

Impact Of Visual Impairment Among With Cerebral Palsy

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ABSTRACT

Visual impairment and Cerebral Palsy is often a significant component of multiple handicapping conditions affecting individuals. Early identification of visual impairment and treatment helps the children overall development in the sensory and motor skills through vision training. Often the visual problems are not noticed and seems unidentified due to the primary disability of Cerebral Palsy .Identification of the visual conditions like Cortical visual impairment, Field loss and visual problems of refractive errors and Strabismus at the early stage and the constant training in the visual skills will improve their functional vision and skills to a great extent. The purpose of the study is to identify the prevalence of visual conditions among cerebral palsy and the impact of the vision training in the visual skills of the children with cerebral palsy. In this descriptive study , purposive sampling techniques was used on 30 children having eye conditions of Cortical visual impairment, Refractive errors who underwent complete clinical and

functional assessment at vasan eye care hospital ,Chennai were included in this study. This study states that children with the secondary problems of eye conditions need to be diagnosed at the earliest so that their visual skills on optical and optical perceptual skills may be improved to a great extend especially in their educational activities. The evaluation and management of the visual problems of this population can therefore greatly facilitate their rehabilitation. A thorough clinical assessment coupled with a functional evaluation was useful in planning suitable rehabilitation for these children in a comprehensive manner.

Keywords: Visual Impairment, Cerebral Palsy, Visual Skills, Vision Training

INTRODUCTION

Cerebral Palsy is a term used to describe a set of neurological conditions that affect movement. Since cerebral palsy is linked with number of associated problems including visual impairments, its recommended to start early intervention as soon as possible for children whose vision is affected. The first child with cerebral palsy born into a family presents many demands on the family's way of life, and other impairments such as sight loss can go unnoticed. Sometimes, visual problems are missed because of diagnostic overshadowing, that is, behaviors resulting from visual problems may be considered part of the symptoms of cerebral palsy, such as lack of attention, speech problems, lack of eye contact or shading of the eyes, and clumsiness. But sometimes a lack of cooperation or varying responses on the child's part during testing, and evaluators conducting tests who are not knowledgeable about cerebral or behavioral techniques, can lead to delays in more specific testing for visual problems.

If a child is first recognized as having visual loss before having a cerebral palsy diagnosis, some of their palsy-related behaviors may be mistaken by parents and professionals as a consequence of that loss. More often, a child is born into a family without an immediate member with a sight disability, so parents and care givers are buried in learning about communication, safety and adapting daily living skills for their child, making it difficult to distinguish the signs-despite visual impairment and cerebral palsy being very different challenges.

A child's age when cerebral palsy and a vision disorder is diagnosed, and which disorder is diagnosed first, can be critical. However, families have reported a time lag of 18 months to 12 years between diagnoses, especially when a sensory loss is identified first. Though unfortunate, this happens for many reasons.

Types of vision impairment associated with cerebral palsy are broken up into eye issues and neurological issue

A, Cortical Visual Impairment (CVI) is a form of visual impairment caused by brain damage. The severity of the visual impairment depends on what part of the brain is damaged and how serious the damage is. Symptoms of CVI include difficulties with focusing while looking at objects, blurred vision, field vision loss, problems making fast eye movements, trouble recognizing familiar faces. Although there currently isn't a medical treatment for CVI, children often benefit by getting the appropriate prescription glasses, contact lenses or other aids that help with vision.

B, Eye Visual Impairment the most common type of vision problems associated with eye impairments include

a. Strabismus is a medical condition marked by the eyes turning in different directions. The condition can lead to blurred vision and amblyopia also known as lazy eye which in turn cause the brain to ignore signals from the eyes. Eye exercises and prescription glasses are typical treatment options for strabismus. In some cases the child may need to wear a patch over the lazy eye which helps to improve vision in the eye.

b. Hyperopia is also known as long sightedness is another visual impairment caused by eye issues that can affect children with cerebral palsy. Symptoms include the ability to see clearly from far away but when objects are up close they become blurry and out of focus. Prescription of glasses or contact lenses typically help but surgery is also possible if corrective vision devices fail to work.

c. Field loss A person's visual field is what they can see when they look ahead. If a person cannot see 180 degrees in either direction, he or she may have field loss.

Different types of field loss include Hemianopia, Central loss and Peripheral Loss. It is very important to make the individual, his/her family and all professionals concerned with visual problem to understand that early diagnosis, treatment of visual problem and

vision training enables the children motor, sensory skills to a great extent. Functional vision assessment and instructional programme for each individual visual skills needs to be developed. It might include activities to encourage the use of vision, and/or to enhance visual efficiency and/or to change the environment.

