ORIGINAL ARTICLE

Prevalence of ocular problems among school students of Karachi

Navaid Qureshi, Tahir Ahmed, Tabassum Ahmed

Received:
2nd January 2016

Accepted:
23rd September 2016

Abstract

Objective: To find out the magnitude of eye-problems among the school students of north Karachi.

Study design: Prospective community-based study.

Duration: Approximately 20,000 school-children of different age groups were screened for eye-problems from February, 2010 till May, 2011.

Methodology: Snellens vision chart, school-wise children registration, pen-torch, mobile-van equipped with slit-lamp, auto-refractro-meter, direct ophthalmoscope, streak retinoscope, etc.

Results: Out of a total of 19,606 beneficiaries as students, 3,305 students were found to have refractive errors standing at 16.85%. Blepharitis 5% being most commonly seen among eye-lesions. Epidemics of acute adeno-viral conjunctivitis showed at 2.4% cases as red-eyes.

Discussion: Refractive errors accounted for the majority of optical cases. Poor hygiene among students resulted in 5% of cases of Blepharitis.

Conclusion: The most practical way was to use auto-refractometer for mass screenings and prescribe spectacles prescriptions for the needy school children.

Key words: pen-torch, Snellen's vision-chart, slit-lamp biomicroscope, auto-refractometer

Hamdard University Hospital Karachi
N Qureshi
T Ahmed
T Ahmed

Correspondence:
Dr. Navaid Qureshi, Assistant Professor, Hamdard University Hospital, Taj Medical Complex, MA Jinnah Road, Karachi
Cell:
mail: dr_navaidq@hotmail.com

Introduction:

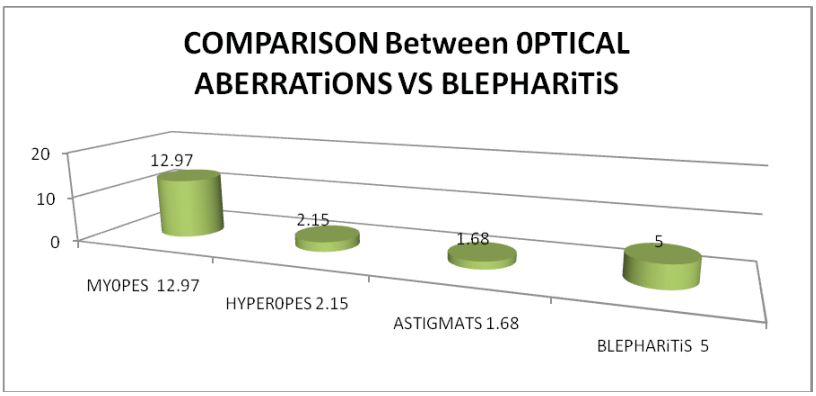
Juvenile ocular reviews in 'mass-screenings'[1] are of paramount importance as many young school students, because of much immaturity, fail to realize their eye-problems. Clinical evidence suggests that refractive errors, along with amblyopia and strabismus, are common in children.[2] Refractive error can place a substantial burden on the individual. School-age children constitute a particularly vulnerable group, because uncorrected refractive error may have a dramatic impact on learning capability and educational potential. The visual cut off level is also dictated by the compliance of populations with spectacle use. Uncorrected refractive errors are an important cause of visual impairment in many countries.

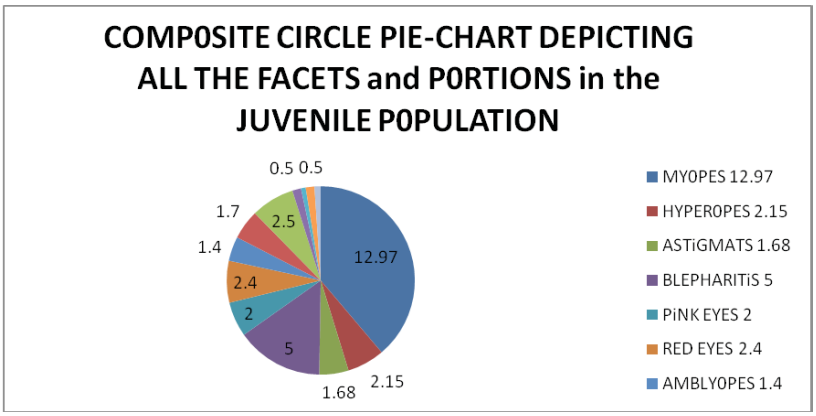
The purpose of the study in children was to assess the age-specific and sex-specific prevalence of ocular problems, refractive errors, and the prevalence and causes of visual impairment in children of different ethnic origins and cultural settings using consistent definitions and common methods.

