



## Paediatric Ocular Disorders in a Tertiary Care Rural Hospital of Central India (Birth to 15 Years)

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### Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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### ABSTRACT

**Introduction:** This study was done to know the pattern of paediatric ocular disorders presenting in outpatient department (OPD) of rural tertiary care hospital of central India.

**Methods:** A cross sectional study of Paediatric ocular disorder done at UPRIMS and R (Uttar Pradesh Rural Institute of Medical Sciences and Research, Saifai, Etawah) pediatric patients attending the OPD from January 2015 to June 2015. The patients of birth to 15 years of age were included in the study. The patient particular were noted. The patient name, age, sex, residence, visual acuity, type of refractive errors, mode and type of injury and diagnosis (Allergic Conjunctivitis, Refractive Error, Infective Conjunctivitis, Ocular Trauma, congenital NLD obstruction, Squint, Amblyopia, JOAG, Congenital Glaucoma, Corneal Ulcer, Conjunctival xerosis, Periorbital swelling) was made.

**Result:** The total number of 848 paediatric ocular disorder patients enrolled in the present study from eye OPD of UPRIMS & R, Saifai, UP from January 2015 to June 2015. The age of pediatric ocular disorder patients ranges from birth to 15 years of age. Out of these 542 patients (63.92%) were male and 306(36.08%) patients were female. The majority of Pediatric patients (406 childrens, 47.88%) seen in OPD were of 9-15 years. The most common ocular complain was allergic

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conjunctivitis in 277 cases (32.66%, 173 male,104 female), refractive error is seen in 260 cases (31.37%, 168 male, 92 female), infective conjunctivitis in 73 cases (8.60%, 40 male,33 female), ocular trauma in 71 cases (8.37%, 50 male, 21 female), congenital nasolacrimal duct obstruction(NLDO) in 53 cases (6.25%,35 males,18 female, bilateral in 32 cases and unilateral in 21 cases), squint in 31 cases (3.66%, 23 male, 8 female), amblyopia in 30 cases (3.53%,15 male, 15 female), Juvenile open angle glaucoma in 10 cases (1.17%, 5 male, 5 female), corneal ulcer in 10 cases (1.17%, 10 male), ocular swelling (with or without tumour) in 25 cases (2.95%, 20male, 5 female) , and conjunctival xerosis (Vit A deficiency) in 3 cases (0.35%,3 female), and congenital glaucoma in 5 cases (0.59%, 3 male,2 female).

*Keywords: Amblyopia; childhood disorders; ocular trauma; refractive error.*

## 1. INTRODUCTION

Pediatric ocular disorder form one of common reason of Ophthalmological OPD visits [1]. The Pediatric ocular disorders are important challenge not only as a diagnostic or treatment, but it has overall long term effect on the intellectual development, educational development and long pending life span [1-3].

Childhood patients are different from adult patients because they cannot give specific complain about their problems and if ocular problems diagnosis is delayed, it can lead to Amblyopia [1-3].

Most the ocular problems are treatable and hence decreased visual acuity or loss of vision is preventable. But due ignorance, lack of knowledge and careless attitude towards ocular problems in childhood, can lead to visual impairment or blindness [1-3].

Childhood blindness is second most common cause in terms of "blind years" [4]. Around the world approximately 70 Million blind years are caused by childhood blindness. Approximately one child become blind every one minute, that is equivalent to 500,000 children every year and point to be noted is that 60% of these patients die within 1 or 2 years after becoming blind [5]. The majority of these children's are from developing countries, amongst 1.5 million children's who are blind worldwide, 80% belong to Asia and Africa [6].

The different studies done on paediatric ocular problems have shown that eye problems in this group are highly important. A study conducted in Nigeria shown that refractive errors (25.7%), vernal conjunctivitis (25.3%), eye injuries (13.3%), and corneal inflammation (12.5%) were the important cause of paediatric ophthalmology

OPD visits [7]. Another study conducted in Tikrit, Iraqallergic conjunctivitis (27%), refractive error (14.6%), ocular trauma (13.8%), infection (12.7%), squint (12.1%) and nasolacrimal duct obstruction (NLDO, 5.2%) were the important cause of paediatric ophthalmology OPD visits [8]. Another population based study done in Ethiopia has found that 51.6% cases of paediatric ophthalmology OPD were of active trachoma [9]. But the trachoma trend has decreased drastically even in developing countries after early diagnosis and good availability of drugs for the treatment. Another study done in Ethiopia [2] reported conjunctivitis (35%), then ocular trauma (11.8%), refractive error (11.4%) and trachoma (7.6%). In central Ethiopia [2] Bilateral visual impairment (UCVA <6/18 in the better eye) was found in 119 children, and the causes were refractive errors (47.1%), keratitis/corneal opacity (16%), amblyopia (14.3%), ocular trauma (11.8%), cataract (6.3%), Glaucoma (2%) and uveitis (2%) cases of visits to paediatric ophthalmological problems in OPD [2].

