

Prevalence of Incidental Amblyopia in Buraidah City

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Purpose: To determine the prevalence of incidental Amblyopia and to identify the factors associated with this disorder.

Material and Methods: An analytical survey was conducted in different primary schools in Buraidah city Kingdom of Saudi Arabia. This study included 1413 children of 6-13 years of age. The study was school based and data was collected during the period of December 2009 to April 2011. Detailed ocular and medical history was recorded in printed Performa of all students. The testing and examination protocol included visual acuity measurement, ocular motility, squint evaluation, cycloplegicretinoscopy, cycloplegicautorefraction, anterior segment and fundus examination. Diagnostic criteria for amblyopia were best corrected visual acuity of 6/12 or less in one or both eyes or bilateral difference of at-least two best corrected visual acuity lines.

Results: Out of 1413, 203 (14.36%) students had refractive problems, of which, 37 (2.61%) students were found to be Amblyopic. The mean age was 9.32 years with standard deviation of ± 1.84 , of which, 27(1.91%) had Anisometropic amblyopia, 7(0.49%) had isometropic amblyopia, 2(0.14%) had strabismic amblyopia and 1(0.07%) had sensory deprivation amblyopia. Anisometropic hyperopic amblyopia was the commonest type of amblyopia found (1.91%).

Conclusion: The incidence of undiagnosed amblyopia is alarmingly high in the young children in the local population. This observation would suggest that screening should be done at pre-school and school entry level so that it can be detected at an earlier treatable stage to reduce the incidence of amblyopia.

Amblyopia is one of the most common eye ailments in children treatable by early diagnosis and correction¹. This almost always affects only one eye but may manifest with reduction of vision in both eyes².

Amblyopia is a disorder of the visual system that is characterized by a decrease in the best corrected visual acuity (BCVA) in an eye with no organic pathology³.

Amblyopia has effects on the social, economic, behavioral, educational, physical and psychological aspects of an individual and community. The term functional amblyopia often is used to describe amblyopia, which is potentially reversible by occlusion therapy. Organic amblyopia refers to

irreversible amblyopia⁴⁻⁶.

The overall prevalence of Amblyopia varies between 1.6 to 3.6% in different regions of the world.⁷ Amblyopia mainly is caused by uncorrected refractive errors during sensitive period i.e up to 8 years of age. After this sensitive period, refractive errors do not improve with correction and the eye becomes amblyopic.

Amblyopia is a leading cause of visual impairment in both childhood and adult population⁸. Recent population based studies reported prevalence rates ranging from 0.8% to 2.6% in their samples^{9,10}.

The risk factors associated with amblyopia are strabismus and uncorrected refractive errors, in particular anisometropia¹¹.

Studies have suggested that screening is associated with an absolute reduction in prevalence of amblyopia between 0.9% to 1.6%¹².

The purpose of this study is to determine the prevalence of incidental Amblyopia and to identify the factors associated with this disorder in our region.

This study in Buraidah city had not been conducted before.

MATERIAL AND METHODS

It was a prospective analytical survey of 7 different primary school in Buraidah city. In this survey a 1413 students of 6-13 years of age were examined by qualified ophthalmologist, optometrist along with the help of optometry students of our college. The study was school based and data was collected after the consent of the school authority during the period of December 2009 to April 2011.

Detailed ocular and medical history was recorded in printed Performa of all students. The testing and examination protocol included visual acuity measurement, ocular motility, squint evaluation, cycloplegic retinoscopy, cycloplegic auto refraction and examination of anterior segment and fundus. Visual acuity was measured with snellen E- chart at 6 meter, cover-uncover test and alternate cover test were performed both at 0.5 meter and 6.0 meter with and without glasses, the degree of Tropia was measured using the corneal light reflex, anterior segment was examined with binocular magnifying loupe.

Cycloplegia was obtained after 2 cycles of 1 drop of 1% cyclopentolate hydrochloride and 1 drop of 1% tropicamide instilled 5 minutes apart after corneal anesthesia with 1% methocaine hydrochloride. Auto refractor was used to perform cycloplegic auto-refraction. Fundus of every child was examined by ophthalmoscope.

Data entry and analysis was done in SPSS version 17.

