/

Making Mobile Phones and Services Accessible for Persons with Disabilities, ITU and G3ict: http://g3ict.org/resource_center/publications_and_reports/p/productCategory_books/subCat_1/id_191

United Nations Convention on the Rights of Persons with Disabilities: http://www.un.org/disabilities/default.asp?id=150

www.webaim.org

CHAPTER 13

International Publications, Reports And Declarations Concerning Persons With Disabilities

Bhushan Punani

This chapter provides specific relevant details regarding international declarations, conventions and initiatives which have influenced various developments in this regard in India as well. The development of disability-specific U.N. initiatives can be traced back to the adoption of two landmark resolutions. On 20th December 1971, vide its Resolution 2856, the U.N. came up with the Declaration on the Rights of Mentally Retarded Persons. This was followed by the U.N. Declaration on the Rights of Disabled Persons adopted through its Resolution 3447 of 9th December, 1975.

Then, the United Nations General Assembly declared 1981 as the International Year of Disabled Persons (IYDP) which was followed by the World Programme of Action Concerning Disabled Persons, adopted by the UN General Assembly by Resolution 37/52 on 3rd December 1982. The Programme encourages Member States, within the context of available resources, to initiate whatever special measures that may be necessary to ensure the provision and full use of services needed by persons with disabilities living in rural areas, urban slums, and shanty towns. Subsequently, many important international initiatives came to fore, which are discussed below:

ILO'S HISTORIC CONVENTION (1983)[1]

ILO Convention (No. 159) and Recommendation (No. 168) concerning Vocational Rehabilitation and Employment (Disabled Persons), 1983, has the following salient features:

[1] Full text of Convention is available on the Website: http://www.ilo.org/wcmsp5/groups/public/@ed_emp/@ifp_skills/documents/publication/wcm_103529.pdf

ISBN 978-92-2-121438-0 (print); ISBN 978-92-2-121439-7 (web pdf)

a. Focus on Vocational Rehabilitation;

b. Equality of Opportunities;

c. Emphasis on Vocational Rehabilitation of the Rural Disabled;

d. Particular efforts to be made to ensure that vocational rehabilitation services are provided for disabled persons in rural areas and in remote communities at the same level and on the same terms as those provided for urban areas;

e. The development of such services to be an integral part of general rural development policies;

f. Designating existing rural vocational rehabilitation services or, if these do not exist, vocational rehabilitation services in urban areas as focal points to train rehabilitation staff for rural areas;

g. Establishing mobile vocational rehabilitation units to serve disabled persons in rural areas and to act as centres for the dissemination of information on rural training and employment opportunities for disabled persons;

h. Training rural development and community development workers in vocational rehabilitation techniques;

i. Providing loans, grants or tools and materials to help disabled persons in rural communities to establish and manage cooperatives or to work on their own account in cottage industries or in agricultural, crafts or other activities;

j. Incorporating assistance to disabled persons into existing or planned general rural development activities;

k. Facilitating disabled person's access to housing within reasonable reach of the work place;

l. Provision of support services;

m. Providing services of professionals;

n. Ensuring community participation in particular with that of the representatives of employers', workers' and disabled persons' organizations;

o. Encouraging disabled persons and their organizations to participate in the development of community activities aimed at vocational rehabilitation of disabled persons so as to further their employment and their integration or reintegration into society;

p. Appropriate government support to promote the development of organizations of and for disabled persons and their involvement in vocational

rehabilitation and employment services, including support for the provision of training programmes in self-advocacy for disabled persons;

q. Appropriate government support to these organizations to undertake public education programmes;

r. Promoting coordination at all levels.

These valuable guidelines of the UN and the ILO exhibit vision, concern and a deep involvement at the highest International policy level in vocational rehabilitation, training, employment, resettlement, and integration of the rural disabled, including the rural visually impaired.

JOMTIEN DECLARATION (1990)[2]

Education for All (EFA) promoted by UNESCO and signed by India. "There is a need for a broader, more inclusive understanding of special education needs...."

UNESCAP DECLARATION[3] (1991)

The Social Development Strategy for the ESCAP Region towards the Year 2000 and Beyond was adopted by the Fourth Asian and Pacific Ministerial Conference on Social Welfare and Social Development, held at Manila in October, 1991.

The Strategy has the ultimate aim of improving the quality of life of all the people of the ESCAP region. With that aim in mind, the basic objective of the Strategy is the eradication of absolute poverty, the realization of distributive justice and the enhancement of popular participation. Within the framework of these aims and objectives, the Strategy assigns priority to the region's disadvantaged and vulnerable social groups, including persons with disabilities. To further the

[2] Detailed text available on the website: www.unesco.org/education/.../Jomtien%20Declaration%20eng.shtm

[3] ESCAP is the regional development arm of the United Nations and serves as the main economic and social development centre for the United Nations in Asia and the Pacific. Its mandate is to foster cooperation among its 53 members and 9 associate members. ESCAP provides the strategic regional link between global and country-level programmes and issues. It supports Governments of the ESCAP region in consolidating regional positions and advocates regional approaches to meeting unique Asian and Pacific socioeconomic challenges in a globalizing world. Website www.unescap.org

concerns of persons with disabilities in the regional Social Development Strategy, thirty-three countries attending the forty-eighth ESCAP session in April 1992, joined in sponsorship of Resolution 48/3. In adopting the Resolution, the governments of the region expressed their collective commitment to the full participation and equality of people with disabilities. The proposed Agenda for Action also envisaged development of community-based approaches as a means of improving access to rehabilitation services, for persons with disabilities, through a variety of measures.

BEIJING PROCLAMATION[4]

The Economic and Social Commission for Asia and the Pacific adopted landmark Beijing Proclamation on Asian and Pacific Decade of Disabled Persons during the period 1993- 2002 through Resolution No. 48/3 adopted by General Assembly at its 48th session held on 23 April, 1992.

