



**Seeing the World through New Lenses  
Sibling Screening to Tackle  
Childhood Refractive Error with  
Sibling Motivation Card (SMC)**

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# Financial Disclosure

Authors do not have any financial interest

# Purpose

To study the prevalence of refractive errors among siblings of children with refractive error using a sibling motivational card (SMC)

# Background

- Problem of childhood blindness is enormous in India (0.3 million children below the age 16yrs – 1/5<sup>th</sup> of World's blind children) <sup>1</sup>
- Delay in treatment can have a significant impact on a child's life in terms of education and development
- We need effective strategies to tackle this easily treatable cause of visual impairment

*1 – ORBIS database – Childhood blindness in India,2010*

# Screening

- Different ways of screening – opportunistic, school based, eye camps etc.
- But we need more novel approaches to tackle this problem



# Methods

## Terminology

- **PROBAND** - The child who came first time with refractive error
- **SIBLING** - Brother/sister of proband who is asymptomatic and not been evaluated before



# Sibling Motivational Card (SMC)

- SMC is given to parent for all siblings of a proband diagnosed to have refractory error

**குழந்தைகளுக்கான பார்வை குறைபாடு  
குடும்ப பரிசோதனை அட்டை**

|                                      |                   |
|--------------------------------------|-------------------|
| பரிசோதனைக்கு வரும்<br>நபரின் பெயர் : | Sibling name      |
| நோயாளியின் பெயர் :                   | Proband name      |
| நோயின் வகை :                         | Proband Diagnosis |
| பதிவு எண் :                          | Proband M.R.No    |

தாங்கள் பரிசோதனைக்கு வரும்பொழுது அறை எண் 12-ல்  
உள்ள..... செனிலியரை அணுகவும். சனி,  
ஞாயிறு, திங்கள் தவிர மற்ற தினங்களில் வரவும். தாங்கள் தொடர்பு  
கொள்ள வேண்டிய தொலைபேசி எண் : 0413-2619100 இணைப்பு : 170.

# Methods

- About 250 probands with refractive error (Mean spherical equivalent of refraction of equal to or worse than 0.5 diopter for Myopia and equal to or worse than 0.5 diopter for Hypermetropia) were given SMC
- Nearly 232 siblings were recruited for the study
- Each sibling underwent detailed orthoptic and cycloplegic refraction by an experienced optometrist
- A pediatric ophthalmologist then performed a detailed eye examination and appropriate treatment was prescribed



# Results

| Distribution of Refractive Error among Siblings |                  |
|---|------------------|
| <b>Total Siblings</b>                           | <b>232</b>       |
| Emetropic                                       | 78 (34%)         |
| Simple Myopia                                   | 54 (23%)         |
| Myopic Astigmatism                              | 88 (38%)         |
| Simple Hypermetropia                            | 2 (0.8%)         |
| Hypermetropic Astigmatism                       | 8 (3%)           |
| Mixed Astigmatism                               | 3 (1%)           |
| <b>Total Refractive Error among Siblings</b>    | <b>154 (66%)</b> |

# Pair wise distribution of Refractive Error

|                           | Probands | SIBLING   |          |          |          |           |     |
|---------------------------|----------|-----------|----------|----------|----------|-----------|-----|
| Refractive Error          | Pairs    | EM        | SM       | HM       | MA       | HMA       | MXA |
| Simple Myopia             | 86       | 36 (42%)  | 42 (49%) | 0        | 8 (9%)   | 0         | 0   |
| Hypermetropia             | 6        | 4 (66.8%) | 0        | 1(16.6%) | 1(16.6%) | 0         | 0   |
| Myopic Astigmatism        | 124      | 37(30%)   | 11(9%)   | 0        | 76(62%)  | 0         | 0   |
| Hypermetropic Astigmatism | 14       | 3(21.5%)  | 0        | 1(7%)    | 2(14%)   | 8 (57.5%) | 0   |
| Mixed Astigmatism         | 2        | 0         | 1 (50%)  | 0        | 1(50%)   | 0         | 0   |

# Discussion

## Other Studies



- **Refractive error**
  - Dandona et al: <sup>1</sup> – 2.65%
  - Gupta et al: <sup>2</sup> - 22%
  - B. P. Nepal et al: <sup>3</sup> -8.9%

## SMC



- **Target screening**
  - Refractive error -66%

**TARGET SCREENING** has the benefit of identifying greater number of children in need than **POPULATION SCREENING**.

*1 – Dandona et al – Investigative Ophthalmology – March 2002*

*2 – Madhu Gupta et al – IJO – 2009;57; 133-138*

*3 – B.P. Nepal et al – BJO – 2003, 87; 531- 534*

# Conclusion

- Visual impairment due to uncorrected refractory error is common among siblings
- SMC is a simple and effective screening tool.
- It is also inexpensive and innovative method of screening children and will help to tackle childhood blindness
- It can be put into practice by any ophthalmologist