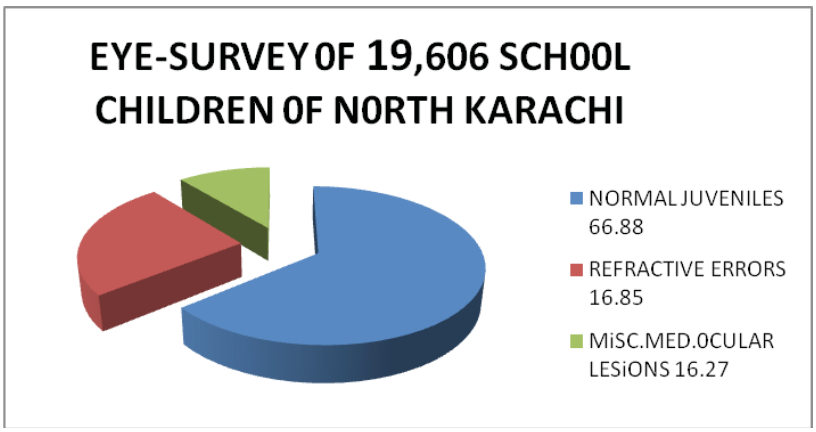
In conclusion, school vision testing programmes are simple to conduct, need minimal resources, greatly benefit children with significant refractive errors and have an impact on concerned communities by increasing their knowledge of vision disorders and how to manage them. However, they need careful planning and resourcing.[3]

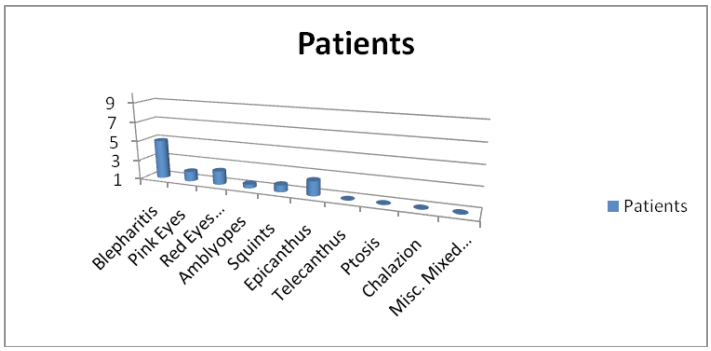
Patients and Methodology:

Population-based, cross-sectional samples of the target population were selected through random sampling of children ages 5 through 15 years. Approval to conduct the study was obtained from the local health authorities. The testing and examination protocol included









lensometry, visual acuity measurements, ocular focimetry, visual acuity measurements, ocular motility and alignment evaluation, cycloplegic retinoscopy (if required) and auto-refraction, and examination of the external eye, anterior segment, media, and fundus. Distance visual acuity was measured with Snellens' "E" chart, visual acuity measurements began at a distance of 6 meters with the top line (6/60). The lowest line read successfully was assigned as the visual acuity for the eye undergoing testing. The right eye was tested first, then the left eye, each time occluding the fellow eye. The child was requested to indicate the direction of the E optotype either by pointing with his/her hand or by calling the direction. The child was observed to prevent squinting (pinhole effect) while reading the optotypes. If the child presented with glasses, the power of the lenses was measured using Focimeter. For these children, visual acuity was measured first with and then without glasses. Strabismus was diagnosed and quantitated with cover testing and observation of the corneal reflex both at 0.5 meters and 6.0 meters. The anterior segment was examined using a magnifying loupe and if any abnormality noted with slit lamp bio-microscope. The lids, conjunctiva, cornea, iris, and pupil were examined and abnormalities noted. The eye examination was completed with indirect or direct ophthalmoscopic examination of the lens, vitreous, and fundus. Specific abnormalities were noted.