PURPOSE:

To give fresh impetus to the implementation of the World Programme of Action concerning Disabled Persons in the ESCAP region beyond 1992 and strengthening regional cooperation to resolve issues affecting the achievement of the goals of this Programme, especially those concerning the full participation and equality of persons with disabilities.

TASKS TO BE ACCOMPLISHED:

The Proclamation desires developing measures that enhance the equality and full participation of disabled persons, including the following:

a. Formulation and implementation of national policies and programmes to promote the participation of persons with disabilities in economic and social development;

b. Establishment and strengthening of national coordinating committees on disability matters, with emphasis on, inter alia, the adequate and effective representation of disabled persons and their organizations, and their roles therein;

c. Provision of assistance, in collaboration with international development agencies and non-governmental organizations, in enhancing community-based support services for disabled persons and the extension of services to their families;

[4] Website: http://www.dinf.ne.jp/doc/english/intl/apddp/8.html

d. Promotion of special efforts to foster positive attitudes towards children and adults with disabilities, and the undertaking of measures to improve their access to rehabilitation, education, employment, cultural and sports activities and the physical environment.

IMPACT IN INDIA:

A team of senior officials and the then Minister of Social Welfare, attended the meeting in Beijing and signed the Proclamation on behalf of India. Being a signatory to this Proclamation, India was duty bound to implement important components of this Proclamation. To implement one of the sections of this Proclamation on "Drafting a suitable and comprehensive national legislation", India enacted "The Persons With Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995" which came into force from 7th February, 1996. In fact, disability being a State subject in the Constitution of India, it would not have been possible for the Parliament of India to enact this Act on the State subject list directly. However, Article 253 of the Constitution of India enables the Central Government to enact a law for giving effect to an international proclamation or declaration or convention or treaty or agreement to which India is the signatory, even for such matters which fall in the State list of the Constitution of India. The Central Government enacted the disability legislation directly under this authority bestowed upon it in the Constitution of India.

U.N. STANDARD RULE[5] ON THE EQUALIZATION OF OPPORTUNITIES FOR PERSONS WITH DISABILITIES:

The United Nations Economic and Social Council adopted a resolution during 1993 based on Resolution No. 32/2 of 20th February 1991 on these standard rules.

The document consists of 22 Rules. These call upon States to:

i. Raise awareness;

ii. Ensure proper medical and rehabilitation services along with development and supply of assistive devices;

iii. Recognizing overall importance of accessibility in all spheres;

[5] Full Text available on the website http://www.dinf.ne.jp/doc/english/intl/apddp/index.html

iv. Recognizing the principle of elementary, secondary and tertiary education in appropriate settings;

v. Empower persons with disabilities to exercise their right to employment;

vi. Provision of social security;

vii. Full participation of persons with disabilities in family life;

viii. Participation in cultural activities, sports, recreation, legal matters and religious life of their communities;

ix. Collection and dissemination of disability-related information and promotion of research;

x. Including disability-matters in all policies and national plans;

xi. Creating equal opportunities for economic development;

xii. Coordination at all levels and continuous monitoring and evaluation;

xiii. Recognizing the right of organizations of persons with disabilities for representation at different levels and their roles in decision-making processes;

xiv. Adequate training of personnel at all levels;

xv. Necessary technical cooperation for improvement of living conditions of persons with disabilities in developing countries;

xvi. Active international cooperation for support to persons with disabilities.

MONITORING:

The Standard Rules are to be monitored within the framework of the sessions of the Commission for Social Development. A Special Rapporteur with relevant and extensive experience in disability issues and international organizations is appointed, if necessary, funded by extra budgetary resources, for three years to monitor the implementation of the Rules. Ms. Catalina Devandas Aguilar of Costa Rica is currently holding this office.

SALAMANCA DECLARATION ON PRINCIPLES, POLICY AND PRACTICE IN SPECIAL NEEDS EDUCATION

The Salamanca Framework for Action was adopted by acclamation, in the city of Salamanca, Spain, on 10th June, 1994 on the occasion of World Conference on Special Needs Education.

MAJOR GUIDING PRINCIPLES:

Those with special educational needs must have access to regular schools which should accommodate them within a child-centred pedagogy capable of meeting these needs. Regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all.

Moreover, they provide an effective education to the majority of children and improve the efficiency and ultimately the cost-effectiveness of the entire education system.

EXPECTATIONS FROM THE GOVERNMENTS:

- Give the highest policy and budgetary priority to improve their education systems to enable them to include all children regardless of individual differences or difficulties,
- Adopt as a matter of law or policy the principle of inclusive education, enrolling all children in regular schools, unless there are compelling reasons for doing otherwise,
- Develop demonstration projects and encourage exchanges with countries having experience with inclusive schools,
- Establish decentralized and participatory mechanisms for planning, monitoring and evaluating educational provision for children and adults with special education needs,
- Encourage and facilitate the participation of parents, communities and organizations of persons with disabilities in the planning and decision-making processes concerning provision for special educational needs,
- Invest greater effort in early identification and intervention strategies, as well as in vocational aspects of inclusive education,
- Ensure that, in the context of a systemic change, teacher education programmes, both pre-service and in-service, address the provision of special needs education in inclusive schools.

EXPECTATIONS FROM INTERNATIONAL ORGANIZATIONS:

- To endorse the approach of inclusive schooling and to support the development of special needs education as an integral part of all education programmes;

- The United Nations and its specialized agencies to strengthen their inputs for technical cooperation, as well as to reinforce their cooperation and networking for more efficient support to the expanded and integrated provision of special needs education.

India adopted the Salamanca Declaration and has been taking various measures to facilitate and promote inclusive education.

