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Who put the 'paediatric' in paediatric eye care?

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Running title: Who put the 'paediatric' in paediatric eye care?

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During infancy and childhood, the visual system is changing and is susceptible to its input, so paediatric eye care is important to detect and manage any anomalies that may affect visual development. Optometrists are the main providers of primary eye care in Australia. The competency standards for optometry in Australia and New Zealand require optometrists to be able to manage patients requiring vision therapy, specifically 'a vision therapy for patients with amblyopia, strabismus and binocular vision disorders' with a sound evidence base.¹ Guidance from Optometry Australia² indicates that optometrists are in a good position to diagnose and treat paediatric eye and vision abnormalities, and have a role in prevention, screening and referral for such conditions where appropriate. We should therefore consider that all optometrists are paediatric eye care providers, since optometry includes patients of any age.

The central role of optometrists in Australia and elsewhere in provision of paediatric eye and vision care is reflected in professional campaigns. In 2014 Optometry Australia launched a campaign to raise awareness of the need for regular eye examinations for children.³ Similarly, in 2015, the United Kingdom College of Optometrists launched their *Eyes on our Future* campaign to raise awareness among parents and carers of the signs and symptoms of eye abnormalities in children.⁴ An Association of Optometrists position statement⁵ focuses on children's eye care, stating that optometric practices should be equipped to provide eye care for young children, and that optometrists should form part of the eye care pathway for children. For example, the guidance on children's vision screening in the UK stipulates that screening should be led by orthoptists and should consist of monocular visual acuity checks. This, however, could miss significant hyperopic refractive errors or intermittent, perhaps decompensating, strabismus. Protocols for children's vision screening vary widely between and within countries globally.

With the role of optometry in paediatric eye and vision care in mind, research suggesting some degree of rejection of this role within the profession is alarming. Shah et al (2007)⁶ carried out a survey of 100 optometric practices in the UK to determine whether they would carry out a sight test for a one-year-old child. The earliest age at which the practice would test children ranged from 1 to 7 years, with a mean of 3.1 years. One in 50 practices would not carry out a test until 7 years of age. This is a concern, given the well-established need for normal visual stimulation during periods of visual development.

In a survey of New South Wales optometrists (Suttle et al, 2003),⁷ questionnaires were mailed to 400 optometrists at random and 179 responded (response rate 45%). More than half (58%) of the respondents stated that 2% or fewer (median 1%) of their patients in the past 6 months were under

4 years of age. Given that children in this age range constitute about 5% of the population in the state, optometrists were providing eye care for about 1 in 5 of the children in this age range.

Visual developmental anomalies such as amblyopia are more likely to occur in children with some forms of learning disability. In particular, amblyogenic factors such as high refractive error and strabismus are more likely to occur in children with Down syndrome than in those with typical development (Watt et al, 2015).⁸ This makes it very important that children with Down syndrome are assessed by optometrists in the same way as all other children. However, a collaborative project between the Royal National Institute for the Blind in Wales and the School of Optometry and Vision Sciences at Cardiff University, found that over one third of children in special schools have never had an eye examination.⁹ More than half of the children needed spectacles but less than one third had been prescribed with these, and the results suggested that at least a fifth of the pupils classified as having low vision could have normal vision with spectacles.

The lack of consistent vision screening protocols or guidelines and the low proportion of optometrists providing eye care to children seems surprising and lamentable, given the need for early identification of amblyogenic factors such as anisometropia or strabismus, and pathology such as cataract or retinoblastoma. Correctable or treatable abnormalities such as these must therefore be identified and managed at an early age. In addition, while we learn throughout life, in early childhood we undergo prolonged periods with a focus on learning during pre-school and school stages. There is weak evidence for a negative association between moderately reduced visual function and academic achievement – better quality evidence would reinforce the need for early vision screening.

In addition to consideration of the vulnerability of the developing visual system, the optometrist needs to consider the fact that any advice should be evidence-based. Specifically, from the Optometry Australia core competencies,¹ 'Clinical expertise is integrated with the best available evidence, the patient's perspective and the practice context when making clinical decisions'. The literature on evidence-based practice refers to the patient's perspective as the patient's needs, circumstances, situation or preferences. This perhaps seems to be stating the obvious, but is an important aspect of all clinical decisions. In paediatric cases, the patient is usually accompanied by a parent or caregiver, and the optometrist needs to consider both when communicating a diagnosis and recommending a management plan. In particular, parents and caregivers may be somewhat concerned about an issue affecting their child, such as a suspected strabismus, or myopia development. One current example is the issue of reading difficulty or discomfort, sometimes known as visual stress when it is alleviated by viewing through a particular colour filter. Children with

symptoms consistent with visual stress may be referred or may self-refer to an optometrist for coloured overlays or lenses. The parent and child may hope that the coloured filter will be effective, and will pay for a private consultation, plus any overlay or tinted spectacles. In this situation, the optometrist has a responsibility to ensure that any recommended intervention is evidence-based. If the evidence is weak, this should be explained to the parent and patient as appropriate.

This special issue addresses these and other issues related to eye and vision care in children. To outline a few examples, in a questionnaire-based study on access to children's eye care, Donaldson et al report that about 1 in 8 of parents surveyed did not know how to access a children's sight test. Parents of African ethnicity less likely to know how to access a sight test for their child than white parents, suggesting that barriers to children's eye care may be associated with ethnicity. Asper et al point out that, despite the available evidence indicating that a refractive correction-only phase is effective prior to occlusion in treatment of many amblyopic children, optometrists have been slow to adopt this strategy. In a systematic review and meta-analysis, they confirm effectiveness and a negative association with age, such that outcomes are better in younger children. Webber reviews the impact of amblyopia on monocular vision and on binocularity, including 'real life' skills such as reading, fine motor skills, and higher functions such as attention. O'Connor and Tidbury continue this theme, acknowledging that empirical research shows poorer abilities such as reaching and grasping in amblyopia, and discuss a need for clinical methods to allow measurement of the 'real-life' impact of reduced stereopsis in conditions such as amblyopia. Clinically applicable tests of this kind would help clinicians, parents, teachers and others to understand any difficulties experienced by the child, and any possible alleviation by treatment.

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