Original Research Article

Retrospective Analysis of Children Coming for First Eye Check up in a Tertiary Center

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Abstract:

Purpose: To detect an ideal age of screening for amblyopia or its risk factors.

Method: 500 patients below 16 years of age, who presented at a tertiary eye hospital for their first eye checkup, were included in the study. They were divided according to the age group of ≤ 4 and > 4 years, and ≤ 7 and > 7 years with the aim of detecting an ideal age of screening for amblyopia.

Result: Mean age at presentation was 5.24 ± 3.58 years (standard deviation; SD). Though 75 patients were asymptomatic, ocular abnormalities were found in 30 (40%) of them. In the whole group of 500, abnormalities were found in 350 children (70%). Spectacles were prescribed in 218 (43.6%) patients with mean age of 6.07 ± 3.09 (SD) years. Total number of amblyopic children was 38 (7.6%) with mean age of 5.98 ± 3.41 years. In the ≤ 4 years age group, amblyopia was in 9 (23.68%)(mean age 2.13 years) and prescribable refractive error was in 46 (21.1%)(mean age 2.55 years). Mean age of 61 (12.2%) strabismic patients was 4.29 years and 16 (3.2%) pediatric cataract patients were 3.48 years.

Conclusion: Significant patients had amblyopia or risk factors for it at a mean age of around 3 years. So the ideal age for first routine eye checkup for all children should be around 3 years.

Keywords: first, eye checkup, amblyopia, children, India, World.

Introduction

The primary aim of childhood eye screening is the detection of reduced vision due to amblyopia or risk factors for amblyopia enabling diagnosis at an age which allows timely intervention. However, a nationwide review of the availability of vision screening programs for children is still lacking.

A medline search (with the words - first, eye checkup, amblyopia, children, India, World) for the age criterion for first eye checkup got no result. In literature, there are few studies regarding importance of routine vision checkup in children at the first school going age.[1-5] But there is no consensus or guideline regarding the age of first eye checkup and no valid proforma, screening criteria or method available.

As most of the time there is no symptom of vision loss in children, they should be screened routinely at a particular age so that amblyopia or its risk factors could be treated or prevented as early as possible. Once the age of neuro-developmental plasticity is missed, the chances of getting back normal vision are lost. It will reduce a huge burden on the family as well as society as a whole. Because amblyopia has a both physical and psycho-social impact on a child in the future.[2] But if the routine vision screening is done very early, there are chances of high false positive results.[3] That will increase unnecessary burden on a family and will not be cost-effective. Because in children vision assessment is not similar with that of adults and there is a period of emmetropisation in normal visual development at childhood. So an ideal age should be chosen for the first eye checkup when risk factors for amblyopia can be properly diagnosed and measures can be taken to prevent it or treat it, to reduce the burden of visual handicap on a society.

Aim: To detect an ideal age of screening for amblyopia or its risk factors.

Methods: This was a retrospective descriptive type of analysis done in a tertiary eye care hospital in West Bengal.

Case selection:

1. Patients below 16 years of age
2. First time eye check up
3. Patients who had their first eye check up with another ophthalmologist within the previous one month of their presentation to this center and either the parents wanted a second opinion or the ophthalmologist himself had referred to a pediatric ophthalmology department.

Total 500 patients for first eye check-up were included in the study from Nov 2017 up to May 2018.

Examination:

Vision was tested by Snellen's chart in case of older children and by Lea symbol for preschoolers and others who were not letter trained. Fixation and following for light and objects, and fixation preference were noted for infants.

Cycloplegic refraction was done routinely for all, even for older children having vision 6/6 on Snellen's chart. Different age appropriate cycloplegic agents used in our study are described in the table - 1.

Refractive error was evaluated first by manual retinoscopy by trained pediatric optometrist and then cross checked by autorefractometer (TOPCON KR-800, Topcon Corporation, Tokyo, Japan). Spectacles were prescribed by the single pediatric ophthalmologist.

For small children where subjective refraction was not possible, spectacles were prescribed according to the American Association for Pediatric Ophthalmology and Strabismus guidelines (Table - 2).[6] For older children subjective acceptance (Post Mydriatic Test or PMT) was done before final prescription after 48 hours (for Cyclopentolate-Tropicamide-Cyclopentolate or CTC and Homatropine-Tropicamide or HT) and 2 weeks (for Atropine) of doing cycloplegic refraction.