BIWAKO MILLENNIUM FRAMEWORK[6]

The Economic and Social Commission for Asia and the Pacific adopted Biwako Millennium Framework for Action Towards an Inclusive, Barrier-Free and Rights-Based Society For Persons With Disabilities In Asia and the Pacific in the twenty-first century, by which it proclaimed the extension of the Asian and Pacific Decade of Disabled Persons, 1993-2002, for another decade, 2003-2012.

PRIORITY AREAS FOR ACTION:

By Resolution 58/4, governments in the region defined the priority policy areas as:

i. Self-help organizations of persons with disabilities and related family and parent associations;
ii. Women with disabilities;
iii. Early detection, early intervention and education;
iv. Training and employment, including self-employment;
v. Access to built environments and public transport;
vi. Access to information and communications, including information, communications and assistive technologies;
vii. Poverty alleviation through capacity-building, social security and sustainable livelihood programmes.

The Framework lists critical issues, relevant millennium developmental goals, targets and actions required to work towards these priority areas. It also lists roles of governments, NGOs and other stakeholders in achieving these goals. A number of strategies have been indicated for achieving the given targets. These include action at the level of national governments, cooperation among Member-States, inter-regional networking, adoption of international human rights treaties etc.

[6] Full text is available on website: http://www8.cao.go.jp/shougai/english/biwako/contents.html

COORDINATION & MONITORING:

It was also laid down that a regional working group comprising the United Nations system, governments and civil society organizations, including organizations of persons with disabilities in the region, should meet regularly to coordinate and monitor implementation of the Biwako Millennium Framework for Action. Provision was also made for a Mid-point review.

IMPACT ON INDIA:

A large number of professionals and officials from Government participated in this event held at Biwako, Otsu City in Japan. Within a few months of adoption of the Framework, the Ministry of Social Justice & Empowerment, Government of India, constituted a group on evolving a National Policy on Disability Development as envisaged under the Framework. The Ministry convened a national consultation in this regard and the first National Policy for Persons with Disabilities was introduced in the country in 2006. Encouraged by the National Policy, certain States have adopted state policies as well.

UNITED NATIONS CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES[7]

On December 19, 2001 the U N General Assembly passed Resolution 56/168 calling for an exclusive International Convention on Disability. Subsequently, the UN General Assembly appointed an Ad Hoc Committee consisting of member countries which started negotiations on drafting the Convention. It was tough as the UN rules and traditions did not recognize the disability organizations as partners in the process because usually a Convention is negotiated among the Member-States of the UN. After 2 meetings of the Ad Hoc Committee, the disability organizations managed to include 12 representatives along with 27 Member-States in the `Drafting Group` to prepare the first draft of the Convention. In all the 8 meetings of the Ad Hoc Committee, disability organizations performed a vital role and were increasingly consulted as experts by the State representatives[8].

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[7] Complete text of UNCRPD is available on the website http://www.un.org/esa/socdev/enable/conventioninfo.htm)

[8] Based on paper presented by Mr. Akhil Paul, Director, Sense International India, The UN Convention on the Rights of Persons With Disabilities -The Road Ahead

The Convention negotiations concluded in the shortest possible time and UN General Assembly adopted the UN Convention on the Rights of Persons with Disabilities (UNCRPD) on 13th December, 2006. On the first day of its opening for the signature, India signed the Convention on 30th March, 2007. India also took the lead by being the 7th country to ratify the Convention on 1st October 2007. The Convention came into force on 3rd May 2008.

The UN Convention on the Rights of Persons with Disabilities marks a paradigm shift in the way disability is looked at and in the manner in which persons with disabilities are perceived. The Convention reiterates that persons with disabilities are no longer objects of charity or pity but full-fledged citizens of this world. It focuses on full inclusion through attitudinal change in society. It is pertinent to clarify here that the Convention is NOT asking for anything NEW but asking that persons with disabilities enjoy the same opportunities in society that everybody else already enjoys. The Preamble clearly states that disability is an evolving concept and that disability results from the interaction between persons with impairments and attitudinal and environmental barriers. It also highlights the need to promote and protect the human rights of all persons with disabilities, including those who require more intensive support and the importance of individual autonomy and independence, including the freedom to make their own choices.

PURPOSE (ARTICLE 1):

This Article summarizes the Convention's main objective, which is to promote, protect and ensure the full and equal enjoyment of all human rights and freedoms by all people with disabilities.

DEFINITION (ARTICLE 2):

This Article lists words that have a particular definition in this Convention. For example, "language" includes spoken words and also signed or other non-spoken languages. Similarly, expressions like "communication", "discrimination on the basis of disability", "reasonable accommodation" and "universal design" are also defined.

GENERAL PRINCIPLES (ARTICLE 3):

The principles (main beliefs) of this Convention are:

a. Respect for inherent dignity, freedom to make one's own choices and independence;

b. Non-discrimination (treating everyone fairly);

c. Full participation and inclusion in society (being included in your community);

d. Respect for differences and accepting people with disabilities as part of human diversity;

e. Equality of opportunity;

f. Accessibility (having access to transportation, places and information, and not being refused access because you have a disability);

g. Equality between men and women;

h. Respect for the evolving capacity of children with disabilities and their right to preserve their identity (being respected for your abilities and proud of who you are).

GENERAL OBLIGATIONS (ARTICLE 4):

Governments to undertake to ensure and promote the full realization of all human rights and fundamental freedoms for all persons with disabilities and actively involve and consult with representatives of organizations of persons with disabilities in all decision-making processes.

EQUALITY AND NON-DISCRIMINATION (ARTICLE 5);

SPECIAL FOCUS ON CHILDREN AND WOMEN:

Article 6 lays focus on **protecting human rights and freedoms of women** and Article 7 desires governments to take every possible action so that **children with disabilities can enjoy all human rights and freedoms** equally with other children. Article 8 deals with awareness raising about the potential of persons with disabilities.

ACCESSIBILITY:

Article 9 ensures that the Governments agree to make it possible for people with disabilities to have access to all forms of transport, built environment, information and communication technologies, and to other facilities and services open or provided to public, both in urban and rural areas.

