COMMUNICATION CHARACTERISTICS OF YOUNG CHILDREN WITH VISUAL IMPAIRMENT

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Introduction

- Young children with visual impairment have not typically been identified as at risk of communication disorder (James & Stojanovik, 2006).
- However, research suggests that the communication difficulties in these children have been underestimated and that early communication intervention may be required (House & Davidson, 2000b; James & Stojanovik, 2006).
- Knowledge of the neurological development of the visual system suggests starting intervention within the first 12 months of life (Davidson & Harrison, 1997) to maximise children's development and improve functional outcomes for both the child and family (Dale & Salt, 2007).

Aims of the presentation

- To give new knowledge about a low incidence disability
- To discuss general developmental and communication characteristics of young children with visual impairment
- To point out clinical implications
- To discuss areas that require attention in early intervention.

Visual development

- The visual system is the most complex sensory system, but also the least mature at birth (Glass, 2002).
- The retina at birth is underdeveloped and the process of cone migration continues up until the age of four years old (Glass, 2002).
- Object permanence develops between six to twelve months and the understanding that a picture is a symbol of a real object emerges.
- During this period non-verbal communication develops as mutual gaze progresses and babies begin to demonstrate referential gaze. This links to early language development as adults label what the baby is looking at.
- Children also begin to respond to other's facial expressions (Glass, 2002).

- Although visual impairment is not an area that speech-language therapists are traditionally trained in (House & Davidson, 2000b), the need for communication intervention for this population is gaining support (House & Davidson, 2000b; James & Stojanovik, 2006).
- Therefore, a literature overview of the communication characteristics of young children with a range of visual impairment was undertaken.
- As indicated in Figure 1 (Appendix 1) the range of visual impairment includes low vision to total blindness, in two etiological categories, i.e. congenital and acquired, without and with associated disabilities or multiple disabilities, which can be linked to dual sensory impairment (deaf blind).

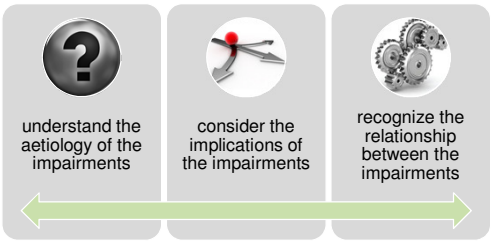
- Children with a visual acuity ranging from 20/70 to 20/500 represent moderate to severe visual impairment. With correction they can perform visual dependent tasks, but not as effective as normally-sighted children.
- In this instance the impact of visual impairment on communication development may be limited.
- However, children with a visual acuity of less than 20/500, i.e. profound visual impairment to total blindness, have less access to reliable vision.
- This range of visual acuity may only be sufficient for gross motor activities (New York State Department of Health, 2007).
- Children with profound visual impairment to total blindness may experience a variety of challenges in developing communication.

Causes of visual impairment

- Visual impairment is defined as the loss of any aspect of vision that diminishes the ability to see (WHO, 2012).
- The International Classification of Diseases -10 (Update and Revision 2006) identifies the following ranges of vision:
  - normal (equal to or better than 20/70)
  - moderate (20/70-20/200)
  - severe visual impairment (20/200-20/400) } Low Vision
  - and blindness; categorised over three ranges:
    - blind (20/200-20/1200)
    - blind with light perception
    - blind with no light perception

  (WHO, 2012)

Speech-language therapists must be able to:

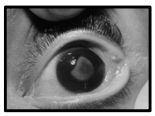


- Childhood blindness is caused mainly by vitamin A deficiency, rubella, newborn conjunctivitis, congenital cataract, and retinopathy of prematurity (ROP) (WHO, 2004).
- The economic status of the country that the child resides in may contribute to the causes of visual impairment.
- In developed countries, the predominant causes are related to perinatal conditions (WHO, 2001) including cortical visual impairment, ROP, teratogens and cataracts.
- These conditions occur globally in infants that have experienced stressful antenatal lives or births, but due to the increased resources in developed countries these children are more likely to survive (Carden & Good, 2006).
- In middle-income countries retinal conditions are the predominant causes of visual impairment (Kello & Gilbert, 2003).

