Clinical study of types of “refractive errors” at a tertiary care hospital

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Abstract:
Objective: Evaluation of the different variants & varieties of the most common symptoms in Ophthalmology.
Study design: Prospective randomized Study.
Setting Out-Patient Department of Ophthalmology, Hamdard University Hospital, Karachi.
Methodology: A total of 538 patients were examined and included in the study. They were of all age groups but mostly from 15 to 35 years of age, including both males and females.
Results: Most common variant among these refractive error cases was Myopia with patients complaining of ‘defective vision for distance’ up to 311 patients (57.8%). This was followed by Hypermetropes (Hyperopes) as up to 101 (18.7%) & then so on to ‘astigmatic’ patients up to only 115 (21.3%).
Conclusion: Majority of the refractive error cases are Myopias which can be easily corrected with ‘Meniscus Concave’ corrective (spectacle) lenses.

Keywords: Myopes; Hypermetropes(Hyperopes); Astigmatism; Amblyopia

Introduction:
Refractive errors are the commonest optical aberrations in patients attending out-patient Ophthalmology clinics1. When un-corrected, they cause “eye-strain” to the patients & can be described in the words of patients as “blurring” or “distortion”2. In the Global Initiative 2020 for the elimination of avoidable blindness, refractive errors have been emphasized together with other ocular disorders such as cataracts, glaucoma, trachoma and onchocerciasis3. The objectives of the study were to estimate the occurrence of various refractive errors in patients attending OPD at Ophthalmology department of Hamdard University Hospital, to identify their types and to provide them with corrective “glasses”.

Methodology:
This prospective study was conducted at eye department of Hamdard University Hospital during July, 2007 to January, 2008. Five hundred and thirty-eight patients were included in the study. Male & female patients between 15-35 years were included. Both eyes of patients were examined. Patients who had previous ocular surgery were excluded from the study. The ocular examination included visual acuity (VA) measurements, ocular motility, squint detection, pupillary reaction, direct ophthalmoscopy and examination of anterior segments with slit-lamp. Visual acuity was measured with Snellen’s chart and Near point chart. For every patient visual acuity was tested without correction and with correction and if possible with their spectacles. Objective refraction was determined using a Welch-Allyn streak-retinoscope, Topcon autorefractometer and ocular motility was evaluated with cover test for distance and the near. Patients with uncorrected visual acuity (UCVA) worse than 6/6 underwent subjective refraction.
Results:
Of 538 patients examined in our eye clinic 335 (62.2%) were males and 203 (37.7%) were females.

Age range from 15-35 years was applied; so most of our patients represent adult population group, such that they don’t require cycloplegic refraction. Also this is not a population-based study but at a local teaching hospital to explain the expected figures.

Types of refractive errors included 311 (57.8%) Myopes, out of whom Simple Myopes were 305 (98%); 101 (18.7%) patients Hypermetropes: and Low Hyperopia was detected in 79 (78.2%) patients whereas 22 (21.8%) patients were High Hyperopes. Astigmatism was present in 115 (21.3%) and amongst them Simple Astigmatism in 44 patients (38.2%), [SMA 28 (24.3%) and SHA 16 (13.9%)]. Compound Astigmatism in 60 patients (52.2%) [(CMA 42 (36.5%) and CHA 18 (15.6%)] and 11 (9.6%) patients were having mixed astigmatism. Amblyopia was present in 5 of 538 (0.92%) and Anisometropia in 6 of 538 (1.11%) patients. (Figure 1 & 2).

In 283 (52.7%) patients uncorrected visual acuity was 6/6 to 6/12, in 224 (41.7%) patients uncorrected visual acuity was 6/18 to 6/36, in 31 (5.7%) patients uncorrected visual acuity was less than 6/60.

In 23 (4.2%) patients visual acuity did not improve after refraction because they had associated ocular pathologies like corneal opacities in 5 cataract, strabismic amblyopia 12, traumatic maculopathy 2, optic atrophy 2 and retinitis pigmentosa 1.

Discussion:
This study was designed to find out the frequency of various refractive errors among adult patients with visual impairment. The reason for not conducting population based survey were limited resources, time requires to achieve adequate cycloplegia, and non-availability of hand held auto-refractor. Problem in school screening is that the sample is not a true representative of target population because most of our children do not go to schools and children of preschool age are not included in such studies furthermore evaluation of refractive error in childrens require cycloplegia which is time consuming and sometimes require multiple visits.

Refractive errors are the commonest cause of vision impairment in Pakistan. The global magnitude of refractive errors is not reliably known, as there is great variation in groupings according to age, definition of blindness and examination method. A World Health Organization (WHO) report on elimination of avoidable visual disability due to refractive errors suggests that 5–25% of blindness in some countries is due to refractive errors and that as much as 4% of the population sees less than 6/18 (20/60). Prevalence of myopia in our population selection is much more as compared to other studies. The National Blindness and Visual Impairment Survey conducted by Shaheen P. Shah, Mohammad Z. Jadoon and et al shows the crude prevalence of myopia and high myopia as 36.5% and 4.6%
respectively. Myopia (defined as ≥40 years, ≤-1D or less, worse eye) appears to be more prevalent in Pakistani adults (31.4%) than in western populations, i.e., 26.5% in the Beaver Dam Eye Study; 17.6% in the Rotterdam Study; 17.97% in the Proyecto Vision Evaluation and Research; 16.76% in the Baltimore Eye Study; 15.79% in the Melbourne Visual Impairment Project and 12.6% in the Blue Mountain Eye Study. However, these figures need to be interpreted bearing in mind demographic differences in the populations surveyed. Based on the available published and unpublished data, it is estimated that the prevalence of visually disabling refractive errors in Pakistan is about 3.5–4.5% in children and 4% in the overall population.

Conclusion:
This study concludes that the uncorrected refractive error remains a problem among patients attending eye out-patients accounting for major portion of eye diseases. Females were almost equally affected as males. Blindness due to refractive error in any population suggests that eye care services in general in that population are inadequate. Treatment for refractive errors is perhaps the simplest and most effective form of eye care.

References:
3. VISION 2020 is the global initiative for the elimination of avoidable blindness, a joint programme of the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB).