

## Research Article

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## Visual Impairment Screening and Early Interventions among Schooling Kids in Dubai Dubai-UAE-2016

Taryam MMO<sup>1</sup>, Hussein HY<sup>2</sup>, Al Faisal W<sup>2\*</sup>, AlBehandy NS<sup>2</sup>, Elkouka N<sup>3</sup>, Elawad SEF<sup>2</sup>

<sup>1</sup> Primary Health Care Services Sector, Dubai Health Authority, Dubai, UAE.

<sup>2</sup> Health Affairs Department, Primary Health Care Services Sector, Dubai Health Authority, Dubai, UAE.

<sup>3</sup> Noor Dubai Foundation, Dubai, UAE.

**\*Corresponding Author:** Al Faisal W, Health Affairs Department, Primary Health Care Services Sector, Dubai Health Authority, Dubai, UAE, E-mail address: wldalfaisal@gmail.com.

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### Abstract

**Background:** Amblyopia and strabismus can affect normal visual development at a critical period of visual development, resulting in irreversible vision loss. These conditions can reduce quality of life, function, and school performance. Identification of vision problems as early as possible could help identify children who might benefit from early interventions to correct or improve vision.

**Objectives:** To identify children who are visually impaired, children with strabismus and/or amblyopia or at risk of developing them, and other noticeable impairments among healthy looking children.

**Methodology:** A cross sectional study was carried out on randomly selected sample of 316 students, age rang (6-11 Years old) (grade 1 and 5). Visual assessment has been carried out by three well trained and experienced optometrists from Dubai Hospital and primary health care sector services at Dubai health Authority. Assessment setting was (Al Sadiq Private school clinic and two clinics sets by Noor Dubai Mobile clinic already installed in school for two successive days (fully furnished with vision assessment equipments) and optometrists. A Snellen 6/9 Visual Acuity Card A measuring tape - for measuring 6 meters distance A torch light - for external eye examination Baseline data formats Referral forms A kit bag to store all these materials and A poster with information on signs and symptoms of eye ailments and good eye health practices which will be permanently displayed in the schools. If the child was able to say or point out all the four directions of E in the visual acuity chart, the visual acuity was recorded as 6/9. If not, it was recorded as less than 6/9.

**Results:** The study showed that about 38.9% of total sample visually assessed were having error of refraction and about 42.3% of total students with error of refractions wearing glasses while about 16.5% of total students examined were being wearing glasses), the study revealed that the common error of refractions identified among the sample were (myopia (9.8%), hypermetropia (4.9%), astigmatism (43.9%). The study showed that there are number of eye morbidities detected during visual screening like nyctagmous (0.3%), strabismus (0.6%), Cataract (0.3%) and Conjunctivitis 0.3%) and all cases were referred for further intervention.

**Conclusions:** The study concluded that errors of refractions and other eye morbidities are tremendously prevalent among younger age groups of students and significant portion of these case are UN identified and has direct impact on students academic performance as well as other students interests. National wise visual impairment screening and early eye morbidities detection needs to be considered at policy and decision making, and strongly recommended to be listed as one of the mandatory screening for children national wise.

**Keywords:** Visual Impairment, screening, intervention, schooling Kids, Dubai

**Conflict of interest:** The authors declare that they do not have any conflict of interest.

## Background

Common visual problems in young children include refractive error, strabismus, and amblyopia. [1] Vision impairment related to these conditions can reduce quality of life, function, and school performance. [2] In addition, amblyopia and strabismus can affect normal visual development at a critical period of visual development, resulting in irreversible vision loss. Identification of vision problems as early as possible could help identify children who might benefit from early interventions to correct or improve vision.

Vision impairment can affect school performance and other functions, such as ability to safely participate in sports. Strabismus, the most common contributing factor to amblyopia, can also result in loss of stereopsis, leading to impaired depth perception, as well as teasing and other psychosocial consequences. Although amblyopia is often considered a disease of childhood, it is the most common cause of monocular visual loss in adults ages 20 to 70 years. [3] One risk of amblyopia is that vision loss in the nonamblyopic eye can result in severe vision impairment or blindness. One study estimated at least a 1.2 percent lifetime risk for vision loss for an individual with amblyopia. [4] Long-term functional effects of unilateral vision loss related to amblyopia are not well characterized. A study of a 1958 British birth cohort found no differences at ages 33 or 41 years in educational, health, or social outcomes among 8,432 adults with normal vision and 429 adults with amblyopia. [5]

When amblyogenic risk factors are present or occur in early childhood. [6] Normal vision cannot develop if the images seen by the two eyes are unequally clear, unclear in both eyes, or disparate due to misalignment. If amblyogenic risk factors develop after the ages of 6 to 8 years, amblyopia usually does not occur, as visual maturation has already occurred. [7] Conversely, if amblyopia is treated too late, the visual pathways do not develop properly

and visual loss may become permanent. Amblyopia is therefore considered to be a developmental disorder that is most effectively treated during an early, sensitive period.