The South African context

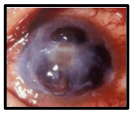
- In developing countries, such as South Africa, the main causes of visual impairment are related to acquired conditions due to a lack of resources and stressful environments (WHO, 2001).
- These include:
  - corneal scarring due to measles
  - vitamin A deficiency
  - damage due to traditional eye medicines
  - rubella cataracts
  - ophthalmia neonatorum, a bacterial conjunctivitis contracted during delivery

  (Kello & Gilbert, 2003; WHO, 2011).



Corneal scarring from measles

Vitamin A deficiency



Damage from traditional medicines

Cataracts due to rubella

ophthalmia neonatorum

- There are 285 million people in the world with visual impairment (WHO 2012), 90% of which reside in developing countries (WHO, 2010).
- Of the approximate 19 million visually impaired children (birth to 14 years) worldwide (WHO 2012), an estimated 23% that are blind live in sub-Saharan Africa (Kello & Gilbert, 2003).
- The prevalence rate of visual impairment in South Africa is estimated at 0.75% of the population (South African Department of Health, 2002).
- However, *The national guideline for the prevention of blindness in South Africa* (South African Department of Health, 2002) states that the occurrence of visual impairment is expected to increase over the coming decades.

- South Africa has the highest rate of HIV and AIDS in the world (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2010).
- HIV and AIDS associated eye disorders affect 70–80% of infected individuals (Kestelyn & Cunningham, 2001) and may emerge between the first to third year of life in children (Belman, 2008).
- Children infected with HIV and AIDS are at risk for neuro-developmental delays, which includes neuro-opthalamic and communication disorders (Cunningham & Margolis, 1998; Swanepoel & Louw, 2010).
- Furthermore, South Africa has the highest prevalence of Foetal Alcohol Spectrum Disorder (FASD) in the world (de Beer, Kritzinger & Zsilavecz, 2010).
- FASD is known to impact on communication development and is associated with hearing loss and visual impairment (de Beer et al., 2010).
- Based on these numerous conditions, it is evident that many South African children are at risk of both communication and visual impairment.

CHARACTERISTICS OF YOUNG CHILDREN WITH VISUAL IMPAIRMENT

- The information collected was selected from resources relating to children with visual impairment, their development and/or communication characteristics.
- Resources included peer-reviewed journal articles, early intervention position statements, conference papers and panel developed documents.
- The level of evidence of each publication was classified according to ASHA's hierarchy of levels of evidence (ASHA, n.d).

General developmental characteristics of young children with visual impairment

- Table 1 (Appendix 2)
- Knowledge of the developmental domains that can be affected by visual impairment is essential for an integrated approach to treatment as approximately 70% of children with visual impairment present with multiple disabilities (James & Stojanovik, 2006).
- The loss of visual examining, experimenting with, and exploring of objects and the environment creates unique barriers for the infant to develop to a stage where mastered skills can be exhibited, and where the child can compete with expert peers in the preschool years.
- This links to Owens' (2005) 5 E's.

Communication development characteristics of young children with visual impairment

- As indicated in Table 2 (Appendix 3); children with visual impairment are predominantly affected in the areas of
  - parent-child interaction
  - pragmatics
  - expressive language skills
- These difficulties may arise as communication is so dependent on visual input during the foundation period of birth to three years (Chen, 1999).

Parent-child interaction

- Parents of children with visual impairment may struggle to develop synchronicity with their children. Infants and parents who demonstrate poor synchronicity increase the potential for disordered communication development (Rossetti, 2001).
- Poor interaction patterns by very young children with visual impairment become learned behaviours that are reinforced by care givers (Rossetti, 2001).
- The risk of poor parent-child interaction as a result of misunderstood or missed infant communication cues, such as quiet listening, may be one of the first aspects to address in early communication intervention.
- With knowledge of communication characteristics, professionals are able to identify ways to support the interaction between the child and family (Roe, 2008).