Anterior segment was evaluated by slit lamp in case the child could sit in the chair unit. Otherwise indirect ophthalmoscopy was used for that. Retina was evaluated by indirect ophthalmoscope for all. For small child finger tension was used for intra-ocular pressure evaluation.

For older one, Goldmann's Applanation Tonometry was used. Tonopen was used when needed. Gonioscopy was not done routinely for all except when glaucoma was suspected. For measuring angle of deviation in strabismus, prism alternate cover test (PACT) by loose prisms and corneal reflection (CR) tests were done. Binocularity was checked by worth four dot test (WFDT) and Titmus fly test (FLY Stereo Acuity Test with Lea Symbols, Vision assessment Corporation).

Division of study group according to the age of ≤ 4 years, > 4 years, ≤ 7 years, > 7 years:

Although there is emerging evidence that neuroplasticity extends into adulthood, allowing some benefit from amblyopia therapy in later life, for most children the best chance of attaining full visual potential is timely intervention before the age of 6 - 7 years.[1], [7] So initiating treatment before the patient is 7 years old will yield greater improvement and stability of visual acuity compared with treatment initiated after 7 years of age.[8 - 10] For this reason we divided the whole study group by the age of 7 years.

Normal visual acuity both for distance and near is necessary in the age group of 3 to 4 years, as children start to go to school in this age group. Vision assessment and complete ocular examination is also much easier and reliable in this age group. For this reason we divided the whole study group by the age group of 4 years. So the ultimate goal of dividing the study group by age of 4 and 7 years, was to detect an ideal age for screening when accurate testing is feasible and timely intervention for amblyopia is possible.

Definitions:

Amblyopia was defined as reduced best corrected vision in either or both eyes in the absence of an organic cause. In case of small children and developmental delay, who could not respond to vision chart, amblyopia was detected looking at the response to monocular occlusion or fixation preference along with the presence of amblyogenic factors (refractive errors, strabismus, media opacity and eyelid ptosis). For older children who could respond to vision chart, unilateral amblyopia was diagnosed on the basis of difference in best corrected visual acuity of two lines or more between the two eyes in the absence of any organic cause and best corrected visual acuity in the worse eye being <20/30 (or equivalent). Bilateral amblyopia was defined as bilateral decreased best corrected visual acuity <20/30 (or equivalent).

In the calculation of amblyopia, we included only refractive and strabismic group as these are the two most common causes of amblyopia; excluding media opacity as we have taken pediatric cataract as a separate entity. We got no patient of amblyopia from ptosis.

Prescribable refractive error was defined as that refractive error of an eye for which spectacle is required to have clear vision to prevent or treat amblyopia (Table - 2).

Strabismus or squint was defined as the presence of misalignment between the visual axis of the eyes (as evidenced by a cover test or corneal reflection test).

Pediatric cataract was defined as pediatric lens opacities, may be associated with congenital or acquired etiologies.

Pediatric glaucoma was defined as IOP related damage to the eye, rather than being based solely on optic-nerve criteria (IOP > 21 mm Hg, optic disc cupping, corneal findings of Haab's striae and / or increased corneal diameter, reproducible visual field defect consistent with glaucomatous optic neuropathy or progressive myopia).[11]

Any child with history of watering, frequent blinking or photophobia was observed for corneal status (diameter, clarity, Haab's striae), optic disc cupping and intraocular pressure (IOP) measurement by Tono-Pen (Tono-Pen AVIA, Reichert Inc.). Examination was done at outpatient department (OPD) and if required in operation theater (OT) for examination under anesthesia (EUA) for confirmation in small children. Pachymetry, axial length and direct gonioscopy by Swan-Zacob lens (Ocular Instruments, inc.) were carried out in EUA in addition to IOP measurement by Tonopen, anterior and posterior segment evaluation. For older children who could cooperate, IOP was measured by Goldmann's applanation tonometer, and gonioscopy was done by four mirror gonioscope (Posner gonioprism, Ocular instruments, inc).

Nystagmus was defined as the presence of involuntary rhythmic to-and-fro eye movements associated with a slow phase.