CIVIL & POLITICAL RIGHTS:

Article 10 ensures **Right to Life** as every human being is born with the right to life. Governments guarantee that this is equally true for people with and without disabilities. Article 11 ensures that People with disabilities have the same

right as everyone else to be **protected and safe during Situations of Risk and Emergencies.** Article 12 desires **Equality before the Law** as people with disabilities have the right to enjoy 'legal capacity' in the same way as other people. Similarly, Article 13 provides **Access to Justice** in terms of having the right to be treated fairly and justly.

LIBERTY, SECURITY & FREEDOMS:

Article 14 pertains to **Liberty and Security** of the person in terms that people with disabilities have their freedom protected by law, the same as all other people. Similarly, Article 15 casts the responsibility that no one should be **Tortured or Humiliated or Treated Cruelly**, and everyone has the right to refuse medical or scientific experiments. Article 16 ensures that the children with disabilities should be **Protected from Violence and Abuse**. They should not be mistreated or harmed in their home or outside. Article 17 ensures Protecting the Integrity of the Person. Article 18 on **Liberty of Movement and Nationality** provides that persons with disabilities have the right to movement, to choose their residence and nationality and to acquire and change nationality. It also provides that every child has the right to a legally registered name, a nationality and, as far as possible, the right to know and be cared for by his or her parents.

PERSONAL FREEDOMS:

Article 19 on **Living Independently and being Included in the Community** desires that the people have the right to make choices about where they live, whether or not they have a disability. They will have the right to live independently if they prefer and to be included in community and have access to support services if they need help to live in the community, such as care in your home and personal assistance. Similarly, Article 20 on **Personal Mobility** desires that persons with disabilities have the right to move about and be independent. Governments must help them do so. Article 21 on **Freedom of Expression and Opinion, and Access to Information** points out that people with disabilities have the right to express their opinions, to seek, receive and share information and to receive information in forms that they can understand and use.

PRIVACY, HOME AND FAMILY:

Article 22 on **Respect for Privacy** clarifies that nobody can interfere in people's private affairs, whether they have disabilities or not. People who have information about others, such as their health status, should keep this information confidential. Article 23 on **Respect for Home and the Family** clarifies that people

with disabilities have the right to live with their families. The Government should support family of people with disability-related expenses, information and services. They should not be separated from their parents because they have a disability. Young people with disabilities have the same rights as other young people to reproductive health information and the same rights as others to marry and start a family.

EDUCATION (ARTICLE 24):

Governments must ensure an inclusive education system at all levels and life-long learning. Persons with disabilities have the right to go to school and they cannot be excluded from education because of their disability. They have the right to the same education and curriculum as other children, and the governments must give them the help they need to make this happen.

Article 25 deals with **Health** and stipulates that governments must recognize that persons with disabilities have the right to the enjoyment of the highest attainable standard of health without discrimination on the basis of disability.

HABILITATION AND REHABILITATION (ARTICLE 26):

Governments must provide habilitation and rehabilitation services that promote independence and full physical, mental, social and vocational abilities of the persons with disabilities, as early as possible. Due consideration be allowed for the individual's needs and strengths as also provision of peer support, as required.

RIGHT TO WORK AND EMPLOYMENT (ARTICLE 27):

Governments must recognize the right of persons with disabilities to work in just, good, safe and healthy conditions and initiate policies that forbid all discrimination and bullying because of disability, and further must promote opportunity for persons with disabilities to undertake self-work, entrepreneurship and start their own business. Jobs both in public and private sectors must be made available without any discrimination.

ADEQUATE STANDARD OF LIVING AND SOCIAL PROTECTION (ARTICLE 28):

People with disabilities have a right to food, clean water, clothing and access to housing, without discrimination.

Article 29 is about **Participation in Political and Public Life**. Once

persons with disabilities reach the age set by the laws of the land, they have the right to form a group, serve the public, access voting booths, vote and be elected to a political position, whether they have a disability or not.

Article 30 speaks of **Participation in Cultural life, Recreation, Leisure and Sports**. Persons with disabilities have the same right as others to participate in and enjoy the arts, sports, games, films and other fun activities. Theatres, museums, playgrounds and libraries should be accessible to everyone, including persons with disabilities.

MISCELLANEOUS:

Article 31 desires that **Governments must Collect Data about Disabilities** to develop better programmes and services. Persons with disabilities who contribute to research on disability have the right to be treated in a respectful and humane way. Any private information they share must be kept confidential. The statistics collected must be made accessible to persons with disabilities and others. Similarly, Article 32 on **International Cooperation** desires that the governments should help each other fulfill the provisions of this Convention.

ARTICLES 33 TO 50 DEAL WITH:

- National Implementation and Monitoring;
- Committee on the Rights of Persons with Disabilities;
- Reports and their Consideration;
- Cooperation between States Parties and the Committee and its Relationship with Other Bodies;
- Report of the Committee;
- Conference of State Parties and other related matters.

IMPACT ON INDIA:

India is already in the process of enacting legislation "Rights of Persons with Disabilities Bill."

WHO CBR GUIDELINES

The CBR Joint Position Paper (2004)[9] promotes this multi-sectoral, rights-based approach focused on poverty reduction within an inclusive community. But the question remained: how do we take on this approach? The position paper desired

[9] Developed by WHO, ILO and UNESCO

preparing guidelines to help CBR practitioners develop an effective multi-sectoral strategy and encouraging inter-sectoral activities. The UNCRPD[10] has both inspired and informed the development of these Guidelines and in turn, the Guidelines can be used as a tool for ensuring that the rights of people with disabilities outlined in the Convention are effectively realized at the community level. These Guidelines have been released in 2010 by WHO[11] and the same are available on WHO website for download.