Results:

Out of a grand total of 19,606 beneficiaries, there were 3,305 cases of refractive errors at 16.85%, approx.17%. Majority were minus Myopes + Miscellaneous ocular-medical problems as under:

1.	Blepharitis	5%
2.	Pink eyes	2%
3.	Red eyes (Epidemics)	2.4%
4.	Amblyopes-A (lazy eyes)	1.4%
5.	Squints-S (deviated eyes)	1.7%

6. Epicanthus epicanthal folds 2.5%
7. Telecanthus T 0.5%
8. Ptosis-drooping of U.lid 0.27%
9. Chalazion-C-meibomian cyst MC 0.5%
10. Misc mixed few ocular lesions= corneal opacity=(co+cataracts+pseudophakia=[PP]=aphakia=Aph= 0.36%
11. Rare-one interesting ocular: Eye lesions enlisted for interest academics detailed tabular charts depict the statistics, but to mention a few interesting findings like Blue Naevus of Ota. micro-cornea, mid-facial dysostosis, ocular albinism, nystagmus, heterochromic irides, Bitot's spots, Bilateral Duane's syndrome Type-I with inferior oblique (IO) muscle over-action with each eye elevation on adduction on each side.

Discussion:

It is a well-known fact that school-students screenings at their own-sites can bring very fruitful results along with fascinating facts about paediatric ophthalmology, 'eye-opener'.But from one study of Khyber Teaching Hospital in Frontier province, the most common eye problem was vernal catarrh. Refractive errors presented the second most common cause of paediatric ophthalmic disorder. Males were more affected than females. The most common age group affected was 7-10 years. Most of the children required medical treatment. Squints were the most common disorder requiring surgical intervention followed by paediatric cataracts.[4] Nationally & Internationally data-base show the visual states of v.young students of montessori or first or second classes are known, the sooner the wearing of appropriate 'Sight-Spects' and the better the visual outcome & gloom of Amblyopia lessens. Teachers get trained to visually screen their own class-students & make a list of the suspected students. They would be given the Snellen vision charts to note & record their un-corrected eye-sights if below 6/6 or 6/9, reported to our Centre(then). But I wanted to visit their specific school sites at their door-steps; that I did. So as to screen them & spot them & not to miss any in order to report them. But parents, teachers & doctors need to repeatedly tell these tender genders to have good diet, sound sleeping hours & habits, real good reading habits; avoid too much inter-cousin marriages & if at all have genetic opinions & of course regular medical & eye-checks.

One study from primary schools within Sargodha, Punjab, Pakistan had less ratio of refractive errors as quote," out of 1,185 students, 1,133 (95.6%) had normal vision and only 52 (4.38%) had myopia which means that visual defect is not a major health problem in primary school children of this area.[5] Another study from HQ Hospital landi kotal in NWFP shows different comparative results but taking into account as under 15 years while in my much larger study includes even upto matriculates & beyond. So their figures from Landi Kotal show as 58% Hyperopes, 36% Myopes & 6% Astigmats but they also included pre-school children from 1 year upto 15.[6] Those that developed much after the period of amblyopia. According to one study conducted at Govt. middle schools' level, prevalence of Amblyopia is upto 3% as stated: (3%) were amblyopic. Out of these 6(3%), 2(1%) were boys and 4(2%) were girls. 3(1.50%) students had unilateral and 3(1.50%) had bilateral Amblyopia. Meridional Amblyopia was found to be the most predominant type of Amblyopia being 3(1.5%) while Ametropic, Anisometropic and Strabismic type of Amblyopia were 1(0.5%) each.[7] Such as in matriculate classes with mild to moderate numbers benefitted the most but all were to be advised for frequent follow-up visits. It is estimated that even 2.5[8] billion people world-wide may be affected by 2020. It is estimated that 2.5 billion people will be affected by myopia alone with in the next decade. In one study in Africa of school-children was found to be 9.4%[9] in their classes.[10] In one multi-ethnic pediatric population in Los Angeles, upto 5% children had visual weakness due to uncorrected refractive errors or amblyopia as in this ratio African-American(1.5%) vs: Hispanics (1.9%).