Posterior segment abnormalities included those of the optic disc and retina like optic disc hypoplasia, congenital optic disc anomalies, optic disc coloboma, retino-choroidal coloboma, foveal hypoplasia, retinopathy of prematurity, retinal dystrophies, albinotic fundus etc.

Statistical analysis was done using Stata 14.0 (StataCorp LP, College Station, Texas, USA) software.

Results:

Out of total 500 pediatric patients who presented for the first eye checkup at our OPD, average age at presentation was 5.24 ± 3.58 (standard deviation or SD) years. Age wise distribution of patients is presented in table-3. Minimum age was 1 month and maximum was 15.7 years. 275 (55%) children were male and 225 (45%) were female.

Out of 500 patients, 116 (23.20%) patients were referred by different doctors at an average age of 3.37 ± 3.29 (SD) years. Referral from pediatrician was highest (70; 60.34%), followed by ophthalmologist (42; 36.20%), lastly by others (4; 3.44%) (Figure - 1).

75 (15%) patients came for just a routine eye checkup without any complaint. Their average age was 5.2 ± 3.59 (SD) years. Surprisingly ocular abnormalities were found in 30 of them (40%, 95% confidence interval or CI 39.37 - 40.62). 425 (85%) patients came with some complaints at an average age of 5.28 ± 3.58 (SD) years (flow chart - 1). In the whole study group, ocular problems were found in 350 patients (70%, 95% CI 69.91 - 70.08).

Prevalence of ocular abnormalities and it's age wise distribution are presented in table-4 and table-5. From the table-4 it is very obvious that, all of the problems were detected at an average age of less than 7 years except myopia where it was 7.59 ± 3.75 (SD) years. Prevalence of amblyopia and prescribable refractive error was 7.6% (95% CI 7.57 - 7.67) and 43.6% (95% CI 43.5 - 43.69) respectively with the average age of 5.98 ± 3.41 (SD) years and 6.07 ± 3.09 (SD) years respectively. The table-5 is showing that according to the division of the whole study group by the age of 7 years, majority of problems got detected in the age group of ≤ 7 years. For amblyopia and refractive error including myopia, hypermetropia and astigmatism, mean age was around 4 years. And for squint, pediatric cataract and glaucoma, nystagmus and posterior segment problem, mean age was around 2 to 3 years.

Now dividing the whole group by the age of 4 years, although prevalence of amblyopia and refractive error including myopia, hypermetropia and astigmatism, was higher in the age group of > 4 years, but it was not negligible at all in the age group of ≤ 4 years. For amblyopia and refractive error it was 23.68% and 21.1% respectively with the mean age of 2.13 ± 1.11 (SD) years and 2.55 ± 1.18 (SD) years respectively. For other problems majority was in the age group of ≤ 4 years.

Out of 38 amblyopic patients 19 were anisometropic and 19 were strabismic amblyopia (excluding amblyopia from media opacity). Average age of anisometropic amblyopia was 5.41 ± 2.68 (SD) years and of strabismic amblyopia was 6.53 ± 3.98 (SD) years with minimum of 4 months and maximum of 15.7 years. We got no ptosis induced amblyopia.

Among 61 squint children, total number of esotropia was 31 (50.81 %, 95% CI 50.01 - 51.62) and exotropia was 29 (47.54 %, 95% CI 46.73 - 48.34) with average age of 4.74 ± 3.48 (SD) years and 3.8 ± 3.70 (SD) years respectively. One was vertical squint.

We compared referred group of children with the non-referred group regarding the prevalence and average age of different ocular abnormalities (Table 6 and 7). The prevalence of amblyopia in referred group was 9.48% (95% CI 9.34 - 9.63) and that in non-referred group was 7.03% (95% CI 7.00 - 7.06) with the average age of 6.66 ± 4.17 (SD) years and 5.70 ± 3.10 years respectively. Prevalence of prescribable refractive error was 28.45% (95% CI 28.10 - 28.79) and 48.18% (95% CI 48.05 - 48.30)

respectively in the referred and non-referred group with the average age of 5.2 ± 3.03 (SD) years and 6.24 ± 3.09 (SD) years respectively. Percentage values of abnormalities were higher in the referred group except refractive error because of the obvious reason of screening by doctors. For refractive error, many times referring ophthalmologists might have prescribed the spectacles on their own. Whereas in non-referred group it was not possible. That may be the reason of higher amount of refractive error in

non- referred group. Using ANOVA analysis, we conclude that there was no difference between mean age of the two groups regarding both amblyopia (p = 0.24 > 0.05) and prescribable refractive error (p = 0.88 > 0.05) (p = 0.05 was taken as level of significance). As a whole, mean age was < 7 years in all the abnormalities. So this sub-group analysis shows that referred group has not affected the results of total group analysis.