So, it's clear from the above studies that Paediatric ophthalmic disorders prevalence varies in different geographical locations. Knowledge of the prevalence of paediatric disorders is very helpful in organising disease prevention control programme of particular area and also laying down the treatment guidelines for that particular area. The treatment options include correction of refractive error, amblyopia treatment, squint correction, convergence exercises and ocular surgeries [10].

Aim of our study is to assess the prevalence of paediatric ocular disorders in central India. The secondary objective can be to find out paediatric ocular disorders relation between different age and sex. There is no such study done in rural India so far the knowledge of paediatric ocular disorders.

## 2. MATERIALS AND METHODS

A cross sectional study of Paediatric ocular disorder done at UPRIMS and R (Uttar Pradesh Rural Institute of Medical Sciences and Research, Saifai, Etawah) paediatric patients attending the OPD from January 2015 to June 2015. The patients of birth to 15 years of age were included in the study. The patient particular were noted. Refraction was done by the Optometrist. If required cycloplegia was done using homatropine or cyclopentolate. Pupil examined with torch light and anterior segment examination was done using slit lamp.

Posterior segment examination was performed after dilating the pupil using 90 diopter lens with slit lamp and indirect ophthalmoscope by any of the author or co author. The diagnosis and patient particular noted in the enrolment proforma. The clinical diagnosis classified by any one of these (Allergic Conjunctivitis, Refractive Error, Infective Conjunctivitis, Ocular Trauma, congenital NLD obstruction, Squint, Amblyopia, JOAG, Congenital Glaucoma, Corneal Ulcer, Conjunctival xerosis, Periorbital swelling)

The patients were stratified into three different age subgroups (<5 years, 6-10 years and 11-15 years). The study follows guidelines of declaration of Helsinki and is started after clearance from ethical clearance from Institutional ethical committee.

### 2.1 Statistical Analysis

Mean and standard deviations were calculated. Means and standard deviations compared for calculating most common disorder. In order to assess differences between the different sexes, independent samples t-test and Chi-square test were conducted.

## 3. RESULTS

The total number of 848 paediatric ocular disorder patients enrolled in the present study from eye OPD of UPRIMS & R, Saifai, UP from January 2015 to June 2015. The age of paediatric ocular disorder patients ranges from birth to 15 years of age. Out of these 542 patients (63.92%) were male and 306 (36.08%) patients were female. The majority of Pediatric patients (406 childrens, 47.88%) seen in OPD were of 9-15 years (Table 2). The most common ocular complain was allergic conjunctivitis in 277

cases (32.66%, 173 male,104 female), refractive error is seen in 260 cases (31.37%, 168 male, 92 female), infective conjunctivitis in 73 cases (8.60%, 40 male,33 female), ocular trauma in 71 cases (8.37%, 50 male, 21 female), congenital nasolacrimal duct obstruction (NLDO) in 53 cases (6.25%, 35 males, 18 female, bilateral in 32 cases and unilateral in 21 cases), squint in 31 cases (3.66%, 23 male, 8 female), amblyopia in 30 cases (3.53%,15 male, 15 female), Juvenile open angle glaucoma in 10 cases (1.17%, 5 male, 5 female), corneal ulcer in 10 cases (1.17%, 10 male), ocular swelling (with or without tumour) in 25 cases (2.95%, 20 male, 5 female) , and conjunctival xerosis (Vit A deficiency) in 3 cases (0.35%, 3 female), and congenital glaucoma in 5 cases (0.59%, 3 male, 2 female). (Table 1, Fig. 1).

## 4. DISCUSSION

The present study was conducted to know the paediatric ocular disorder as its data regarding central Indian population is lacking. It is very important to know the local prevalence of ocular disorder as it is different in different geographical parts. The importance is further increased as the children are not cooperative for examination, hence it become difficult to diagnose disorders and also children has poor compliance for treatment given [2].

