

Original Research Article

Paediatric ocular disorders in a tertiary care rural hospital of central India (birth to 15 years)

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 particulars 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 children, 47.88%) seen in OPD were of 9-15 years. The most common ocular complaint 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 (Vitamin A deficiency) in 3 cases

33 (0.35%,3 female), and congenital glaucoma in 5 cases (0.59%, 3 male,2
34 female).

35 **Keywords:** Amblyopia , childhood disorders, ocular trauma, refractive error.

36 INTRODUCTION

37 Pediatric ocular disorder form one of common reason of Ophthalmological
38 OPD visits[1]. The Pediatric ocular disorders are important challenge not only
39 as a diagnostic or treatment , but it has overall long term effect on the
40 intellectual development, educational development and long pending life span.
41 [1-3].

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

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

49 Childhood blindness is second most common cause in terms of “blind
50 years”. [4] Around the world approximately 70 Million blind years are caused by
51 childhood blindness. Approximately one child become blind every one minute,
52 that is equivalent to 500,000 children every year and point to be noted is that
53 60% of these patients die within 1 or 2 years after becoming blind.[5] The
54 majority of these children’s are from developing countries, amongst 1.5 million
55 children’s who are blind worldwide, 80% belong to Asia and Africa.[6]

56 The different studies done on paediatric ocular problems have shown that eye
57 problems in this group are highly important. A study conducted in Nigeria
58 shown that refractive errors (25.7%), vernal conjunctivitis (25.3%), eye injuries
59 (13.3%), and corneal inflammation (12.5%) were the important cause of
60 paediatric ophthalmology OPD visits.[7] Another study conducted in Tikrit,Iraq
61 allergic conjunctivitis (27%), refractive error (14.6%), ocular trauma (13.8%),
62 infection (12.7%), squint (12.1%) and nasolacrimal duct obstruction (NLDO,
63 5.2%) were the important cause of paediatric ophthalmology OPD visits.[8]
64 Another population based study done in Ethiopia has found that 51.6% cases

65 of paediatric ophthalmology OPD were of active trachoma.[9] But the
66 trachoma trend has decreased drastically even in developing countries after
67 early diagnosis and good availability of drugs for the treatment. Another study
68 done in Ethiopia[2] reported conjunctivitis (35%), then ocular trauma(11.8%),
69 refractive error (11.4%) and trachoma (7.6%). In central Ethiopia[2]Bilateral
70 visual impairment (UCVA < 6/18 in the better eye) was found in 119 children,
71 and the causes were refractive errors (47.1%), keratitis/corneal opacity (16%),
72 amblyopia(14.3%), ocular trauma (11.8%), cataract (6.3%), Glaucoma (2%) and
73 uveitis (2%) cases of visits to paediatric ophthalmological problems in OPD.[2]

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

81 Aim of of our study is to assess the prevalence of paediatric ocular disorders in
82 central India. The secondary objective was to find out relation between
83 prevalence with age and sex. There is no such study done in rural India so far
84 the knowledge of paediatric ocular disorders.

85 **Materials and Methods**

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

93 Posterior segment examination was performed after dilating the pupil using
94 90 diopter lens with slit lamp and indirect ophthalmoscope by any of the
95 author or co author. The diagnosis and patient particular noted in the
96 enrolment proforma. The clinical diagnosis classified by any one of these
97 (Allergic Conjunctivitis, Refractive Error, Infective Conjunctivitis, Ocular Trauma,

98 congenital NLD obstruction, Squint, Amblyopia, JOAG, Congenital Glaucoma,
99 Corneal Ulcer, Conjunctival xerosis, Periorbital swelling)

100 The patients were stratified into three different age subgroups (<5 years, 6-10
101 years and 11-15 years). The study follows guidelines of declaration of Helsinki
102 and is started after clearance from ethical clearance from Institutional ethical
103 committee. Statistical analysis done using pair and unpair t-test.

104 **RESULTS**

105 The total number of 848 paediatric ocular disorder patients enrolled in the
106 present study from eye OPD of UPRIMS & R, Saifai, UP from January 2015 to
107 June 2015. The age of paediatric ocular disorder patients ranges from birth to
108 15 years of age. Out of these 542 patients (63.92%) were male and 306
109 (36.08%) patients were female. The majority of Pediatric patients (406
110 childrens, 47.88%) seen in OPD were of 9-15 years . The most common ocular
111 complain was allergic conjunctivitis in 277 cases (32.66%, 173 male, 104
112 female), refractive error is seen in 260 cases (31.37%, 168 male, 92 female),
113 infective conjunctivitis in 73 cases (8.60%, 40 male, 33 female), ocular trauma
114 in 71 cases (8.37%, 50 male, 21 female), congenital nasolacrimal duct
115 obstruction (NLDO) in 53 cases (6.25%, 35 males, 18 female, bilateral in 32 cases
116 and unilateral in 21 cases) , squint in 31 cases (3.66%, 23 male, 8 female),
117 amblyopia in 30 cases (3.53%, 15 male, 15 female), Juvenile open angle
118 glaucoma in 10 cases (1.17 %, 5 male, 5 female), corneal ulcer in 10 cases
119 (1.17%, 10 male), ocular swelling (with or without tumour) in 25 cases (2.95%,
120 20 male, 5 female) , and conjunctival xerosis (Vit A deficiency) in 3 cases
121 (0.35%, 3 female), and congenital glaucoma in 5 cases (0.59%, 3 male, 2
122 female).

