



## PREVALENCE OF REFRACTIVE ERROR IN ILLITERATE POPULATION IN NAVI MUMBAI, MAHARASHTRA, INDIA

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Received: March 23, 2012; Accepted: April 12, 2012

### Abstract-

**Objective-** Analyzing the prevalence of refractive errors in illiterates (uneducated) population.

**Design-** RETROSPECTIVE: population based cross sectional study.

**Participants-** Illiterate adults between 20 to 50 years of age having obvious refractive error.

**Material and Methods-** A retrospective cross sectional study was carried out in illiterate adults between age group of 20 to 50 in Navi Mumbai, Maharashtra. Recording visual acuity on Snellen's E type chart, dilated retinoscopy and fundoscopy was done.

Refractive error as myopia / hyperopia was noted as + / - 0.50 spherical / cylindrical.

**Results-** Prevalence of hyperopia was more common than myopia in illiterate population. 2000 eyes of 1000 subjects were examined; majority age group was between 25 to 35. Female were having relatively more refractive error 64% compared to male 36%. Overall 76% of them were having hyperopia and only 24% were having myopia.

**Conclusion-** Hyperopia is more prevalent in illiterate population and even more commoner in female. Commonest symptom associated was headache in late 20s and early 30s.

**Key words-** Retinoscopy, fundoscopy, myopia, hyperopia, astigmatism, ametropic

**Citation:** Gore V.S. (2012) Prevalence of Refractive Error in Illiterate Population in Navi Mumbai, Maharashtra, India. International Journal of Bioinformatics Research, ISSN: 0975-3087 & E-ISSN: 0975-9115, Volume 4, Issue 2, pp.-263-264.

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### Introduction

Out door activity is more associated with hyperopic refractive error meaning less prevalence of myopic refractive error [1]. Hyperopia is usual (physiological) refractive error in young children. Neonates and infants most often have hyperopic refractive error [2, 3]. However prevalence of hyperopia is reported only in school going children. The range vary widely in different countries ranging between 0.06% to 26 % recorded on spherical equivalent (SE) [4-8]. There are not many studies about real prevalence of hyperopia in adults. Myopia is suggested to exist in case excess of indoor activity like reading, writing, computer work or watching television. During my day to day record of refractive status among varied population there has been striking existence of more prevalence of hyperopia in illiterate subjects.

This study also reveals that illiterate subjects remains asymptomatic due to lack of schooling meaning lack of near work (reading, writing, working on computer). This illiterate population is mostly a labour worker or having occupation in outdoor conditions. Many of them become symptomatic in late 30s might be because strong accommodation in childhood is diminishing nearing 40 yrs of age or being hyperopes they are more prone to early presbyopia. Being uneducated this population was largely remained undiagnosed and asymptomatic due to lack of reading. But increased usage of mobile phones in this population also has made them symptomatic in early presbyopic age bracket.

A study by Frank et al suggests that myopia was rare among the indigenous population in north western Amazon region of Brazil [9].

## Material and methods

Retrospective cross sectional study was carried out in young illiterate adult population from satellite city Navi Mumbai, Maharashtra, INDIA. Subjects having obvious refractive error were included to know the status of refractive error in that population. The added advantage of this area is that it is mixed population where people from all over India are situated hence vast and varied population is studied giving more reliable conclusion in Indian population.

### Age group- 20 to 50 years

All the subjects having refractive error were examined with keeping detailed records. Visual acuity was recorded on Snellen's E type chart. Subjects were asked to count dots or to note the direction of broken side of the bangle on snellens chart, as being uneducated. Refractive status was recorded by doing dilated static retinoscopy, examination of anterior segment and fundoscopy.

All subjects underwent cycloplegic refraction with Tropicamide I. P. 0.8% w/v and phenylephrine I. P. .5.0%w/v. chlorbutol I.P. 0.5% w/v. ophthalmic solution. Retinoscopy was performed only after total cycloplegia was assured by observing no pupillary reaction to light. Final refractive prescription was given only after post mydriatic test. Retinoscopy was conducted by single person to eliminate human error during the course of this threeyears study.

### Inclusion criteria

1. Bilateral myopia or hyperopia
2. Simple astigmatism
3. Compound astigmatism

### Exclusion criteria

1. Mixed astigmatism
2. Refractive error less than 0.5 D i.e. 0.25
3. Media opacity

In this study only obvious refractive error is taken under consideration for more fare results.

Only bilateral refractive error more than 0.5 diopter is taken in this study so that unilateral and minor (0.25) refractive error would be eliminated to come to more valid conclusion. Cases that have myopic and hyperopic astigmatism together as in mixed astigmatism are not taken in this study for simplification of final conclusion.

## Results

Out of 2000 ametropic eyes of 1000 illiterate adults from satellite city Navi Mumbai Maharashtra, India. 68% meaning 680 subjects were hyperopic and 32% meaning 320 subjects were having myopic refractive error. Majority of subjects were between age group of 25 to 35. Female were more symptomatic with headache as commonest complain. Out of these 68% hyperopic 442 subjects meaning 65% were female and 238 subjects meaning 35% were male.

## Discussion

This is retrospective cross sectional study where it reveals striking results of high prevalence of hyperopia in illiterate young adults. There are many references suggesting that extended near work has increased incidence of myopic refractive error. But hardly any references suggesting more outdoor activity meaning lack of near work has more prevalence of hyperopia. In my three years of refractive status study this data is showing marked prevalence of

hyperopia in illiterate (uneducated). The illiterate subjects come under that population where there is lack of near work related occupation like reading or computer and more likely to have occupation in outdoor environment.

Female were more symptomatic than male with headache being common complaint. It was more at 30 years of age or above. This study reveals some strong association with declining accommodative power that is said to exist in childhood. Complaint of decreased visual acuity for distant object was not observed. But decreased vision for near was common complaint in subjects who were in late 30's as early presbyopia. It was also observed in this study that there was wide prevalence of migraine in hyperopic middle aged female. 62% meaning 274.04 female were having migraine component. These subjects were undergoing migraine treatment and were referred by treating physician to rule out refractive error.

## References

- [1] Kathryn A. Rose, Jan G. Morgan, Jenny I.P., Annette Kifley, Son Huynh, Wayne Smith and Paul Mitchell (2008) *American academy of Ophthalmology*, 115 (8), 1279-1285.
- [2] Ekstrom C. and Haglund B. (1991) *Chronic open angle glaucoma and advanced visual field defects in a defined population*, 69, 574-80.
- [3] Larson E.K., Rydberg A.C. and Holmstrom G.E. (2003) *A population based study of the refractive outcome in 10 year old preterm and full term children*, 121, 1430-6.
- [4] Zhao J., Pan X. and Sui R., et al. (2000) *Am. J. Ophthalmol.*, 129, 427-35.
- [5] Naidoo K.S., Raghunandan A. and Mashige K.P., et al. (2003) *Refractive error and visual impairment in African children in south Africa.*, 44, 3764-70.
- [6] Maul E., Barroso S. and Munoz S.R. (2000) *Am. J. Ophthalmol*, 129, 445-54.
- [7] Murthy G.V., Gupta S.K. and Ellwein L.B. (2002) *Invest ophthalmol. vis. Sci.*, 43, 623-31.
- [8] Pokharel G.P., Negrel A.D., Munoz S.R. and Ellwein L.B. (2000) *Am. J. Ophthalmol.*, 129, 436-44.
- [9] Thorn, Frank O.D., Cruz A., Nio A.V., Machado A., Carvalho Ricardo A.C. (2005) *Optometry and vision science*, 82 (4), 267-272.