PURPOSE OF CBR GUIDELINES:

The purpose of these Guidelines is to provide support on how to initiate a CBR programme or how to strengthen an existing CBR programme. The target group for the Guidelines is CBR managers as well as personnel from local and international NGOs, government ministries, development organizations, primary health care programmes, education programmes and organizations of people with disabilities. These are designed as a practical guide to strengthen the delivery of CBR and promote inclusive development as a life cycle approach.

CBR MATRIX:

According to these Guidelines, a comprehensive multi-sectoral CBR programme should cover the key domains of well-being: health, education, livelihood, social and the empowerment of people with disabilities and their families. This matrix has been developed to help CBR professionals, rehabilitation workers, persons with disabilities and their family members visualize the range and depth possible in a CBR programme. Each of the five components has been divided into elements which a comprehensive CBR programme may address depending on local circumstances and specific needs of persons with disabilities.

HEALTH COMPONENT:

The right to health without discrimination is captured in various international instruments. The Constitution of the World Health Organization (WHO) states that "Enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion & political belief, economic or social condition throughout the life of an individual." Unfortunately, evidence shows that people with disabilities often experience poorer levels of health than the general population and face various challenges to the enjoyment of

[10] United Nations Convention on the Rights of Persons with Disabilities

[11] Released in the Africa Conference on CBR 0n 27th October, 2010

their right to health. The right to health is not only about access to health services; it is also about access to the underlying determinants of health, such as safe drinking water, adequate sanitation and housing. The right to health also contains freedoms and entitlements. These freedoms include the right to be free from nonconsensual medical treatment such as experiments and research and the right to be liberated from torture or other cruel, inhuman or degrading treatments. The health-related entitlements include the right to a system of health protection; the right to prevention, treatment and control of diseases; access to essential medicines; and participation in age-related health-based decision-making.

CBR programmes support persons with disabilities in attaining their highest possible level of health, working across **five key areas: health promotion, prevention, medical care, rehabilitation and assistive devices**. CBR facilitates inclusive health by working with the health sector to ensure access for all people with disabilities, advocating for health services during the life span of the individual to accommodate the rights of people with disabilities and be responsive, community-based and participatory[12].

EDUCATION COMPONENT:

The role of CBR is to work with the education sector to help make education inclusive at all levels, and to facilitate access to education and lifelong learning for people with disabilities.

Desirable Outcomes:

- All persons with disabilities have access to learning and resources that meet their needs and respect their rights;
- Local schools take in all children, including children with disabilities, so they can learn and play alongside their peers;
- Local schools are accessible and welcoming; they have a flexible curriculum, teachers who are trained and supported, good links with families and the community, and adequate water and sanitation facilities;
- People with disabilities are involved in education as role-models, decision-makers and contributors;
- Home environments encourage and support learning;
- Communities are aware that people with disabilities can learn, and provide

[12] Based on Health Component of CBR Guidelines Pages 4-8

support and encouragement for lifelong learning;

- There is good collaboration between the health, education, social and other sectors;
- There is systematic advocacy at all levels to make national policies comprehensive to facilitate inclusive education[13].

LIVELIHOOD COMPONENT:

Livelihood is part of CBR because: "It is essential to ensure that both youth and adults with disabilities have access to training and work opportunities at community level"[14] The learning of knowledge and skills begins in the family at an early age– children watch and learn how to do things from parents and other family members. Children with disabilities should also be encouraged to learn, participate and make a contribution in the family. Likewise, disabled family members of working age should be assisted and encouraged to develop skills and start or return to work. A CBR programme that does not address the skills development and livelihood needs of youth, adults and senior citizens with disabilities in a community is incomplete and limits the sustainability of other efforts.

The livelihood component, like every other component of the CBR matrix, has very strong linkages with the other components. There are necessary linkages between efforts to promote and facilitate livelihood in CBR and efforts to enhance access to health care, education services and social opportunities.

SOCIAL COMPONENT:

CBR programmes can provide support and assistance to persons with disabilities to enable them to access social opportunities, and can challenge stigma and discrimination to bring about positive social change[15].

DESIRABLE OUTCOMES:

- Persons with disabilities are valued as members of their families and have a variety of lifelong social roles and responsibilities.
- Along with their families, they are encouraged and supported to contribute

[13] Based on Education Component of CBR Guidelines Pages 6-7

[14] Based on Livelihood Component of CBR Guidelines, Page 5

[15] Based on Social Component of CBR Guidelines Page 5

their skills and resources to the development of their communities.

- Barriers that exclude people with disabilities and their families from participating in social roles and activities are challenged and addressed.
- Local government authorities respond to the needs of persons with disabilities and their family members and provide effective social support and services where required[16].

EMPOWERMENT COMPONENT:

While the first four components of the matrix relate to key development sectors (i.e. health, education, livelihood, and social sectors), the empowerment component focuses on the importance of empowering persons with disabilities, their family members and communities to facilitate the mainstreaming of disability across each sector and to ensure that everybody is able to access their rights and entitlements.

Many CBR programmes have focused on the medical model, i.e. on the provision of rehabilitation to persons with disabilities without asking for anything in return. While this has resulted in positive changes for many people with disabilities, it has also promoted a dependency model-a mindset of giver and receiver. Empowerment begins to happen when individuals or groups of people recognize that they can change their situation and begin to do so through a life-cycle approach.

Persons with disabilities, their family members and communities are central to CBR. These Guidelines encourage and promote a move away from the traditional model of CBR to a community-based inclusive development model. The starting point of any CBR programme should be to facilitate the empowerment of disabled people and their families and communities as this will lead to lifelong achievement of goals, outcomes and sustainability[17].