In one African Study in District of Kampala,[11] the commonest single refractive error was astigmatism which accounted for 52% of all errors.[12] Previous reports of less hyperopic mean spherical equivalent refractive error, and more myopia and less hyperopia in children of this age may be due to problems with achieving adequate cycloplegia in children with dark irises.[13] In one study in Nigeria. the prevalence of refractive error in this study was as low as 2.2% meaning African children have much better eye-sight compared to our 14-17%. Vision disorders are the fourth most common disability of children and the leading cause of visually-handicapped children.[14] While traditional estimates indicate that about 25% of the adult US population has myopia. In regions of East Asia, myopia[15] has reached epidemic proportions and its prevalence now exceeds 80% in some highly educated groups.

Conclusion:

Majority of the population like among the younger tender generation of 'School-Students' in our Study were nearly 17%, 3305 Students needing Sight-Spectacles at 16.85%=nearly 17%. With Myopes at 77%, hypermetropes at 13% & astigmats at 10% defective for distance labelled as Myopes & they were best treated by being prescribed Concave Meniscus lenses in "Sight-Spectacles". But one study from primary schools within Sargodha, Punjab, Pakistan had less ratio of refractive errors as quote," Out of 1185 students, 1133 (95.6%) had normal vision and only 52(4.38%) had myopia which means that visual defect is not a major health problem in primary school children of this area.[5] Another study from HQ Hospital LANDI KOTAL in NWFP shows different comparative results but taking into account as under 15 years while in my much larger study includes even upto matriculates & beyond. So their figures from Landi Kotal show as 58% Hyperopes, 36% Myopes & 6% Astigmats but they also included pre-school children from 1 year upto 15.[6] Those that developed much after the period of amblyopia. According to one study conducted at Govt.middle schools' level, prevalence of Amblyopia is upto 3% as stated: (3%) were amblyopic. Out of these 6(3%), 2(1%) were boys and 4(2%) were girls. 3(1.50%) students had unilateral and 3(1.50%) had bilateral Amblyopia. Meridional Amblyopia was found to be the most predominant type of Amblyopia being 3(1.5%) while Ametropic, Anisometropic and Strabismic type of Amblyopia were 1(0.5%) each.[7] Such as in matriculate glasses with mild to moderate numbers benefitted the most but all were to be advised for frequent follow-up visits. It is estimated that even[8] 2.5 billion people world-wide may be affected by 2020. It is estimated that 2.5 billion people will be affected by myopia alone with in the next decade. In one study in Africa of school-children was found to be 9.4%[9] in their classes.[10] In one multi-ethnic pediatric population in Los Angeles, upto 5% children had visual weakness due to uncorrected refractive errors or amblyopia as in this ratio African-American(1.5%) vs: Hispanics(1.9%). In one African Study in District of Kampala,[11] the commonest single refractive error was astigmatism which accounted for 52% of all errors.[12] Previous reports of less hyperopic mean spherical equivalent refractive error, and more myopia and less hyperopia in children of this age may be due to problems with achieving adequate cycloplegia in children with dark irises.[13] In one study in Nigeria. the prevalence of refractive error in this study was as low as 2.2% meaning African children have much better eye-sight compared to our 14-17%. Vision disorders are the fourth most common disability of children and the leading cause of visual-handicap among children.[14] While traditional estimates indicate that about 25% of the adult US population has myopia, but in regions of East Asia,[15] myopia has reached epidemic proportions and its prevalence now exceeds 80% in some highly educated groups. A total of 153 million people (range of uncertainty: 123 million to 184 million) are estimated to be visually impaired from uncorrected refractive errors, of whom eight million are blind.[16]

Conflict of Interest: None

Funding Sources: None

Role and contribution of authors:

Dr Navaid Qureshi, conceived the idea and wrote the initial writeup

Dr Tahir Ahmed, was instrumental in carrying out this study. He helped in writing the introduction, discussion and conclusion

Prof Dr Tabassum Ahmed, critically reviewed the article and made the final touchup.