RESULTS

Of the total number 1413 students, 203 (14.36%) had refractive problems, of which, 50 (24.63%) were in the age group 4-8 years, 55 (27.09%) were in 9-10 years of age while 98 (48.27%) were between 11-13 years, as shown in table 1, of which, 37 (2.61%) students were amblyopic, as shown in fig. 1 and table 2. The mean age was found to be 9.32 years with a standard deviation of ± 1.84 .

The various factors responsible for amblyopia as observed in our study are shown in figure 2. Anisometropic hyperopic amblyopia was the commonest type of amblyopia found (1.91%).

Table 1: Age range of children with refractive problems

Age Range	Children n (%)
6 - 8 year	50 (24.63)
9 - 11 year	55 (27.09)
11 - 13 year	98 (48.7)
Total	203 (100)

Table 2: Distribution of patients according to amblyopia diagnosis

Amblyopia	Frequency n (%)
Absent	1376 (97.39)
Present	37 (2.61)
Total	1413 (100)

DISCUSSION

Amblyopia is defined as a best corrected Snellen acuity of 20/40 or worse in either eye and /or an inter ocular difference of two Snellen lines or more¹³.

It is one of the leading cause of acquired monocular visual impairment, with an overall prevalence of amblyopia varying between 1.6 to 3.6% in different regions of the world^{7,14}.

In our study, 14.36% had refractive errors, 2.61% were amblyopic. These finding were quite similar to the observation of Awan, who found 3% of amblyopia,¹⁵ while Pai have found 1.9% in their sample¹⁶.

In this study, Anisometropic amblyopia was the commonest problem found (1.91%), and this is consistent with the results of Shah M and Khan.¹⁷ Studies have demonstrated that children with higher magnitude of anisometropia had higher prevalence and greater depth of amblyopia¹⁸.

In our cases of anisometropic amblyopia majority were hyperopic. In actual fact, anisometropic amblyopia is more common in hyperopic with anisometropia than it is myopic anisometropia¹⁹.

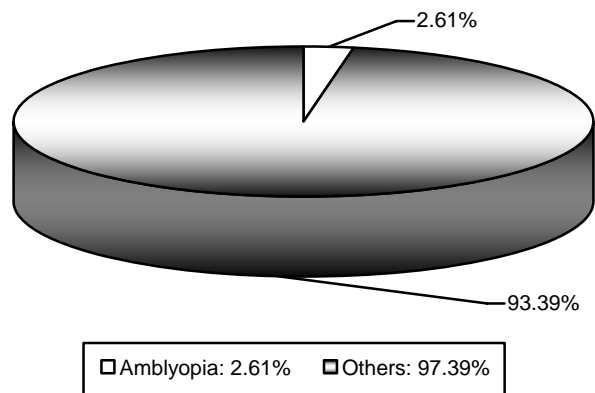


Fig 1: Prevalance of Incidental Amblyopia

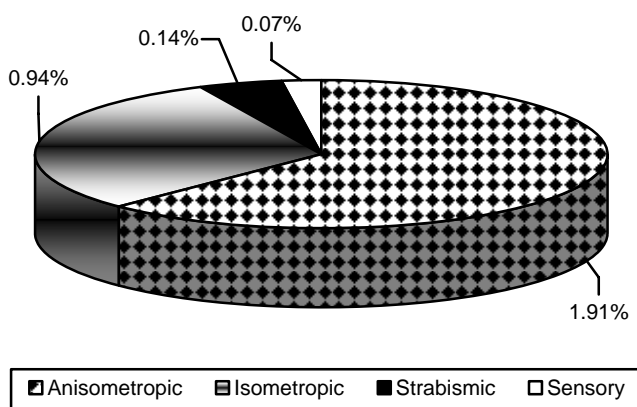


Fig 2: Distribution of amblyopia

The prevalence rate of amblyopia among school children in Riyadh, Abha and Jeddah were 2.6%, 1.9%, 1.3% respectively,²⁰⁻²² our result were slightly higher when compared to these results. Rahi, Sapkota, and Drover showed the prevalence of Amblyopia was 4.8%, 1.8% 4.7% respectively²³⁻²⁵.

CONCLUSION

The incidence of undiagnosed amblyopia is alarmingly high in the young children in the local population. This observation suggest that screening should be done at pre-school and school entry level so that it can be detected at an earlier treatable stage to reduce the incidence of amblyopia.

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