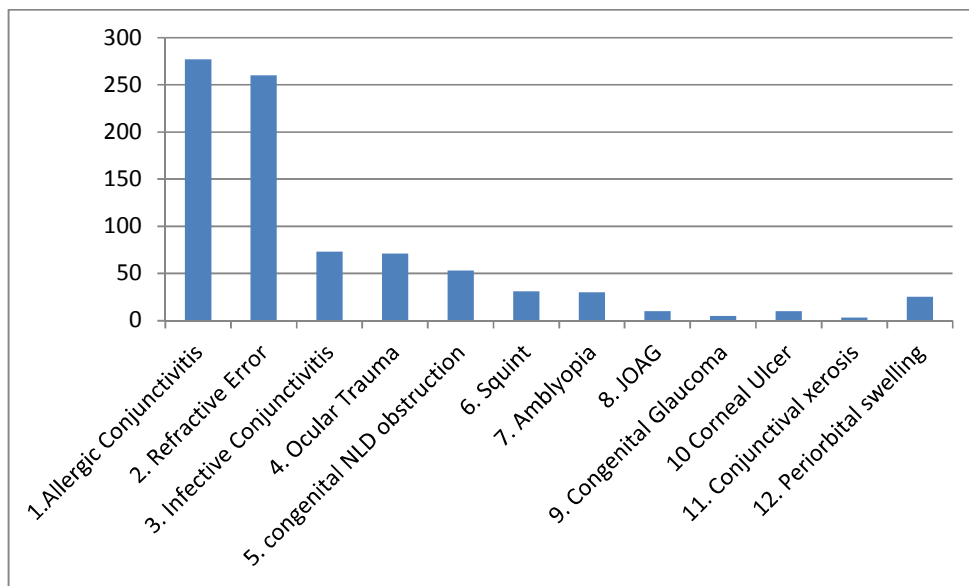
In our study, 63.92% were male and 36.08% were female. These findings were similar to study done by Sethi S et al [10] at Peshawar, Pakistan where 60.6 male and 39.1% were female [8]. The higher frequency of the ophthalmology OPD visits was seen image group of 11-15 years (409 patients, 48.23%) that was similar to the study done by Onakpora et al. in Nigeria [4]. Diseases of conjunctiva was seen commonly in our study (32.66% allergic conjunctivitis, 8.60% infective conjunctivitis) with allergic conjunctivitis is the being the most common ophthalmic diagnosis 32.66% and is followed by refractive errors 31,37%. The cause of higher incidence of allergic conjunctivitis can be because of the tropical climate with long summer weather and low socio economic status of the patients in the population covered by the Institution. Dusty polluted environment, rural living may contribute to development of chronic allergic conjunctivitis. Various studies reported allergic conjunctivitis as the most common ocular disorder. [1-8]. So, it should be emphasised that proper diagnosis and management can shorten

the duration of the symptoms and will help in decreasing the loss of school days.

In this study, refractive errors were present in 260 (31.37%) including different types of simple myopia, hypermetropia, astigmatism and compound refractive errors. The most common age group for refractive error was 11-15 years (150 patients, 17.69%). The cause for higher prevalence in 11-15 years age is the ability of this age children to interact and report their problem themselves compare the lower age group. Onakpoya et al. [4] reported 14.3% refractive error, Sethi et al found 12.7% refractive

error [10], which is comparable to our study. So the refractive error is ranging between 12% to 31%, which is comparable to reported in present study. The incidence of refractive error may be under reported as children's of lower age group are not very cooperative and not aware about their low vision, so they do not come to hospital for examination.

In our study, corneal and sclera diseases accounted for only 9.55% (71 patients ocular trauma, 10 cases corneal ulcer). The most common cause of corneal scar was found to be penetrating ocular injury. [11]



**Fig. 1. Bar diagram to show different types of childhood disorders noted in this study**

**Table 1. Showing different types of ocular disorders in childrens noted in this study and sex distribution of ocular disorder**

	Total cases	% of total cases	Males	Females
1. Allergic Conjunctivitis	277	32.66	173	104
2. Refractive Error	260	31.37	168	92
3. Infective Conjunctivitis	73	8.60	40	33
4. Ocular Trauma	71	8.37	50	21
5. congenital NLD obstruction	53	6.25	35	18
6. Squint	31	3.66	23	8
7. Amblyopia	30	3.53	15	15
8. JOAG	10	1.17	5	5
9. Congenital Glaucoma	5	0.59	3	2
10. Corneal Ulcer	10	1.17	10	0
11. Conjunctival xerosis	3	0.35	0	3
12. Periorbital swelling	25	2.95	20	5
Total	848	100	542	306

**Table 2. Shows mean age distribution of ocular disorders in children**

Disorder/Age group	0-1year	2-5 year	6-10 year	11-15 year	Total cases
1.Allergic Conjunctivitis	0	47	80	150	277
2. Refractive Error	0	60	70	130	260
3. Infective Conjunctivitis	15	20	22	16	73
4. Ocular Trauma	0	0	20	51	71
5. congenital NLD obstruction	53	0	0	0	53
6. Squint	15	10	4	2	31
7. Amblyopia	0	0	10	20	30
8. JOAG	0	0	0	10	10
9. Congenital Glaucoma	5	0	0	0	5
10 Corneal Ulcer	0	0	0	10	10
11. Conjunctivalxerosis	0	0	0	3	3
12. Periorbital swelling	0	0	8	17	25
Total	88	137	214	409	848