Table 1: Cycloplegic agents used for different age group

Patient's age	Eye drop/ointment	Method
Less than 6 months	ROP drops [3 ml 1% Tropicamide and 1 ml 10% Phenylephrine (Drosyn)]	Applied 2-3 times, 10 minutes apart.
6 months to 1 year	Tropicamide (1%) drop	Applied 2-3 times, 10 minutes apart.
More than 1 year	Cyclopentolate (C) (1%) and Tropicamide (T) (1%) drop	C →T → C (spaced 5 minutes apart). Retinoscopy at 40 minutes later from the last drop.
Children with neurological disorders, history of convulsion	Homatropine (H) (2%) and Tropicamide (T) (1%) drop	H →T (spaced 5 minutes apart). Retinoscopy at 40 minutes later from last drop.
Inadequate cycloplegia / ciliary spasm	Atropine ointment (1%)	Not applied on regular basis. Applied 2-3 days before retinoscopy, 3 times daily.

Table 2: American Association for Pediatric Ophthalmology and Strabismus guidelines for prescription of glasses for children

Condition	Diopters beyond which glasses should be prescribed		
	Age 0- 1 year	Age 1- 2 years	Age 2-3 years
Isometropia			
Myopia	≥ - 4.00	≥ - 4.00	≥ - 3.00
Hyperopia (no eso)	≥ + 6.00	≥ + 5.00	≥ + 4.50
Hyperopia (eso)	≥ + 2.00	≥ + 2.00	≥ + 1.50
Astigmatism	≥ 3.00	≥ 2.50	≥ 2.00
Anisometropia			
Myopia	≥ - 2.50	≥ - 2.50	≥ - 2.00
Hyperopia	≥ + 2.50	≥ + 2.00	≥ + 1.50
Astigmatism	≥ 2.50	≥ 2.00	≥ 2.00

Table 3: Distribution of patients according to age of 4 years and 7 years

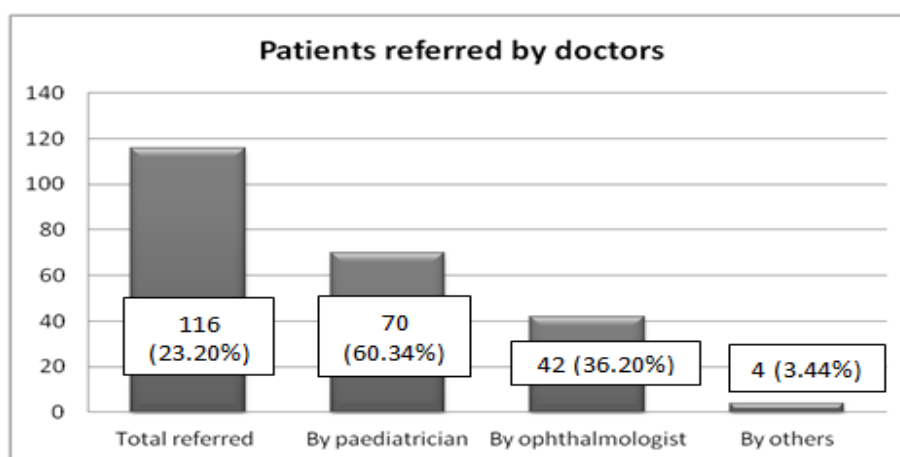| Age (in years)	Number	%
≤ 4	197	39.4
> 4	303	60.6
≤ 7	365	73
> 7	135	27
Total	500	100.0

