



ORIGINAL RESEARCH PAPER

Ophthalmology

PREVALANCE OF HORIZONTAL STRABISMUS FOUND IN PEDIATRIC POPULATION IN A TERTIARY CARE EYE HOSPITAL IN EASTERN NEPAL

KEY WORD: Strabismus, esotropia, exotropia

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ABSTRACT	PURPOSE: To determine the prevalence of horizontal strabismus in patients less than 15 years of age.
	METHODS: A retrospective analysis of data of children attending pediatric OPD from January 2016 to December 2020 was done. A proforma was made and following information was entered: history, clinical presentation, ocular examination including visual acuity, anterior and posterior segment evaluation, extraocular motility, cover tests, Prism bar cover test, Worth four dot test, Bagolini's striated glasses test, Lang test, cycloplegic refraction.
	RESULTS: A total of 1,17,700 attended the pediatric OPD in 5 year period, prevalence of horizontal strabismus was 1.43%. Exotropia was more common than esotropia. Concomitant deviation was more common than incomitant deviation.
	CONCLUSION: strabismus is frequently encountered in pediatric clinics now. Proper training of pediatric ophthalmologists is required to give excellent care to these children.

INTRODUCTION

The term strabismus is derived from the Greek word strabismos- to squint, to look obliquely or askance- and means ocular misalignment. This misalignment may be caused by abnormalities in binocular vision or by anomalies of neuromuscular control of ocular motility. Strabismus can be concomitant or incomitant. Concomitant means that the angle of deviation is same in all direction of gaze. In incomitant or paralytic strabismus angle of deviation varies in different direction of gaze. Strabismus is commonly encountered in ophthalmology clinics now. Prevalence of strabismus ranges from 0.5% to 5%. Strabismus not only has medical implication, but it also has social and psychological impact. Visual loss in childhood has a drastic negative impact on the overall development of children.

It was found to be the second most common cause of ocular morbidity in a study conducted at Kathmandu, Nepal by in 1100 school children. The prevalence and type of strabismus varies between various races. Baltimore pediatric eye disease study, found the prevalence of strabismus to be 3.3% in white and 2.1% in African American children. Esotropia and exotropia was found to be equal in both groups. Goals of pediatric strabismus management includes maximizing binocular single vision, maintaining visual acuity and improving psychological function of individual. Pediatric ophthalmologists play an important role in controlling strabismus by proper counselling of parents regarding the nature of their child's disease and guiding them in proper decision making.

After doing an exhaustive search we could not find a study elucidating the prevalence and type of strabismus in Nepalese children. The study aims to determine the prevalence of strabismus in children attending the pediatric OPD at SCEH, Lahan, Nepal.

METHODOLOGY

A retrospective analysis of patients attending the pediatric OPD between January 2016 to December 2020 at SCEH, Lahan, Nepal was done. Patients less than 15 years were included in the study. Ethical approval was obtained from the institutional review board. Case records of patients with diagnosis of strabismus was retrieved. A proforma was made and information regarding history of presenting illness,

clinical presentation, type of strabismus and clinical diagnosis was entered in the proforma. All patients were examined by pediatric ophthalmologists. Verbal patients were examined for visual acuity with Lea symbols, Snellen's chart or illiterate E test and preverbal patients were tested with preferential looking test or ability to fixate and follow. Cycloplegic refraction was done with atropine in less than 3 years age group and CTC (Cyclopentolate 1% - Tropicamide - Cyclopentolate 1% administered 5 minutes apart) in older patients. Refraction was performed by a senior optometrist. Thorough anterior segment and fundus examination was done. A complete work up of strabismus was done including cover tests, Prism bar cover test, extraocular movement assessment, Worth four dot test, Bagolini's striated glasses test, Titmus fly test. When a patient's visual acuity was insufficient to maintain fixation for distance corneal reflex tests like Hirschberg test and Krinsky test were used for measurement. Strabismus was defined if any tropia was present at near or distance, with or without spectacles and then classified according to the primary direction of tropia. Diagnosis was made on the basis of above examination.

RESULTS

A total of 1,17,177 patients attended the pediatric OPD from January 2016 to December 2020. Prevalence of horizontal strabismus was 1.43%. We found exotropia to be more common than esotropia. Exotropia accounted for 608 cases and esotropia accounted for 428 cases. Concomitant deviation was more common than incomitant deviation. The frequency of manifest strabismus 0.88 (%) was more than latent strabismus 0.55 (%).

DISCUSSION

Various prevalence rates have been reported by various population based studies. Studies based on prevalence rates in children of eastern Nepal are limited. We found the prevalence rates to be 1.6% with the exotropia/esotropia ratio to be 1.40. Our prevalence rate was lower when compared to African American and Caucasian population but similar to prevalence rates seen in east Asian population like in Japan, China, Korea.

Our study corroborated with the results found in a study conducted in South Korean children. Han et al evaluated a total of 5935 children for the prevalence of horizontal strabismus,

they estimated clinically significant horizontal strabismus to be 1.6%, 1.3% for clinically significant exodeviation and 0.3% for clinically significant esodeviation⁵. Another study conducted by Nepal et al found strabismus to be the second most common cause of ocular morbidity (1.6%) among school children in Kathmandu, Nepal. Alternate divergent squint was the commonest type of strabismus found in their study of 1100 children³. Study on prevalence of strabismus in young Singaporean children reported a prevalence rate of 0.8% with no sex predilection. The exotropia esotropia ratio was 7:1 with most exotropia being intermittent⁶. We report a greater frequency of strabismus in males but this may be biased as male children are still more favored in underdeveloping countries, so their medical needs are promptly addressed first. Matuso et al elucidated the prevalence of strabismus and amblyopia in a large number of Japanese school children. The percentage of children with strabismus was 1.28%, esotropia (0.28%) and exotropia (0.69%).

We found similar prevalence rates in comparison to east Asian population in other studies however when compared to western population our prevalence rate was lower. This may be due to racial differences. Baltimore pediatric eye disease study found that manifest strabismus affects 3.3% of white and 2.1% of African American children⁴. Esotropia and exotropia accounted for close to half of strabismus in each group. In the whites population rate of esotropia has been found to be more than exotropia⁸⁻¹⁰. However recent studies from Los Angeles and Sydney report that esotropia has become less common while exotropia has maintained its prevalence¹¹. Our study also reports greater prevalence of exotropia as compared to esotropia.

CONCLUSION

Strabismus is emerging as a common cause of ocular morbidity among children. Training of pediatric ophthalmologists need to be upgraded to tackle the load of cases. Proper education and counselling of parents and the need for long term follow up is also one of the roles of pediatric ophthalmologists. With timely diagnosis and proper treatment we can not only achieve good visual outcome but also have a great impact on the quality of life of children.

Limitation of study

Limitation of our study is its retrospective nature and also the fact that ours is a hospital based study so it might not give a true idea of epidemiology of disease in the community.

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Conflicts of interest

None

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