References:

1. Gilbert C. Dissertation for MSc, London School of Hygiene and Tropical Medicine. 1995. A pilot study to evaluate the methods and logistics for a prevalence and causes survey of visual impairment and hearing impairment in children.
2. A. dominique negrel, MD, eugenio maul, MD, gopal p. pokharel, MD, mph, jialiang zhao, MD, and leon b. ellwein, PhD . Am J Ophthalmol 2000;129: 421–426. © 2000 Refractive Error Study in Children: Sampling and Measurement Methods for a Multi-Country Survey
3. G V S Murthy, MBBS MD MSc; Community Eye Health. 2000; 13(33): 3–5. 2000 Journal of Community Eye Health, International Centre for Eye Health, London.
4. Sadia Sethi, Mohammad Junaid Sethi, Nasir Saeed, Naimatullah Khan Kundi; Pattern of Common Eye Diseases in Children Attending Outpatient Eye Department Khyber, Teaching Hospital, Peshawar. Pak J Ophthalmol 2008, Vol. 24 No. 4
5. Haq Nawaz Anwar, Muhammad Iqbal Zafar and Shafqat Hussain, Health Screening of Primary School Children-A Case Study of district, Sargodha-Pakistan, Pak. j. life soc. sci. (2006), 4(1-2): 40-47.Pakistan Journal of Life & Social Sciences.
6. Mohammad Junaid Sethi, Sadia Sethi, Rashid Iqbal, Department of Ophthalmology Lady Reading Hospital & Khyber Teaching Hospital andCommunity Medicine Khyber Girls Medical College, Peshawar, Pakistan. Gomal Journal of Medical Sciences July-December 2009, Vol. 7, No. 2
7. Muhammad A. Awan, Imran Ahmad, Asad A. Khan. Prevalence of Amblyopia among Government Middle School Children in City Of Lahore, Pakistan IJAVMS. 2010; 4(2): 41-46: International Journal for Agro Veterinary and Medical Sciences.
8. Robert Wojciechowski, OD, MSc PhD; Nature & Nurture:the Complex Genetics of Myopia & Refractive Errors; Clin Genet.2011 April:79(4): 301-320.
9. AssefaWolde Yared, Wasie Taye Belaynew, Shiferaw Destaye, et al. Prevalence of Refractive Errors among School-children in Gondar Town of NW Ethiopia, Africa.
10. Rohit Varma, LaVina Abbott, LaVina Abbott, et al. Prevalence & Causes of Visual Impairment in African-American & Hispanic Preschool Children :the Multi-National Pediatric Eye Disease Study[MEPEDS Group].
11. Medi Kawuma & Robert Mayeku. A survey of the prevalence of refractive errors among children in lower primary schools in Kampala district. Afr Health Sci. 2002 August; 2(2): 69–72.
12. Weizhong Lan, Feng Zhao, [...], and Ian G. Morgan; Refractive Errors in 3–6 Year-Old Chinese Children: A Very Low Prevalence of Myopia?; PLoS One.2013; 8(10) e;78003.
13. Ibeinmo Opubiri and Chinyere Pedro-Egbe; Screening for refractive error among primary school children in Bayelsa state, Nigeria; Pan Afr Med J. 2013; 14:74.
14. Mohammad A. Al-Rowaily; Prevalence of refractive errors among pre-school children at King Abdulaziz Medical City, Riyadh, Saudi Arabia; Saudi J.Ophthalmol; 2010; April:24(2):45-48.
15. Earl L. Smith, III, OD, PhD, FAAO; The Charles F. Prentice Award Lecture 2010: A Case for Peripheral Optical Treatment Strategies for Myopia; Optom Vis.Sci. 2011 September; 88(9):1029-1044.
16. Serge Resnikoff, Donatella Pascolini.. Global magnitude of visual impairment caused by uncorrected refractive errors in 2004; Bulletin of the World Health Organization, Jan.2008;86(1): 63-70.