Figure 1: Number and percentage of patients referred by doctors
Flow chart 1: Coincidental detection of ocular problems in patients presented for routine eye check up without any symptom.
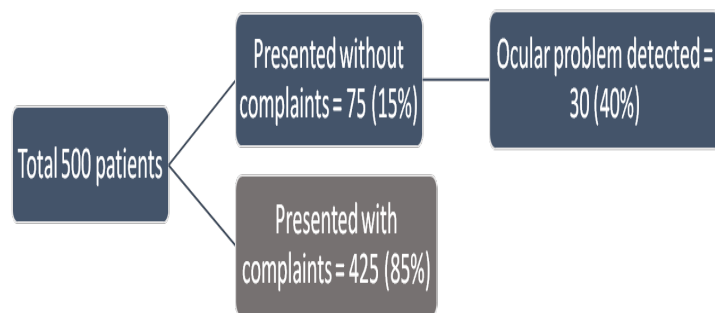
Table 4: Types of ocular abnormality detected among total 500 patients

Type of abnormality detected	Number	% (95% CI)	Age	
			Average ± SD (years)	Range
Amblyopia (n=500 patients)	38	7.6 (7.57 - 7.67)	5.98 ± 3.41	4 month - 15.7 years
Prescribable refractive error (n=500 patients)	218	43.6 (43.5 - 43.69)	6.07 ± 3.09	1 month - 15.7 years
Total Myopic eyes (n=1000 eyes)	118	11.8 (11.77 - 11.82)	7.59 ± 3.75	1 month - 15.7 years
Total hypermetropic eyes (n=1000 eyes)	79	7.9 (7.88 - 7.91)	5.41 ± 2.79	2 months - 13.7 years
Total astigmatism (n=1000 eyes)	237	23.7 (23.66 - 23.73)	5.75 ± 2.54	1.1 years - 15.7 years
Squint (n=500 patients)	61	12.2 (12.15 - 12.24)	4.29 ± 3.63	2 month - 15.7 years
Paediatric cataract (n=500 patients)	16	3.2 (3.18 - 3.21)	3.48 ± 3.58	1 month - 12.6 years
Paediatric glaucoma (n=500 patients)	5	1.0 (0.99 - 1.0)	3.58 ± 3.91	1 month - 9.5 years
Nystagmus (n=500 patients)	7	1.4 (1.39 - 1.4)	2.21 ± 1.76	7 month - 5.5 years
Posterior segment abnormalities (retina and optic nerve) (n=500 patients)	7	1.4 (1.39 - 1.4)	4.64 ± 3.64	2 month - 10.9 years

Table 5: Age wise distribution of different ocular abnormalities among total 500 patients

Ocular Abnormalities	Age ≤ 4 years		Age > 4 years		Age ≤ 7 years		Age > 7 years	
	Number (%)	Average age ± SD (years)	Number (%)	Average age ± SD (years)	Number (%)	Average age ± SD (years)	Number (%)	Average age ± SD (years)
Amblyopia (n=38 patients)	9 (23.68)	2.13 ± 1.11	29 (76.31)	7.17 ± 2.96	27 (71.05)	4.24 ± 1.78	11 (28.94)	10.25 ± 2.55
Prescribable refractive error (n=218 patients)	46 (21.1)	2.55 ± 1.18	172 (78.89)	7.02 ± 2.75	155 (71.1)	4.51 ± 1.60	63 (28.89)	9.92 ± 2.47
Myopic eyes (n=118 eyes)	21 (17.79)	2.48 ± 1.24	97 (82.2)	8.63 ± 3.19	60 (50.84)	4.49 ± 1.77	58 (49.15)	10.59 ± 2.50
Hypermetropic eyes (n=79 eyes)	27 (34.17)	2.62 ± 1.15	52 (65.82)	6.69 ± 2.32	60 (75.94)	4.16 ± 1.73	19 (24.05)	9.06 ± 1.98
Astigmatism (n=237 eyes)	46 (19.4)	3.02 ± 0.79	191 (80.59)	6.39 ± 2.38	195 (82.27)	4.75 ± 1.28	42 (17.72)	9.57 ± 2.58
Squint (n=61 patients)	33 (54.09)	1.69 ± 1.14	28 (45.9)	7.36 ± 3.12	51 (83.6)	3.02 ± 2.11	10 (16.39)	10.76 ± 2.74
Paediatric cataract (n=16 patients)	10 (62.5)	1.25 ± 1.31	6 (37.5)	7.21 ± 2.95	14 (87.5)	2.50 ± 2.40	2 (12.5)	10.35 ± 3.18
Paediatric glaucoma (n=5 patients)	3 (60)	1.1 ± 1.64	2 (40)	7.3 ± 3.11	4 (80)	2.1 ± 2.40	1 (20)	9.5 ± 0
Nystagmus (n=7 patients)	5 (71.42)	1.22 ± 0.52	2 (28.57)	4.7 ± 0.56	7 (100)	2.21 ± 1.76	0	0
Posterior segment abnormalities (n=7 patients)	4 (57.14)	2.32 ± 1.61	3 (42.85)	7.73 ± 3.30	5 (71.42)	2.72 ± 1.65	2 (28.57)	9.45 ± 2.05