DISABILITY STATUS REPORT[18]

The first ever World report on disability, produced jointly by WHO and the World Bank released in 2011, suggests that more than a billion people in the world

[16] Based on Social Component of CBR Guidelines Page 5

[17] Based on Empowerment Component of CBR Guidelines Page 5

[18] Complete text of Report is available on the website http://www.who.int/disabilities/world_report/2011/en/

today experience disability. Persons with disabilities have generally poorer health, lower education achievements, fewer economic opportunities and higher rates of poverty than people without disabilities. This is largely due to the lack of services available to them and the many obstacles they face in their everyday lives. The report provides the best available evidence about what works to overcome barriers to health care, rehabilitation, education, employment, and support services, and to create the environments which will enable persons with disabilities to flourish. The report ends with a concrete set of recommended actions for governments and their partners.

This pioneering World report on disability will make a significant contribution to implementation of the Convention on the Rights of Persons with Disabilities. At the intersection of public health, human rights and development, the report is set to become a 'must have' resource for policy-makers, service providers, professionals, and advocates for persons with disabilities and their families.

According to the Report, more than a billion people are estimated to live with some form of disability, or about 15% of the world's population (based on 2010 global population estimates). This is higher than previous World Health Organization estimates, which date from the 1970s and suggested around 10%.

According to the World Health Survey around 785 million (15.6%) persons, 15 years and older, live with a disability, while the Global Burden of Disease estimates a figure of around 975 million (19.4%) persons. Of these, the World Health Survey estimates that 110 million people (2.2%) have very significant difficulty in functioning, while the Global Burden of Disease estimates that 190 million (3.8%) have `severe disability`: the equivalent of disability inferred for conditions such as quadriplegia, severe depression, or blindness. Only the Global Burden of Disease measures childhood disabilities (0-14 years), which is estimated to be 95 million (5.1%) children, of whom 13 million (0.7%) have 'severe disability'.

The number of persons with disabilities is growing. This is because populations are ageing-older people have a higher risk of disability--and because of the global increase in chronic health conditions associated with disability, such as diabetes, cardiovascular diseases, and mental illness. Chronic diseases are estimated to account for 66.5% of all years lived with disability in low-income and middle-income countries. Patterns of disability in a particular country are influenced by trends in health conditions and trends in environmental and other factors--such as road traffic crashes, natural disasters, conflict, diet, and substance abuse.

The Report also states that disability disproportionately affects vulnerable populations. Results from the World Health Survey indicate higher disability prevalence in lower income countries than in higher income countries. People who have a low income, are out of work, or have low educational qualifications are at an increased risk of disability. Data from the Multiple Indicator Cluster Surveys in selected countries show that children from poorer households and those in ethnic minority groups are at significantly higher risk of disability than other children.

The Report documents a number of barriers faced by persons with disabilities, which are as follows:

a. Inadequate policies and standards;
b. Negative attitudes;
c. Lack of provision of services;
d. Problems with service delivery;
e. Inadequate funding;
f. Lack of accessibility;
g. Lack of consultation and involvement;
h. Lack of data and evidence.

As per the Report, the disabling barriers contribute to the following disadvantages for persons with disabilities:

a. Poorer health outcomes;
b. Lower educational achievements;
c. Less economic participation;
d. Higher rates of poverty.

The Report synthesizes the best available scientific evidence on how to overcome the barriers which people with disabilities face in health, rehabilitation, support and assistance, environments, education, and employment. These are:

a. Addressing barriers to health care;
b. Addressing barriers to rehabilitation;
c. Addressing barriers to support and assistance services;
d. Creating enabling environments;
e. Addressing barriers to education;
f. Addressing barriers to employment.

RECOMMENDATIONS:

a. Enable access to all mainstream systems and services;
b. Invest in specific programmes and services;
c. Adopt a national disability strategy and plan of action;

d. Involve persons with disabilities;
e. Improve human resource capacity;
f. Increase public awareness and understanding;
g. Improve disability data collection;
h. Strengthen and support research on disability.

The CRPD established an agenda for change. This World report on disability documents the current situation for persons with disabilities. It highlights gaps in knowledge and stresses the need for further research and policy development. The recommendations here can contribute towards establishing an inclusive and enabling society in which persons with disabilities can flourish.

INCHEON STRATEGY

The Governments of the ESCAP region gathered in Incheon, Republic of Korea, from 29th October to 2nd November 2012 to chart the course of the new Asian and Pacific Decade of Persons with Disabilities for the period 2013 to 2022. They were joined by representatives of civil society organizations, including organizations of and for persons with disabilities. Also in attendance were representatives of intergovernmental organizations, development cooperation agencies and the United Nations system.

The group adopted the Ministerial Declaration on the Asian and Pacific Decade of Persons with Disabilities, 2013-2022, and the Incheon Strategy to "Make the Right Real" for Persons with Disabilities in Asia and the Pacific. The Incheon Strategy will enable the Asian and Pacific region to track progress towards improving the quality of life, and the fulfillment of the rights of the region's 650 million persons with disabilities, most of whom live in poverty.

The Incheon Strategy is based on the principles of the Convention on the Rights of Persons with Disabilities reported earlier. It is composed of **10 interrelated goals, 27 targets and 62 indicators.** The time-frame for achieving the goals and targets is the Asian and Pacific Decade of Persons with Disabilities, 2013 to 2022.

GOALS OF STRATEGY:

Incheon Strategy has adopted 10 goals:

Goal 1: Reduce poverty and enhance work and employment prospects.

Targets include:

- Eliminate extreme poverty among persons with disabilities;

- Increase work and employment for persons of working age with disabilities who can and want to work;
- Increase the participation of persons with disabilities in vocational training and other employment-support programmes funded by governments. Core Indicators include:
- Proportion of persons with disabilities living below poverty line;
- Ratio of persons with disabilities in employment to the general population in employment;
- Ratio of persons with disabilities who participate in government-funded vocational training and other employment support programmes to all people trained.

Goal 2: Promote participation in political processes and in decision-making.

