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A Study of the Epidemiology of Childhood Blindness and plan of Action in Bihar

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ABSTRACT
Vision disorders are among the most common disabilities to affect children. Childhood blindness is an important Public Health Problem due to inequalities in the social and economical conditions of Bihar State.
Moreover it's a significant component of WHO vision 2020 program. By public health interventions, the prevalence of cases of childhood Blindness can be reduced. With this background, a study was done in assessment of the epidemiology of childhood blindness, with suggestions of plan of actions to reduce the prevalence of childhood blindness which will lead to educational opportunities and improvement in mental and general health.
This study had limitations due to average health infrastructures and record keeping from PHC to Medical colleges. But at the same time, still a lot of timely neonatal eye care services and proper refraction strategies have helped in prevention of childhood blindness.
In this study, the principals of epidemiology has been followed, as to finding the answers of "Who, Where and Why" regarding Childhood blindness in Bihar.
The current prevalence of blindness in children is known to be around 0.6%. Despite various intervention programs. This public health problem a challenge both from epidemiology and care provider point of view.

Methods
Information from search engines used included pubmed, Google scholar. Field visits to different levels of health infrastructure, like PHC, CHC, District Hospitals and medical colleges, while working in a, Govt, UNICEF sponsored project Hospital Records.

Community based survey
From verbal discussion with Eye specialists, program managers and Health workers.
From Health department records available in state blindness control cell.

Observations
The main cause of childhood visual impairment was Refractive Errors. Under blindness control program till date 3.5 lacs children have been examined at schools of Bihar over a period of nearly fourteen years from 1999 to 2013. The important observation being that the majority of children suffered from Refractive errors. Random sampling of 15 district records out of total 38 districts were done.
Districts with high percentage of Refractive errors Sharsha, Supual, Madhepura, Rhotas, Kishanganj, Darbhangha, Banka, Madhubani and Sitamadhi . This in terms of percentage is 60% Districts with low percentage of refractive errors Munger, Nalanda, Nawada, and Begusarai, Arrah, Gaya. This in terms of percentage is 33.33%

The findings showed that North districts across River Ganges had more cases of refractive errors than districts of South and central Bihar.
The possible causes of high percentage in North Bihar districts being Poverty, malnutrition.
Yearly floods causing loss of livelihood leading to poor economic status.
The second largest cause of childhood blindness was Vit-A deficiency.

The Prevalence of childhood blindness due to Vit- A deficiency per thousand was as follows

Year	**PR**
2000	0.40
2005	0.25
2010	0.02

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The OPD records on random study of district hospitals showed that , South Bihar showed a bigger percentage of cases in comparison to North Bihar.
The possible cause being rich fruit plantation like papaya, mangoes, which are consumed in large children population. Practice of hut roof for agriculture purpose is very common in villages, of North Bihar, where papaya can be grown.
With intervention of Vit –A deficiency control program sponsored by UNICEF for nearly five years played a very crucial role in bringing down the prevalence rate of vit-A deficiency cases. Moreover, this program also led to huge reduction in gastroenteritis cases in children.

Thus breaking the vicious cycle of :
Diarrhea-malnutrition- vitamin-A def- blindness.
3. Lately with more access to health care facilities, other causes too were also identified
Coloboma of iris
Congenital cataract
Microphthalmos
Possibly, hereditary reasons are responsible for these ocular morbidity.
Many cases of ocular trauma were also recorded.

Discussion

The impact of Vit-A blindness program, supported by UNICEF, had a great impact in Vit-A deficiency both in terms of the incidence and prevalence leading to decreasing the burden of childhood blindness. After the program, robust immunization program , which includes Vit-A administration to children had also a great impact.

The school health check up program , which includes detection of refractive errors and general examination of eye , too had been very successful. A large number of children with refractive errors were detected , which was eventually corrected by giving glasses, which can lead to reduction of Amblyopia in future years.

The observations suggests that
Strengthening of refractive services at primary and secondary level of school going children.
Screening of eyes at school levels, as well at health facilities like PHC, CHC, District hospitals should be done regularly.
Provision of low vision devices at low or free should be done.

Plan of Actions/ strategy to be adopted for control of childhood blindness.
Establishment of Paediatric ophthalmic department in Medical and District hospitals.
Low vision clinics should be provided at district hospitals.
Training programs in paediatric ophthalmology should be carried out regularly.

Conclusions

Regular small survey should be carried out by ophthalmologist in their respective areas, which will go a long way in prevention of childhood blindness. The observations should be documented and published.
There should be continuum of health promotion of health programs along with rehabilitation. A comprehensive eye care approach in control of childhood blindness should be a priority by the health planners and providers.

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