In our study, squint was seen in 3.66% (31 patients). In a study done by Sethi et al reported incidence of 8.06% [10]. In a study done in Katmandu, Nepal reported the the percentage of squint around 1.6% [12]. Determinants of strabismus diagnosis are important because of the amblyogenic nature of certain concurrent squint [13]. Esotropia is also more likely to be amblyogenic than exotropia [14,15]. In our study lower percentage of squint compared from Sethi et al [10] can be because lack of awareness and knowledge regarding squint in rural population covered by the hospital.

Vitamin A deficiency signs were seen in 3 children in form of bitot spots (3 children's).The government of India has incorporated Vitamin A prophylaxis programme along with immunisation in age group of 6 months to 5 years. So there is decreased incidence of Vitamin A deficiency related disorders in India. Interestingly all the Vit A deficiency children were female and presented in 11-15 year age group. This represents lack of care to female child in rural India and late reporting due to negligence, low socioeconomic status.

The total no of studies on childhood ocular disorders are limited in rural India, so limited comparative studies considered in the discussion from India.

## 5. CONCLUSION

In conclusion, the childhood ocular disorders are very difficult to diagnose and manage as they cannot speak about their problems due to less developmental age and are not cooperative for examination. The four common causes of paediatric ocular disorder in our study were

allergic conjunctivitis, refractive error, infective conjunctivitis and ocular trauma. Most of the ocular problems in children are treatable and hence decreased visual acuity or loss of vision is preventable. But due ignorance, lack of knowledge and careless attitude towards ocular problems in childhood, it can lead to visual impairment or blindness [1-3]. The importance of creating awareness based upon the regional common aetiology will help in early diagnosis and prevention of severe visual loss in children from amblyopia and other ocular disorders. Health education will be helpful in preventing ocular trauma in childhood and early referral to eye specialist.

## CONSENT

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Nwosu SNN: Childhood eye diseases in Anambra State, Nigeria. Nigeria J Ophthalmol. 1999;7:34–8.
2. Mehari: Pattern of childhood ocular morbidity inrural eye hospital, Central Ethiopia. BMC Ophthalmology. 2014;14:50
3. Rai Salma KC, Hari T, Malla BA, Kabindra B. Clinical profile of pediatric ocular morbidity in a tertiary eye care centre in western region of Nepal. Ann Pediatr Child Health. 2015;3(5):1070.

4. Onakpoya OH, Adeoye AO. Childhood eye diseases in southwestern Nigeria: A tertiary hospital study. *Clinics (Sao Paulo)*. 2009;64:947-952.
5. World Health Organization: Vision 2020 action plan 2006–2010;14:2:20:28–32.
6. World health organization: Preventing blindness in children. Report of WHOIAPB scientific meeting. Geneva: WHO/PBL/00.77. 2000;9.
7. Isawunmi MA: Ocular disorders amongst school children in Ilesa east Local Government area. Osun State, Nigeria: National Postgraduate Medical College of Nigeria; Dissertation; 2003.
8. Salmansheaps MS: Pediatric eye diseases among children attending outpatient eye department of Tikrit Teaching Hospital. *Tikrit J Pharm Sci*. 2010;7(1):95–103.
9. Abebe B, Wondu A: Prevalence of trachoma and its determinants in Dalocha District, central Ethiopia. *Ophthalmic Epidemiol*. 2001;8(2–3):119-125.
10. Sethi S, Sethi MJ, Iqbal R, Khan T. Pattern of common eye diseases in children attending outpatient eye department, Khyber Teaching hospital, Peshawar. *J Med Sci*. 2008;16:99-101.
11. Kuhn F, Morris R, Witherspoon CD: Birmingham eye trauma terminology (BETT): Terminology and classification of mechanical eye injuries. *Ophthalmol Clin North Am*. 2002;15(2):139–43.
12. Nepal BP, Koirala S, Adhikary S, Sharma AK. Ocular morbidity in school children in Kathmandu. *Br J Ophthalmol*. 2003;87:531-534.
13. Robaei D, Rose KA, Ojaimi E, Kifley A, Martin FJ, Mitchell P. Causes and associations of amblyopia in a population-based sample of 6-year-old Australian children. *Arch Ophthalmol*. 2006;124:878-884.
14. Mohny BG. Common forms of childhood esotropia. *Ophthalmology*. 2001;108:805-809.
15. Mohny BG, Huffaker RK. Common forms of childhood exotropia. *Ophthalmology*. 2003;110:2093-2096.

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