Targets include:

- Ensure that persons with disabilities are represented in government decision-making bodies;
- Provide reasonable accommodation to enhance the their participation in the political process. Core Indicators include:
- Proportion of seats held by persons with disabilities in the parliament or equivalent national legislative body;
- Proportion of members of the national coordination mechanism on disability who represent diverse disability groups;
- Proportion of those represented in the national machinery for gender equality and women's empowerment who are persons with disabilities;
- Proportion of polling stations in the national capital that are accessible with processes in place that ensure confidentiality of voters with disabilities.

Goal 3: Enhance access to the physical environment, public transportation, knowledge, information and communication.

Targets include:

- Increase the accessibility of the physical environment in the national capital that is open to the public;
- Enhance the accessibility and usability of public transportation;
- Enhance the accessibility and usability of information and communications

services;

- Halve the proportion of persons with disabilities who need, but do not have, appropriate assistive devices or products.

Core Indicators include:

- Proportion of accessible government buildings in the national capital;
- Accessible international airports;
- Proportion of daily captioning and sign-language interpretation of public television news programmes;
- Accessible and usable public documents and websites that meet internationally recognized accessibility standards;
- Persons with disabilities who need assistive devices or products and have them

Goal 4: Strengthen social protection.

Targets include:

- Increase their access to all health services, including rehabilitation;
- Increase their coverage within social protection programmes;
- Enhance services and programmes, including for personal assistance and peer counseling, that support, especially those with multiple, extensive and diverse disabilities, in living independently in the community. Core Indicators include:
- Proportion of such persons who use government-supported health-care programmes, as compared to the general population;
- Their coverage within social protection programmes, including social insurance and social assistance programmes;
- Availability of government-funded services and programmes, including for personal assistance and peer counseling, that enable them to live independently in the community.

Goal 5: Expand early intervention and education of children with disabilities.

Targets include:

- Enhance measures for early detection of and intervention for, children with disabilities from birth to pre-school age;
- Halve the gap between children with disabilities and without disabilities in

enrolment rates for primary and secondary education.

Core Indicators include:

- Number of children with disabilities receiving early childhood intervention, their primary education enrolment rate and secondary education enrolment rate.

Goal 6: Ensure gender equality and women's empowerment.

Targets include:

- Enable girls and women with disabilities to have equitable access to mainstream development opportunities;
- Ensure representation of women with disabilities in government decision-making bodies;
- Ensure their access to sexual and reproductive health services on an equitable basis with girls and women without disabilities;
- Increase measures to protect them from all forms of violence and abuse.

Core Indicators include:

- Number of countries that include the promotion of the participation of women and girls with disabilities in their national action plans on gender equality and empowerment of women;
- Proportion of seats held by them in the parliament or equivalent national legislative body;
- Access to sexual and reproductive health services of government and civil society, compared to women and girls without disabilities;
- Number of programmes initiated by government and relevant agencies aimed at eliminating violence, including sexual abuse and exploitation, perpetrated against girls and women with disabilities;
- Number of programmes initiated by government and relevant agencies that provide care and support, including rehabilitation, for those who are victims of any form of violence and abuse.

Goal 7: Ensure disability-inclusive disaster risk reduction and management.

Targets include:

- Strengthen disability-inclusive disaster risk reduction planning;
- Implementation of measures on providing timely and appropriate support to persons with disabilities in responding to disasters. Core Indicators include:

- Availability of disability-inclusive disaster risk reduction plans;
- Disability-inclusive training for all relevant service personnel;
- Accessible emergency shelters and disaster relief sites.

Goal 8: Improve the reliability and comparability of disability data.

Targets include:

- Produce and disseminate reliable and internationally comparable disability statistics in formats that are accessible by such persons;
- Establish reliable disability statistics by the midpoint of the Decade, 2017. Core Indicators include:
- Disability prevalence based on the International Classification of Functioning, Disability and Health;
- Number of Governments in the Asia-Pacific region that have established, by 2017, baseline data for tracking progress towards achievement of the strategy;
- Availability of disaggregated data on such women and in mainstream development programmes and government services, including health, and sexual and reproductive health programmes.

Goal 9: Accelerate the ratification and implementation of the Convention on the Rights of Persons with Disabilities and the harmonization of national legislation with the Convention.

Targets include:

- By the midpoint of the Decade (2017), 10 more Asia-Pacific Governments and by the end of the Decade (2022) another 10 Asia-Pacific Governments will have ratified or acceded to the Convention;
- Enact national laws which include anti-discrimination provisions, technical standards and other measures to uphold and protect their rights. Core Indicators include:
- Number of Governments that have ratified or acceded to the Convention;
- Availability of national anti-discrimination legislation to uphold and protect their rights.

Goal 10: Advance sub-regional, regional and interregional cooperation.

Targets include:

- Contribute to the Asia-Pacific Multi-Donor Trust Fund managed by ESCAP as well as initiatives and programmes to support the implementation of the Ministerial Declaration;
- Development cooperation agencies in the region to strengthen the disability-inclusiveness of their policies and programmes;
- United Nations regional commissions to strengthen interregional exchange of experiences and good practices concerning disability issues and the implementation of the UNCRPD. Core Indicators include:
- Annual voluntary contributions by Governments and other donors to the Asia-Pacific Multi-Donor Trust Fund to support the implementation of the Ministerial Declaration;
- Number of donors contributing each year;
- Annual voluntary contributions by Governments or other donors;
- Number of United Nations entities that have regional cooperation programmes;
- Number of regional and sub-regional projects, including for South-South cooperation, in which organizations of and for persons with disabilities participate;
- Number of development cooperation agencies operating in Asia and the Pacific that have mandates, policies, action plans and dedicated and appropriately experienced focal points on disability-inclusive development;
- Number of joint activities among the five regional commission of the United Nations;
- Number of statisticians in the Asia-Pacific region trained in disability statistics;
- Number of United Nations country or regional-level development assistance frameworks that explicitly reference disability-inclusive development in line with the Strategy.