Table 6: types of ocular abnormalities detected in referred group.

Types of abnormalities detected in referred group (n = 116)	Number	% (95% CI)	Average age ± SD (years)
Amblyopia	11	9.48 (9.34 - 9.63)	6.66 ± 4.17
Prescribable refractive error	33	28.45 (28.10 - 28.79)	5.2 ± 3.03
Squint	26	22.41 (22.12 - 22.71)	3.6 ± 3.56
Paediatric cataract	9	7.76 (7.64 - 7.88)	3.76 ± 4.2
Paediatric glaucoma	3	2.59 (2.54 - 2.63)	4.2 ± 4.81
Nystagmus	2	1.72 (1.70 - 1.75)	1.15 ± 0.07
Posterior segment abnormalities	4	3.45 (3.39 - 3.50)	3.8 ± 3.22

Table 7: types of ocular abnormalities detected in non - referred group

Types of abnormality detected in non - referred group (n = 384)	Number	% (95% CI)	Average age ± SD (years)
Amblyopia	27	7.03 (7.00 - 7.06)	5.70 ± 3.10
Prescribable refractive error	185	48.18 (48.05 - 48.30)	6.24 ± 3.09
Squint	35	9.11 (9.07 - 9.16)	4.81 ± 3.65
Paediatric cataract	7	1.82 (1.81 - 1.83)	3.13 ± 2.89
Paediatric glaucoma	2	0.52 (0.5181 - 0.5234)	2.65 ± 3.46
Nystagmus	5	1.30 (1.2955 - 1.3086)	2.64 ± 1.97
Posterior segment abnormalities	3	0.78 (0.7772 - 0.7852)	5.77 ± 4.58

Discussion:

Good vision is key to a child's physical development, success in school and overall well-being. Over 80% of the learning comes through input from the eyes in the early years of development. It is, therefore, critical that any vision or eye related problem should be detected, and treated, as soon as possible. Timely treatment of amblyopia improves visual acuity and binocularity and decreases the likelihood of severe visual handicap if there is loss of vision in the fellow eye later in life.[12]

Childhood blindness is one of the priorities in "Vision 2020: the right to sight".[13] It is estimated that there are 1.4 million blind children in the world, two thirds of whom live in the developing countries.[14] Though no population based nationwide survey has been undertaken on the prevalence of blindness in India, it is estimated to be 0.8/1000 children in the age group of 0 - 15 years.[15] School Eye Screening (SES) program became the integral part of the National Program for Control of Blindness (NPCB) since 1994. But it screens students of 10-14 years of age for better cooperation.[15] So early age group children are being spared who are vulnerable to amblyopia. Prevalence of amblyopia is estimated between 1 and 3% in different regions worldwide[16] with slightly higher figures in India.[17 - 22] Whereas Ganekal S et al[19] have showed it as 1.1%, Dandona R et al[20] got it as 8.3% and Warkad VU et al[21] got it as 17.2% in their population based studies. There is lack of single hospital based studies in the literature. Study done by Saxena R et al. [22] in a tertiary eye hospital in India to evaluate the profile of strabismus and amblyopia in total 24475 patients, got the overall magnitude of amblyopia as 2.0% [95% CI 1.8-2.2)] including both adults and children. But only among younger children, it was 84.4%. This increase in magnitude was due to the higher amount of referred cases in the squint and amblyopia clinic of that hospital.

Dandona R et al[20] have showed prescribable refractive error in 33.3% and Warkad VU et al[21] in 59.52% in their studies. Saxena R et al[23] have showed prevalence of myopia as 13.1%.