123 Table 1 and 2 shows tabular representation of results.

124 Figure 1 represents bar diagram of different ocular disorders showing
125 comparison in male-female and different age subgroups.

126 **DISCUSSION**

127 The present study was conducted to know the paediatric ocular disorder as its
128 data regarding central Indian population is lacking. It is very important to know
129 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 in age 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 Instiuttion. 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].

164

165

166

167 In our study, squint was seen in 3.66%(31 patients). In a study done by Sethi et
168 al reported incidence of 8.06%.[10]. In a study done in Katmandu, Nepal
169 reported the the percentage of squint around 1.6%. [12]. Determinants of
170 strabismus diagnosis are important because of the amblyogenic nature of
171 certain concurrent squint [13]. Esotropia is also more likely to be amblyogenic
172 than exotropia [14,15].The higher incidence of squint (3.66%) can be because
173 of dedicated pediatric ophthalmology clinic in the department in authors
174 hospital.

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

182 **Conclusion**

183 1. The 4 common causes of paediatric ocular disorder in our study were allergic
184 conjunctivitis, refractive error, infective conjunctivitis and ocular trauma
185 respectively.

186 2. The importance of creating awareness based upon the regional common
187 aetiology will help in early diagnosis and prevention of severe visual loss in
188 children from amblyopia and other ocular disorders.

189 3. Health education will be helpful in preventing ocular trauma in childhood.

190 4. This study will be helpful in in planning any programme for the prevention
191 like Vitamin A supplementation, school health programmes and making
192 treatment guideline on regional basis.

193

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 in rural eye hospital, Central Ethiopia. *BMC Ophthalmology* 2014 14:50.
3. Rai Salma KC, Hari T, Malla BA, Kabindra B (2015) Clinical Profile of Pediatric Ocular Morbidity in a Tertiary Eye Care Centre in Western Region of Nepal. *Ann Pediatr Child Health* 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 M J, 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

229 associations of amblyopia in a population-based sample of 6-year-old
 230 Australian children. Arch Ophthalmol. 2006; 124: 878-884.
 231 14. Mohny BG. Common forms of childhood esotropia. Ophthalmology.
 232 2001; 108: 805-809.
 233 15. Mohny BG, Huffaker RK. Common forms of childhood exotropia.
 234 Ophthalmology. 2003; 110: 2093-2096.

235

236 **Table 1 . Showing different types of ocular disorders in childrens noted in this study and break up**
 237 **of each between male and female**

	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. Conjunctivalxerosis	3	0.35	0	3
12. Periorbital swelling	25	2.95	20	5
total	848	100	542	306

238

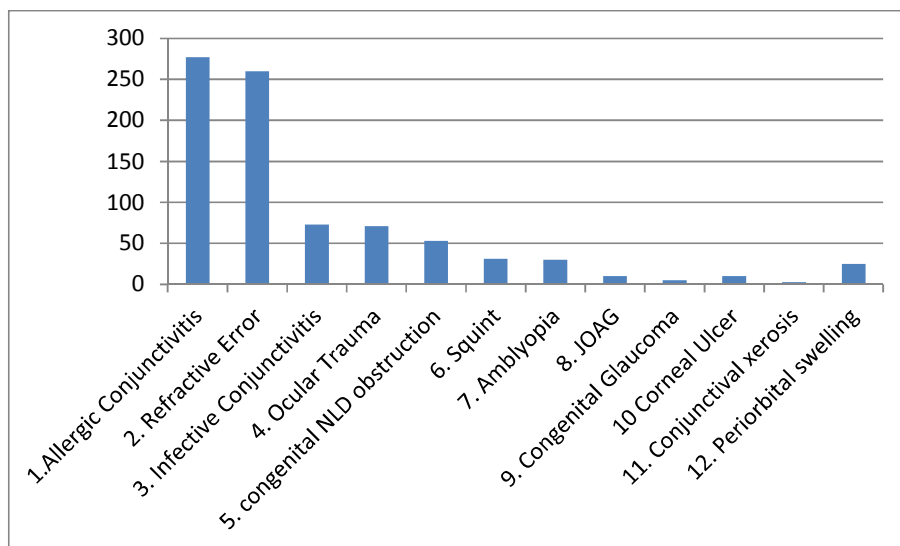


Figure 1 . Bar diagram to show different types of childhood disorders noted in this study.

Table 2. Shows different types of ocular disorders in childhood in different age groups

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