

## Prevalence and pattern of ophthalmic morbidity in pediatric patients at a district early intervention centre of North India

Naheed Akhtar<sup>1\*</sup>, Anam Khalid<sup>2</sup>, Uzma Firdaus<sup>3</sup>

<sup>1,3</sup>Assistant Professor, <sup>2</sup>Pediatric Optometrist, <sup>1</sup>Institute of Ophthalmology, Pediatric Ophthalmologist JNMCH, AMU, Uttar Pradesh, <sup>2,3</sup>DEIC JNMCH, AMU, Uttar Pradesh, India

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### Abstract

**Objective:** To find out prevalence and pattern of Ophthalmic morbidity in pediatric population in a district early intervention centre (DEIC) of North India.

**Study Design:** A retrospective cross sectional study conducted in DEIC of JNMCH, AMU for a period of one year.

**Materials and Methods:** Complete ophthalmological workup was done for 495 pediatric patients.

**Result:** Prevalence of Ophthalmic morbidity was 49.09%. Peak prevalence (72.41%) was found in age gp. (9-12 Yrs). Refractive errors was the commonest morbidity (33.74%). Females had higher prevalence of morbidity than males.

**Conclusion:** Refractive error was the commonest Ophthalmic morbidity. Early intervention in Pediatric population is utmost essential to prevent irreversible visual loss and amblyopia.

### Introduction

A study of prevalence and profile of ophthalmic disorders in pediatric age-group is of utmost importance as early detection, and its management is the key to final visual acuity.

Childhood blindness is the second largest cause of blind person-years following cataract. Globally approximately 70 million blind person-years are caused by childhood blindness. About 1.4 million blind children are there worldwide. 73% of whom live in developing countries. WHO's vision 2020 – "The right to sight program" emphasizes on various measures to control childhood blindness as it adds to socio-economic burden to a nation. Many of ophthalmic morbidities if not detected and managed early lead to irreversible visual morbidity because of risk of amblyopia in childhood.

This study conducted in a District Early Intervention Center aims at early detection of ocular problems in children as many of them are preventable like Vitamin A deficiency, treatable like congenital cataract and strabismus and even potentially irreversible like cortical blindness can have a reasonably good vision if intervened at an early stage.

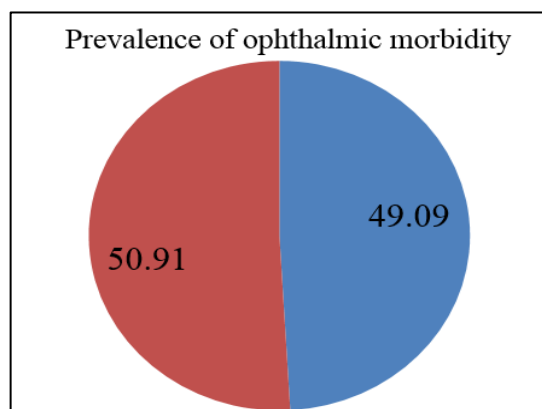
### Materials and Methods

A retrospective cross-sectional study was conducted in pediatric patients attending a District Early Intervention Centre (DEIC) of North India. A total of 495 patients, between 0 to 16 years, were included in the study. Data was collected between October 2017 to October 2018. Each

patient had undergone complete ophthalmic workup, including visual acuity test by Lea paddles, Lea symbols, Cardiff acuity cards, E- charts, Snellen's chart or logMAR visual acuity chart along with cycloplegic refraction. Hirschberg's test, cover-uncover test, and prism bar cover test were done for strabismus evaluation.

Each patient underwent torchlight and slit-lamp examination for the anterior segment and dilated posterior segment examination. All ophthalmic disorders were documented on standard proforma for management. We used Fischer's exact test for the calculation of prevalence.

### Observations



**Fig. 1:** Prevalence of ophthalmic morbidity in total patients

\*Corresponding Author: Naheed Akhtar, Assistant Professor, Institute of Ophthalmology, Pediatric Ophthalmologist JNMCH, AMU, Uttar Pradesh, India

Email: [nakhtar.io@amu.ac.in](mailto:nakhtar.io@amu.ac.in)

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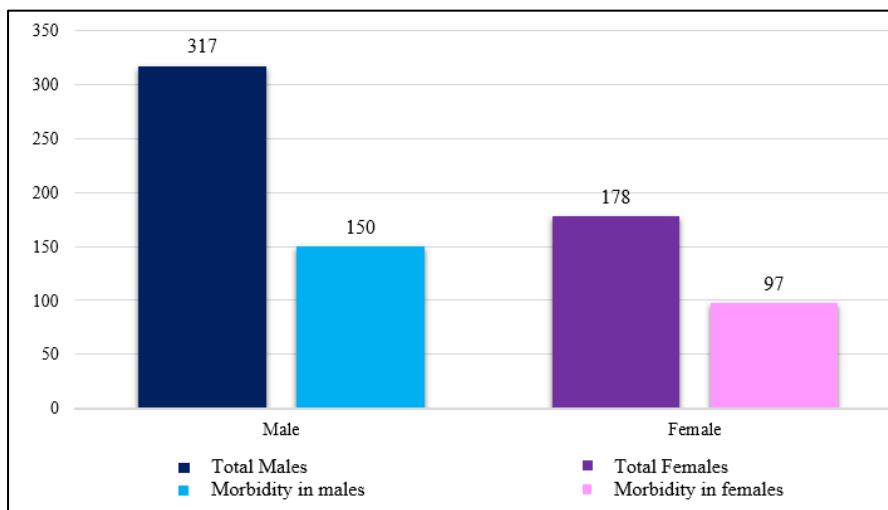