## Objectives

To identify children who are visually impaired, children with strabismus and/or amblyopia or at risk of developing them, and other noticeable impairments among healthy looking children.

## Methodology

A cross sectional study was carried out on randomly selected sample of 316 students, age rang (6-11 Years old) (grade 1 and 5). Visual assessment has been carried out by three well trained and experienced optometrists from Dubai Hospital and primary health care sector services at Dubai health Authority. Assessment setting was (Al Sadiq Private school clinic and two clinics sets by Noor Dubai Mobile clinic already installed in school for two successive days (fully furnished with vision assessment equipments) and optometrists. A Snellen 6/9 Visual Acuity Card A measuring tape - for measuring 6 meters distance A torch light - for external eye examination Baseline data formats Referral forms A kit bag to store all these materials and A poster with information on signs and symptoms of eye ailments and good eye health practices which will be permanently displayed in the schools. If the child was able to say or point out all the four directions of E in the visual acuity chart, the visual acuity was recorded as 6/9. If not, it was recorded as less than 6/9.

## Results

The study showed that about 38.9% of the total sample visually assessed were having error of refraction, and about 42% of students with error of refractions are wearing glasses, while about 16.4% of total students examined were being wearing glasses as reflected by table (1).

**Table (1):** Distribution of visually assessed students according to presence of error of refractions and wearing glasses

	No.	%	No.	%
<b>Total examined</b>	<b>316</b>	<b>100.0</b>		
<b>Error of refraction</b>	<b>123</b>	<b>38.9</b>	<b>123</b>	<b>100.0</b>
<b>Wearing glasses</b>	<b>52</b>	<b>16.5</b>	<b>52</b>	<b>42.3</b>

The study revealed that the common error of refractions identified among the sample were (myopia (9.8%), hypermetropia (4.8%), astigmatism (43.9%) as shown in table (2).

**Table (2)** Distribution of the types of error of refraction among visually screened students

Type of refractive error	No.	%
Myopia	11	8.9
Hypermetropia	6	4.9
Astigmatism	54	43.9
Others	52	42.3
<b>Total</b>	<b>123</b>	<b>100.0</b>

The study showed that there are number of eye morbidities detected during visual screening like nystagmus (0.3%), strabismus (0.6%), Cataract (0.3%) and Conjunctivitis (0.3%) as shown in table (3). All cases were referred to further intervention.

**Table (3):** Distribution of other eye Morbidities identified

Type	No.	%
Nystagmus	1	0.3
Strabismus	2	0.6
Cataract	1	0.3
Conjunctivitis	1	0.3
Refractive errors	123	38.9
<b>Total</b>	<b>316</b>	<b>100.0</b>

## Discussions

This study shows that error of refractions among young students in schools is considerably high about 38.9%, this result is much higher than the result found in another study [8] which stated that Refractive errors in either eye were present in 174 (9.4%) children. Of these, myopia was diagnosed in 55 (31.6%) children in the right and left eyes followed by hyperopia in 46 (26.4%) and 39 (22.4%) in the right and left eyes respectively. Low myopia was the most common refractive error in 61 (49.2%) and 68 (50%) children for the right and left eyes respectively.

While this study result is about to be close to the finding identified by Hashemi et. al., [9] which stated that the prevalence of myopia, hyperopia and astigmatism was 29.3% [95% confidence interval (CI), 25-33.6%], 21.7% (95% CI, 17.8-25.5%), and 20.7% (95% CI, 16.9-24.6%), respectively; the prevalence of myopia increased significantly with age [odds ratio (OR)=1.30, P=0.003] and was higher among boys (OR=3.10, P<0.001). The prevalence of hyperopia was significantly higher in girls (OR=0.49, P=0.003).