Functional vision assessment and vision training should consider factors such as extent of vision - near and distance visual acuity, size of the visual, effects of light and glare, extent of recognition and naming of colours, extent to which contrast affects their activities, extent of use of vision for different activities and purposes in the environment. Extent to which a person sees and recognizes an object depends, amongst other on: familiarity of the object, light, size, distance, contrast, colour, detail or simplicity of the object. Many of these factors can be used to make things easier to see..

Assessment of functional vision among children with cerebral palsy and instruction to enhance visual skills should be provided in the following order: awareness and attention to objects, tracking, scanning, discrimination of objects, discrimination of details to identify actions and match objects, discrimination of detail in pictures, identification of patterns, numbers and words (WHO, 1995). The child can be trained for the effective use of vision, if needed, based on the findings of the functional vision assessment. The three important aspects in the instruction of vision are:

- encouraging use of vision which is of particular, importance to young children
- improving the method of use for vision, which is visual efficiency and
- changing the environment, if needed.

Functional vision assessment must be conducted for assessing optical, optical perceptual and visual perceptual skills of children with cerebral palsy (Optical skills- awareness, attention, focus, fixation, scanning, tracking; Optical perceptual skill- recognition, discrimination, figure ground discrimination visual closure, visual memory, visual spatial orientation, visual motor coordination; Visual perceptual skills). Based on which the vision training program is formulated.

RESEARCH METHODOLOGY

The general aim of this study is to find the effect of vision training instruction on enhancing functional vision of children with cerebral palsy in the various dimensions of Visual skills of optical and optical perceptual skills

OBJECTIVES

- To screen out the common eye disorders more prevalent among the children with cerebral palsy leading to secondary disability for early intervention.
- To find out the effect of vision training on enhancing visual skills of optical and optical perceptual skills of children with cerebral palsy.
- To find the functional vision of children with cerebral palsy using assessment in the following dimensions:
 - o visual awareness and attention
 - o visual tracking
 - o visual scanning
 - o discrimination of objects
 - o discrimination of actions and matching objects
 - o discrimination of detail in pictures
 - o identification and perception of patterns, numbers and words.
- To analyze the functional vision of children with cerebral palsy with regard to the independent and dependent variables.
- To find if there is a relationship among the various dimensions of functional vision.
- To develop vision training instruction model for enhancing functional vision.
- To find out the socio-demographic details of children with cerebral palsy .

RESEARCH DESIGN

The researcher has adopted descriptive research design. It is used to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation.

UNIVERSE AND SAMPLING

Children with cerebral palsy studying in different special educational set ups were chosen as the universe of this study. This study was conducted among children with cerebral palsy with some visual problems belonging to various special and inclusive education programs in Chennai. In this present research, the purposive sampling technique was employed to select the samples for the study.

To find the visual skills of children with cerebral palsy, the researcher at random chose 5 special schools out of 20 institutions working for the children with cerebral palsy in Chennai, Tamil Nadu.

The children who had cerebral palsy with some visual problems of CVI, Field loss and refractive errors who were able to use it for functional purposes were selected for the present study using the Checklist for identifying school. Then in short, by employing the purposive sampling technique a total number of 30 children with cerebral palsy were chosen as sample for the study.

TOOLS FOR DATA COLLECTION

The research study was conducted in two phases, the phase of Assessment, to determine the gravity of the situation of the child, evaluating the child's performance in tests of visual perception, and the phase of Instruction, where it aims at training the functional vision of visual skills of the child, helping him or her to surpass his difficulties. Following this line of reasoning, the researcher developed the research tool, in order to make possible not only the information gathering, but also the instruction of the children. Prior to this the researcher used the checklist for identifying school going children with low vision to identify the children with residual vision. The checklist consisted of three sections i.e.

- appearance of the eye with six items
- complaints associated with the use of eyes with six items
- seeing behavior with eighteen items

If the child had any complaint /complaints associated with the appearance and use of the eyes along with any eight seeing behaviors out of eighteen ones as 'yes' the child needed functional assessment for his / her vision. Before the administration of the checklist the validity and reliability of the checklist was found by administering a pre-test.

The research tool for the study was the functional vision assessment of children with low vision. The dimensions of functional vision used were visual skills used for functional vision assessment procedure developed by the World Health Organization. The dimensions of assessment with seven activities for each section are as follows:

- Visual awareness and attention
- Visual tracking
- Visual scanning
- Visual discrimination
- Visual discrimination of actions and matching objects
- Visual discrimination of detail in pictures
- Visual identification and perception of patterns, numbers and words

HYPOTHESES

- There is a significant difference between the pre and post test mean score of functional vision assessment of the children with cerebral palsy
- Children with congenital handicap and adventitious handicap do not differ significantly in their functional vision.
- Children with central vision and peripheral vision do not differ significantly in their functional vision.
- Urban and rural children do not differ significantly in their functional vision.
- Boys and girls do not differ significantly in their functional vision.
- Children from low economic status and high economic status do not differ significantly in their functional vision.
- There is a significant relationship between the percentage of visual impairment of the respondents and their functional vision.
- There is a significant relationship between the distance visual acuity of the respondents and their functional vision.
- There is a significant relationship between the near vision acuity of the respondents and their functional vision.
- There is a significant relationship between the preferred print size of the respondents and their functional vision.

