

## Refractive Status and Prevalence of Refractive Errors in Suburban School-age Children

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**Abstract :**

**Objective:** This study investigated the distribution pattern of refractive status and prevalence of refractive errors in school-age children in Western China to determine the possible environmental factors. **Methods:** A random sampling strategy in geographically defined clusters was used to identify children aged 6-15 years in Yongchuan, a socio-economically representative area in Western China. We carried out a door-to-door survey and actual eye examinations, including visual acuity measurements, stereopsis examination, anterior segment and eyeball movements, fundus examinations, and cycloplegic retinoscopy with 1% cyclopentolate. **Results:** A total of 3469 children living in 2552 households were selected, and 3070 were examined. The distributions of refractive status were positively-skewed for 6-8-year-olds, and negatively-skewed for 9-12 and 13-15-year-olds. The prevalence of hyperopia ( $+2.00$  D spherical equivalent [SE]), myopia ( $-0.50$  D SE), and astigmatism ( $\geq 1.00$  diopter of cylinder [DC]) were 3.26%, 13.75%, and 3.75%, respectively. As children's ages increased, the prevalence rate of hyperopia decreased ( $P < 0.001$ ) and that of myopia increased significantly ( $P < 0.001$ ). Children in academically challenging schools had a higher risk of myopia ( $P < 0.001$ ) and astigmatism ( $\geq 1.00$  DC,  $P = 0.04$ ) than those in regular schools. **Conclusion:** The distribution of refractive status changes gradually from positively-skewed to negatively-skewed distributions as age increases, with 9-year-old being the critical age for the changes. Environmental factors and study intensity influence the occurrence and development of myopia.

**Key Word :**

Volume 7, Number 6, - 2010