Saxena R et al [22] in their hospital based study found the magnitude of squint as 6.9% (95% CI 6.6-7.2) including both adults and children. But only among younger children it was 26.6% with equal distribution of exotropia and esotropia. Gupta M et al[24] found 2.5% squint in their population based study in school children of north India.

One retrospective study of the prevalence of infantile cataracts in the U.S. showed a rate of 3-4 visually significant cataracts per 10,000 live births.[25] This is similar with the U.K. study which showed 3.18 per 10,000.[26]

Aponte EP et al[27] in a population based study over a 40-year period among patients of < 20 years, found the incidence of childhood glaucoma as 2.29 per 100,000.

The exact magnitude of nystagmus is still unknown due to paucity of studies. Previous hospital based data have found a magnitude of 0.24%.[28] This was against the higher proportion of 11.5% seen in another hospital based study done by Saxena R et al[22] recently.

Posterior segment abnormalities were seen in 14.88% in the Tribal Odisha Eye Disease Study (TOES) 1 which was a population based study.[21]

Our study was not comparable with these population based studies at all because of the obvious reason of single center study with small sample size and high referral in pediatric ophthalmology outdoor. The hospital based studies mentioned above, have even a very large sample size. In our study we restricted inclusion of children who came for first time eye check-up only or have been referred to our center within one month of first eye check-up done elsewhere, to rule out the bias of previous treatment.

In our single hospital based study, 40% (95% CI 39.37 - 40.62) (30 out of 75) children were detected to have some ocular problems in spite of being asymptomatic with an average age of 5.2 ± 3.59 (SD) years. This reflects the importance of routine eye screening even without any symptom at a particular age of < 7 years.

In this study, average age of 7.6% amblyopia and 43.6% prescribable refractive error was 5.98 ± 3.41 (SD) years and 6.07 ± 3.09 (SD) years respectively (table - 4). So definitely early childhood screening should be at < 7 years of age. The same is also established by analysing the table - 5, which is showing that according to the division of the whole study group by the age of 7 years, majority of problems got detected in the age group of ≤ 7 years. 28.94% amblyopia was detected in the age group of > 7 years with the average age of 10.25 ± 2.55 (SD) years, which was quite high for successful amblyopia treatment. Now according to the division of the whole study group by the age of 4 years, 23.68% amblyopia and 21.1% refractive error was detected at an average age of 2.13 ± 1.11 (SD) years and 2.55 ± 1.18 (SD) years respectively(table - 5). So according to our study, first routine eye screening should be around 3 years of age to prevent a significant amount of amblyopia and earlier if there is any symptom of decreased vision or other problems.

There is one RCT done by ALSPAC Study Team[29] which has proved that if we intensively screen children at different age interval (at 8,12,25,31 and 37 months; intensive group) rather than screening at 3 years only (37 months; control group), then chances of amblyopia at 7.5 years of age was less in the intensive group than in the control group (0.6% vs 1.8%; P = 0.02).

But U.S. Preventive Services Task Force (USPSTF)[3] has proved that current evidence is insufficient to assess the balance of benefits and harms of vision screening in children younger than 3 years. And it recommends vision screening atleast once in all children aged 3 to 5 years to detect amblyopia or its risk factors. Similarly two other studies done by Bogdanici ST et al[2] and Gudgel D[5] have proposed also that childhood vision screening should be between the ages of 3 and 3½ years. But all these studies were from western

countries. Though there are many population based and few hospital based studies in India regarding eye screening in children, but no study has suggested an age group for first eye check-up.

The present study in spite of being a unicentric study with small sample size, has determined an age around 3 years for first eye check-up and it should not cross the age of 7 years. The retrospective nature was one of its limitation.

Conclusion:

All children should have a universal eye checkup before they start going to school around 3 years of age irrespective of any specific complaint and earlier if there is any doubt of any ocular problem to avoid significant incidence of refractive error and amblyopia. To the best of our knowledge, before our study there is no such documented study from India regarding setting an age group for early vision checkup. Further studies from India are required to give rise to a cost-effective nationwide vision screening program that can be implemented at an age where accurate testing is feasible and timely intervention is possible. Awareness regarding this should be raised not only among parents but also among doctors of all speciality.

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