Fig. 2: Prevalence of ophthalmic morbidity on gender basis

Table 1: Prevalence of ophthalmic morbidity with age distribution

| Age   | Ophthalmic disorders | No. ophthalmic disorders | Prevalence | 95% CI        |
|-------|----------------------|--------------------------|------------|---------------|
| 0-4   | 127                  | 190                      | 40.06%     | 34.28 – 45.55 |
| 5-8   | 57                   | 36                       | 61.29%     | 51.12 – 70.56 |
| 9-12  | 42                   | 16                       | 72.41%     | 59.71 – 82.33 |
| 13-16 | 17                   | 10                       | 62.96%     | 44.16 – 78.53 |

P value <0.001, Chi square = 30.06, df = 3

Table 2: Prevalence of ophthalmic morbidity: curable versus non-curable

| Curable          |              | Non-curable                |             |
|------------------|--------------|----------------------------|-------------|
| Lid              | 01           | Vitreous and Retina        | 09          |
| Cornea & Sclera  | 18           | Optic nerve pathology      | 14          |
| Lens             | 17           | Cortical visual impairment | 16          |
| Uvea             | 09           | Cortical blindness         | 10          |
| Squint           | 67           |                            |             |
| Refractive error | 82           |                            |             |
| Total            | 194 (79.85%) |                            | 49 (20.16%) |

Table 3: Prevalence of non-curable ophthalmic disorders which showed improvement

| Diseases (Non-curable)     | Improved | Not improved | Proportion improved | 95% CI        |
|----------------------------|----------|--------------|---------------------|---------------|
| Vitreous and Retina        | 3        | 6            | 50%                 | 18.76 – 81.24 |
| Optic Nerve Disorders      | 0        | 14           | 0                   | 0             |
| Cortical visual impairment | 7        | 16           | 43.75%              | 23.07%-66.84% |
| Cortical blindness         | 0        | 10           | 0                   |               |

**Discussion**

In the present study, a total of 495 patients, between 0-16 years were studied. There were 317 males and 178 females. The prevalence of ophthalmic morbidity was 49.09%.

A study by Chaturvedi and Agarwal reported a prevalence of 40% which is comparable with our study.<sup>14</sup> Gupta et al reported a prevalence of 31.6% in Shimla.<sup>6</sup> Nepal et al found a prevalence of 11%<sup>9</sup> International studies by Lu et al in Tibet and Shrestha et al in Kathmandu reported an overall prevalence of ophthalmic morbidity as 18.36%<sup>15</sup> and 34.2% respectively.<sup>13</sup>

These results were not comparable with our study due to differences in sample size, sample selection and prevalence of ophthalmic morbidity in different regions in the country and abroad.

Our study had 47.31% prevalence of morbidity in males while 54.49% in females. These results are comparable with the study by Qamruddin, with a prevalence of 53.3% in males and 46.6% in females.<sup>5</sup> Also P. Gupta reported a prevalence of 57% in males and 43% in females.<sup>12-16</sup>

In our study maximum prevalence of ophthalmic morbidity was found in (9-12 years) group (P-Value < 0.001). Also highest prevalence in this group was reported by H. Singh in his study in school children.<sup>4</sup>

In our study refractive error was most common cause of ophthalmic morbidity with a prevalence of 33.74%. Studies by H. Singh with 47.9% prevalence<sup>4</sup> and by Qamruddin with 31.79% prevalence<sup>5</sup> are comparable with our study. Among all morbidities highest prevalence of refractive error was also reported by Bedi et al,<sup>7</sup> V Singh,<sup>8</sup> V.B. Pratap<sup>11</sup> and Gupta et al.<sup>12</sup> In another study by Nepal et al refractive error was the commonest cause followed by strabismus.<sup>9</sup> Also in a study conducted by Biswas et al in kolkata, refractive error was found to be the commonest cause.<sup>10</sup>

In our study prevalence of curable causes of ophthalmic morbidity was 79.85% while that of non-curable causes was 20.16%. However we found that even some of non-curable causes if intervened early showed improvement. In our study, 50% cases with vitreous and retinal pathology and 43.75% cases with cortical visual impairment showed improvement.

Our study is first of its kind as it has addressed non-curable causes of ophthalmic morbidity like optic nerve disorder and cortical visual impairment.

Our study is based on a concentrated pediatric population attending a tertiary disability centre. Many from remote areas may not have access or knowledge of these centres. It can be one bias in our study. Suggestion is to integrate these centre with rural health centres and to involve paramedicals and telemedicine to catch the visual ailments at an early stage for early intervention. Social workers and councillors can bring hope among patients and parents that even so called untreatable cases can have useful vision with prompt management. Also vocational rehabilitation with financial aids, government schemes for jobs and upcoming gadgets like advanced low vision aid, bionic eyes and future research are our recommendations for brighter futures of these children.

## Conclusion

This study conducted in DEIC emphasizes on the fact that early diagnosis and management of ophthalmic morbidities in children prevents irreversible visual loss and amblyopia and patients with many of non-curable morbidities can have some useful vision. Childhood blindness is a mammoth economic and social burden for the country as today's child carries future of the nation on his shoulders. These centers and our study may serve as a ray of hope in the dark tunnel of blindness.

**Source of Finding:** None.

**Conflict of Interest:** None.

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