

RESEARCH ARTICLE

Open Access

The screening of visual impairment among preschool children in an urban population in Malaysia; the Kuching pediatric eye study: a cross sectional study

Mallika Premsthil¹, Rose Manju², Asokumaran Thanaraj³, Syed Alwi Syed Abdul Rahman⁴ and Tan Aik Kah^{1*}

Abstract

Background: To screen for visual impairment in Malaysian preschool children.

Methods: Visual screening was conducted in 400 preschool children aged 4 to 6 years. The screening involved two basic procedures; the distant visual acuity test using the Sheridan Gardiner chart and the depth perception test using the Langs stereoacuity test. Criteria for referral were a visual acuity of 6/12 or less in the better eye or a fail in the depth perception test.

Results: The prevalence of visual impairment was 5% (95% confidence interval [CI] = 3.3, 7.6). Of the 400 preschool children screened, 20 of them failed the distant visual acuity test or the stereopsis test. Refractive errors were the most common cause of visual impairment (95%, 95% CI = 76.2, 98.8); myopic astigmatism was the commonest type of refractive error (63.2%, 95% CI = 40.8, 80.9).

Conclusion: The study is a small but important step in the effort to understand the problem of visual impairment among our preschool children. Our study showed that it is feasible to measure distant visual acuity and stereopsis in this age group.

Keywords: Preschool children, Eye screening, Prevalence, Visual impairment, Distant visual acuity, Stereopsis, Amblyopia

Background

Vision is an important requirement for learning and plays a critical role in the development of a child during the first three years of life. Children use their sight to strengthen motor functions, establish parent-child bonding, build picture perception and gain their balance [1]. Children may enter school with vision problems. Sub-optimal vision could lead to poor school performance, lack of interest in schooling, and dropping out of school. Sometimes an underlying vision problem can manifest as behavioral problems like learning disabilities, dyslexia and attention deficit disorder [2]. The common

eye problems that can occur in children of preschool and early school age include amblyopia, strabismus and refractive errors [3]. Early detection provides the best opportunity for effective treatment. The American Academy of Pediatrics recommends early vision screening at 3 years of age [4].

Amblyopia affects 5% of the preschool children and is potentially treatable [5]. The two common causes of amblyopia are strabismus and refractive errors. Early detection is critical because it increases the likelihood of successful treatment. Preschool screening programs may result in better visual outcome than screening at school entry. In Malaysia, the nationwide eye screening program effectively covers only primary school children who are 7 years of age and above, but does not include children in the preschool age (6 years and below). To date, there is no data on the prevalence of vision problems among

* Correspondence: portwinestain@hotmail.com

¹Department of Ophthalmology, Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS), Lot 77, Seksyen 22, Kuching Town Land District, Jalan Tun Ahmad Zaidi Aduce, Kuching, Sarawak 93150, Malaysia

Full list of author information is available at the end of the article