Divergent development

- Visual impairment may not always result in delayed development, but rather divergent development when children learn to compensate for their disability (Brambring, 2007; Wakefield, Homewood & Taylor, 2006).
- Children with visual impairment are able to spontaneously name objects and provide their first and last names at an earlier age than typically developing children (Brambring, 2007).
- Children with visual impairment may demonstrate differences in communication skills, specifically with regard to vocabulary labels that are developed through tactile, auditory or visual experiences or concepts that are concrete or abstract (Brambring, 2007).
- Objects too large for tactile investigation such as animals, may pose difficulties.

- Young children with visual impairment who show delays in the acquisition of language may eventually overcome the delay as they mature (Brambring, 2007).
- However, it may impact on later school readiness as qualitative differences remain (James & Stojanovik, 2006).
- From Table 2 it is evident that unique, but subtle language learning difficulties may exist in young children with visual impairment.
- There is no standard interview tool available to detect early social communicative difficulties in preschool children with VI and no normative measures of social communication development for this population (Dale, Tadic &Sonksen, 2013).

EARLY TRANSDICIPLINARY INTERVENTION FOR CHILDREN WITH VISUAL IMPAIRMENT

- When analysing the developmental characteristics of young children with visual impairment the need for early transdisciplinary intervention is evident.
- When considering that children with visual impairment explore their environments less than sighted children (Chen, 2001) and that language is stimulated by interacting with the environment (Owens, 2005), the need for speech-language therapists to work with physiotherapists and occupational therapists in a transdisciplinary team is evident.

- Children with visual impairment rely on information from those guiding them. This can lead to the development of 'learned helplessness' if independence is not encouraged from a young age (Parker et al., 2008).
- Behaviour and sensory processing difficulties appear due to lack of appropriate stimulation. This can result in self-stimulation such as eye poking (Tedder et al., 1993).
- Early intervention can reinforce positive behaviours, stimulate independence and encourage appropriate compensatory strategies (King et al., 2009).
- Tactile, auditory, vestibular and olfactory abilities should be used by the transdisciplinary team to augment the loss of the visual system (Chen, 1999). For example, specific tactile cues for each family and can help a child identify communication partners (Chen, 1999).

Training Care Givers

- Early communication intervention places a strong focus on family centred services (ASHA, 2008), the key team members are children's care givers (King et al., 2009)
- Care givers typically spend the most time with the children and are responsible for truly implementing therapeutic strategies into functional activities. So it is essential that early interventionists plan and execute intervention in conjunction with care givers' needs (ASHA, 2008).
- Mothers of children who are visually impaired tend to name objects around their children more frequently and ask a greater number of questions, showing increased levels of control and directiveness (House & Davidson, 2000a; Vervloed et al., 2005).
- This may hamper communication development (Rattray & Zeedyk, 2005) as children with visual impairment often demonstrate an overuse of questions, demonstrating the effect of caregiver-child interaction on communication development.

- Caregivers need to provide an adult model that focuses on the areas of communication that this population often struggle to develop, as identified in Table 2.
- Parents of children with visual impairment may be knowledgeable about their children's current function but need information understanding behaviours. Professionals may understand certain behaviours but do not always know the children well.
- This interdependency between care givers and professionals is the basis of transdisciplinary, family centred services.
- Besides care giver training, adapting the physical environment and enhancing the social environment are further considerations for transdisciplinary intervention.

CONCLUSION

- Children with visual impairment make up approximately 0.2% of people worldwide (WHO, 2012), a low incidence population.
- However, it is a population that needs greater attention due to its diversity and complexity.
- Furthermore, research shows that there is a large number of children, approximately 4370000 in Sub-Saharan Africa that experience visual impairment (WHO, 2012).
- Furthermore, in developing countries acquired visual impairment appears to be more prevalent than congenital or genetic causes (WHO, 2001).
- Therefore, intervention efforts should also be directed towards prevention.
- Speech-language therapists need to inform themselves about their role in treating young children with visual impairment and their families.

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