- There is a significant relationship between the age of the respondents and their functional vision.
- There is a significant relationship among the various dimensions of functional vision of children with cerebral palsy

DATA COLLECTION

The children with cerebral palsy who had residual vision and were able to use it for functional purposes were selected for the present study using the Checklist for identifying school going children with low vision.

Functional Vision Assessment with seven dimensions of functional vision was administered to 30 children with cerebral palsy having visual problems who had usable visual skills. The tool was administered individually and the data were collected.

DATA ANALYSIS

Analysis of the data was carried out using statistical measures namely percentages, 'F' test, 'Z' test and 'r' test. The responses to some of the questions were represented figuratively also.

MAJOR FINDINGS

- There is a significant difference between the pre and post test mean scores of functional vision assessment of the children with cerebral palsy with regard to onset of visual impairment, percentage of impairment, distance visual acuity, near vision acuity, visual field loss, preferred contrast level and the type of educational setting.
- There is no significant difference between the mean scores of various dimensions in functional vision assessment of children with adventitious and congenital handicap.
- There is significant difference between the mean scores of the functional vision assessment of students with central and peripheral visual field loss, in the dimensions of visual awareness and attention and visual scanning.

- There is significant difference between the mean scores in four dimensions of functional vision (visual tracking, visual scanning, discrimination of objects and identification of perception of patterns, numbers and words) of students from special schools and no significant difference in the areas of visual awareness and attention, discrimination to identify actions and match objects and discrimination of detail in pictures.
- There is no significant difference between the mean scores in all the seven dimensions of functional vision of children from urban and rural background
- There is no significant difference between the mean scores in the various dimensions of functional vision of girls and boys.
- There is no significant difference between the mean scores in the various dimensions of functional vision with regard to low and high socioeconomic status.
- There is significant negative relationship between the percentage of impairment of the respondents and the first five dimensions of functional vision and no significant relationship in the last two dimensions of functional vision.
- There is significant negative relationship between the distance visual acuity and the functional vision in the first four dimensions and no significant relationship between the remaining three dimensions. .
- There is a significant relationship between near vision acuity and the dimension of “discrimination to identify actions and match objects” but no significant relationship with the remaining dimensions of functional vision.
- There is a significant positive correlation among all the dimensions of functional vision at 0.01 level of significance.

CONCLUSION

Comprehensive interventions in low vision among children with cerebral palsy include the promotion of functional vision and use. Intervention strategies to facilitate visual efficiency and access to learning for children with cerebral palsy must be implemented for all children with visual problems. Promising practices are determined on a case-by-case basis for each children through information obtained from a general eye examination and a low vision evaluation by ophthalmologists and optometrists, and

ongoing functional vision evaluations that includes formal and informal testing, observation, and interviews with the children with cerebral palsy and their family.

Also, individuals with cerebral palsy often have difficulty forming and carrying out motor movements, including speech and signing. They may have seizure disorders and require medication that must be balanced with alertness and reaction time demands. If social interaction skills are delayed or atypical, incidental and peer-based learning is sometimes limited. The child may be less able to cope in that environment depending on his/her developmental stage and age. A class for the visual impairment and then a class for those with cerebral palsy sometimes, this builds on strengths and needs in sequence; sometimes, depending on the severity of cerebral palsy, the person is best served in a class that better integrates relatedness and communication skills throughout the day

Finally, one needs to work in a multi-disciplinary forum to understand the potential role of a range of interventions that might be helpful for a child with cerebral palsy and thus may be helpful for the child with the dual impairment. By examining the potential interventions with other professionals and with the parents, as well as the role of physical exercise therapy and education.

The evaluation and management of the sensory problems of this population can therefore greatly facilitate their rehabilitation. A thorough clinical assessment coupled with a functional evaluation was useful in planning suitable rehabilitation for these children in a comprehensive manner.

Families of people identified with Cerebral Palsy and visual impairment may feel even more isolated than those with one diagnosis or the other . Service providers are sometimes uncertain about ways to coordinate and set priorities for the person's multiple needs. And navigating the often bumpy road of dual diagnosis, seemingly endless screenings, and various educational options can be even more over whelming.

SUGGESTIONS FOR FURTHER RESEARCH

Further research and the implementation of its findings are essential in the field of low vision, as are societal change and opportunities to participate in that change. A few suggestions are given below for further research.

- The present research was done for children with cerebral palsy. The same study could be done for children with mental retardation.
- Development of a standardized instrument to assess the performance of vision skills by students with low vision as a secondary problem could be undertaken.

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