MODALITIES FOR IMPLEMENTATION OF INCHEON STRATEGY:

It proposed implementation at national, regional and sub-regional level in the following terms:

a. ***National level****:* The heart of the implementation is the national coordination mechanism on disability and national statistical offices which would assume the role of focal point for establishing baseline data for indicators and tracking progress. There is need to mobilize diverse sectoral ministries, departments and government institutions at all levels, civil society, including organization of and for persons with disabilities and their family support groups, research institutions, and the private sector for multi-sectoral and nation-wide engagement.

   Translate the Incheon Strategy into national languages and ensure availability of the national language versions in access formats.

b. ***Sub-Regional Level***: The ESCAP secretariat, in its promotion of the Asian and Pacific Decade of Persons with Disabilities, 2013-2022, shall support sub-regional and inter-sub-regional cooperation, in partnership with sub-regional intergovernmental bodies. It shall harness the active participation of its sub-regional offices in North and Central Asia, East and North-East Asia, the Pacific, and South and South-West Asia, supported by its regional institutions, in promoting disability-inclusive development.

c. ***Regional Level***: A regional working group on the Asian and Pacific Decade of Persons with Disabilities, 2013-2022, shall be established. The working group shall support full and effective implementation throughout the Decade. Its functions shall focus on the provision of advice and support to the members and associate members, as appropriate, on the regional implementation of the Ministerial Declaration and the Incheon Strategy.

UNITED NATIONS OUTCOME DOCUMENT (2013)

In September 2013, the U.N. General Assembly adopted a document titled: **''Outcome document** of the high-level meeting of the General Assembly on the realization of the Millennium Development Goals and other internationally agreed development goals for persons with disabilities: The way forward, a disability-inclusive development agenda towards 2015 and beyond."

The document resolves to undertake the following commitments leading to 2015 and beyond

(a) Achieve the full application and implementation of the international normative framework on disability and development;

(b) Ensure that all development policies and their decision-making processes take into account the needs of and benefit all persons with disabilities;

(c) Develop specific plans, including national legislations, relevant to the Millennium Development Goals and other internationally agreed goals to advance the inclusion of persons with disabilities;

(d) Recognize the right to education on the basis of equal opportunity and non-discrimination by making primary and secondary education accessible and available, for all children with disabilities, ensuring that they have equal opportunity for access to an inclusive education system of good quality;

(e) Ensure accessibility for persons with disabilities to health care services;

(f) Strengthen social protection for meeting disability-related needs and promote access to relevant schemes and access to affordable and appropriate services and devices and other assistance;

(g) Encourage Member-States to take sustainable measures for ensuring equal access to full and productive employment and decent work to persons with disabilities, including by promoting access to skills development and vocational and entrepreneurial training;

(h) Ensure accessibility following the universal design approach by removing barriers in different spheres;

(i) Improve disability data collection, analysis and monitoring for development policy planning;

(j) Strengthen and support in collaboration with various stakeholders, research to promote knowledge and understanding of disability and development and allocate necessary resources for the purpose;

(k) Strengthen preparedness for disaster risk reduction;

(l) Encourage increased understanding and social awareness about the potential of persons with disabilities and remove attitudinal barriers;

(m) Strengthen national efforts, with support of international cooperation upon request, for addressing the rights and needs of children and women with disabilities;

(n) Encourage international development banks and financial institutions to include disability in all their development efforts and lending mechanisms;

(o) Encourage the mobilization of public and private resources to mainstream disability in development at all levels and promote international and interregional cooperation in support of national efforts in different spheres;

(p) Encourage private sector in partnership with different stakeholders including

disabled persons' organizations, to implement a disability perspective in their corporate social responsibility initiatives;

(q) Support the objectives of the United Nations Partnership to promote the Rights of Persons with Disabilities Multi-Donor Trust Fund including through voluntary contributions.

The document also urges the U.N. Secretary General to include information on the progress made in the implementation of the above provisions in his periodic reports and make recommendations for concrete and further steps for its implementation. The document underlines the importance of closely consulting with and actively involving persons with disabilities and their organizations in the elaboration, implementation and monitoring of the emerging post-2015 development agenda.

MARRAKESH COPYRIGHT TREATY[19]

The World Blind Union (WBU) along with some other organizations, drafted a treaty to provide access to print material converted into accessible formats for the blind and other print disabled persons, free from copyright restrictions. At the instance of the WBU, in 2008, a few Latin American countries tabled the Draft Treaty at a session of the Standing Committee on Copyright and Other Rights (SCCR) of the World Intellectual Property Organization (WIPO) in Geneva. The Treaty was, finally, adopted with some modification, on June 28, 2013, at the Diplomatic Conference called by WIPO in Marrakesh. The Treaty is titled: "Marrakesh Treaty to Facilitate Access to Published Works by Visually Impaired Persons and Persons with Print Disabilities."

The Treaty, inter-alia, allows import and export across countries of accessible versions of books and other copyrighted works, without the copyright holder's permission. The Treaty will come into force once 20 countries have ratified it, which is expected to be achieved by the end of 2015 or early next year. Happily, our country was amongst the first to ratify the Treaty. Further details of the Treaty can be seen at:

CONCLUSION

The international declarations and instruments discussed herein above, have gradually progressed from making reference to disabilities, to:

[19] www.worldblindunion.ngo

- Recognizing their needs,
- Suggesting development of programmes,
- Understanding their rights
- Ensuring protection of their rights, and ultimately suggesting ways and means of "Making the rights real."

India has been taking active interest in initiating action on these documents, especially from Beijing Declaration onwards. The country has signed all the declarations, proclamations and conventions since 1992. We have, of course, a long way to traverse yet. But we are on the move. This summary of international declarations, it is hoped, will guide readers on to understanding the importance of these international initiatives and ensuring their effective and timely implementation.

"The most beautiful things in the world cannot be seen or ever touched, they must be felt with the heart."

- Helen Keller

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