Still, the observed rate is significantly higher than that reported in previous studies. Use of different cut-off points can be one reason for such differences, but even when similar definitions are used,

the prevalence of hyperopia in our study seems high. Based on previous studies, hyperopia is more common than myopia among Iranians. [10-13]

Current study showed that only 42.3% out of all error of refraction cases are wearing correctable glasses which is much higher than another study [14] which stated that there was no awareness among the students and parents regarding the consequences of uncorrected vision problems. This statement has been proved, when we observe the number of students wore glasses. Yes, only 7.26% of vision defective students are wearing glasses. The remaining 92.74% of students are unaware about their problems. [15]

## Conclusion

The study concluded that errors of refractions and other eye morbidities are tremendously prevalent among younger age groups of students and significant portion of these case are UN identified and has direct impact on students' academic performance as well as other students interests. National wise visual impairment screening and early eye morbidities detection needs to be considered at policy and decision-making, and strongly recommended to be listed as one of the mandatory screening for children national wise.

## References

1. Hartmann EE, Dobson V, Hainline L, et al. Preschool vision screening: summary of a Task Force report. *Pediatrics*.2000;106(5):1105–1116.
2. Webber AL, Wood JM, Gole GA, Brown B. Effect of amblyopia on self-esteem in children. *Optom Vis Sci*.2008;85(11):1074–1081.
3. Simons K. Preschool vision screening: rationale, methodology and outcome. *Surv Ophthalmol*. 1996;41(1):3–30.
4. Rahi JS, Logan S, Timms C, Russell-Eggitt I, Taylor D. Risk, causes, and outcomes of visual impairment after loss of vision in the non-amblyopic eye: a population-based study. *Lancet*. 2002;360:597–602.
5. Rahi JS, Cumberland P, Peckham C. Does amblyopia affect educational, health and social outcomes? Findings from the 1958 British birth cohort. *BMJ*. 2006;332:820–825.
6. Ciner E, Schmidt P, Orel-Bixler D, et al. Vision screening of preschool children: evaluating the past, looking toward the future. *Optom Vis Sci*. 1998;75:571–584.
7. Keech R, Kutschke P. Upper age limit for the development of amblyopia. *J Pediatr Ophthalmol Strabismus*.1995;32:89–93.
8. Assefa Wolde Yared, Wasie Taye Belaynew, Shiferaw Destaye, Tsegaw Ayanaw, and Eshete Zelalem. Prevalence of Refractive Errors Among School Children in Gondar Town, Northwest Ethiopia. *Middle East Afr J Ophthalmol*. 2012 Oct-Dec; 19(4): 372–376. doi: 10.4103/0974-9233.102742.
9. Hassan Hashemi, Farhad Rezvan, Asghar Beiranvand, Omid-Ali Papi, Hosein Hoseini Yazdi, Hadi Ostadimoghaddam, Abbas Ali Yekta, Reza Norouzirad, and Mehdi Khabazkhoob. Prevalence of Refractive Errors among High School Students in Western Iran. *J Ophthalmic Vis Res*. 2014 Apr; 9(2): 232–239.
10. Rezvan F, Khabazkhoob M, Fotouhi A, Hashemi H, Ostadimoghaddam H, Heravian J, et al. Prevalence of refractive errors among school children in Northeastern Iran. *Ophthalmic Physiol Opt*. 2012;32:25–30.
11. Fotouhi A, Hashemi H, Khabazkhoob M, Mohammad K. The prevalence of refractive errors among schoolchildren in Dezful, Iran. *Br J Ophthalmol*. 2007;91:287–292.
12. Yekta A, Fotouhi A, Hashemi H, Dehghani C, Ostadimoghaddam H, Heravian J, et al. Prevalence of refractive errors among schoolchildren in Shiraz, Iran. *Clin Experiment Ophthalmol*. 2010;38:242–248.
13. Ostadi-Moghaddam H, Fotouhi A, Khabazkhoob M, Heravian J, Yekta AA. Prevalence and risk factors of refractive errors among schoolchildren in Mashhad, 2006-2007. *Iranian Journal of Ophthalmology*.2008;20:3–9.
14. N. Prema, Prevalence of refractive error in school children, *Indian Journal of Science and Technology* Vol. 4 No. 9 (Sep 2011) ISSN: 0974- 6846
15. Seema S, Vashisht B, Meenakshi K and Manish G (2009) Magnitude of refractive errors among school children in a rural block of Haryana. *The Internet J. Epidemiol*. 2(6), 21-24. 2. 3. Sonam Sethi and Kartha GP (2010) Prevalence of refractive errors in school children (12-17 Years) of Ahmedabad City. *Indian J. Community Medicine*. 4(25), 16-20.