

Study of the Causes of Blindness amongst the Patients in Manipur State: A Retrospective Analytical Study.

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ABSTRACT

Background: Understanding the major causes of blindness is of utmost importance for planning effective strategies against it. The current study was taken up to find out the various causes of permanent visual handicap in the state of Manipur so as to enable to identify the possible preventive measures. **Methods:** Patients coming for obtaining visual handicap certificate to the Field-based Disability Assessment Camps during the period March 2009 - April 2013 and Eye OPD of Jawaharlal Nehru Institute of Medical Sciences (JNIMS), Imphal during the period August 2014 - July 2016 were examined. The degree of disability was estimated based on the Ministry of Social Justice and Empowerment, Government of India guidelines. Data for 340 cases were collected and analyzed. **Results:** Of the total 340 cases, 223 (65.58%) were males giving a M:F ratio of 1.9:1. Mean age (SD) was 26.87 (\pm 19.38) years. Maximum number of cases was in the age group 15-40 yrs. (159, 46.76%). Of the total, 186 (54.70%) patients had 100% blindness followed by 95 (27.95%) cases with 40% disability and 59 (17.35%) cases with 75% disability. Congenital ocular malformation was the commonest with (96, 28.23%) cases followed by corneal diseases with (49, 14.41%) cases. **Conclusion:** The current study showed a higher prevalence of visual disability in males in the age group of 15-40 yrs. Avoidable blindness comprised nearly one half of the total cases. Early diagnosis and management was the urgent need to prevent blindness due to glaucoma, corneal diseases and some of posterior segment diseases. Congenital ocular malformations and Retinitis pigmentosa could be reduced by genetic counseling and creating awareness.

Keywords: Certification, Congenital malformation, Retinitis pigmentosa, Visual handicap.

INTRODUCTION

Blindness is a major public health problem in developing countries.^[1] It affects not only the individual, but also the family and society in the economy. Many ocular diseases lead to partial and complete loss of vision, which may be either treatable or non-treatable. Non-treatable causes lead to permanent visual handicap. Identification of the underlying factors is important for prevention, treatment and management of the problem.

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So far, in Manipur there has been no study done for understanding the cause of visual handicap and reason for obtaining visual handicap certificate. Visually disabled persons in India are categorized based on the severity, and is certified by a competent Board that includes an ophthalmologist. Percentage of visual handicap is accorded as proposed by the Ministry of Social Justice and Empowerment,

Government of India and the minimum degree of disability should be 40% for getting certificate.^[2] Studies on the various causes of blindness were felt necessary for effective planning of strategies to prevent visual handicap, ultimately leading to improvement of eye health. The primary objective of this study was to determine the leading causes of permanent blindness in the state of Manipur.

MATERIALS AND METHODS

Data on a total number of 340 patients of all ages coming to the State Board to obtain visual handicap certificate for permanent blindness were collected. For identification of blindness the WHO definition was used. Blindness is defined according to the WHO definition, as Visual acuity of less than or equivalent to 3/60 or central visual field <10 degree in the better eye with the best correctable measures. Cases included patients from all the existing nine districts (both hilly and valley areas) of Manipur who attended the field-based "Disability Assessment Camps" organized by the Social Welfare Department, Govt. of Manipur during the period March 2009 – April 2013 and also those patients

who attended the Eye OPD of the Jawaharlal Nehru Institute of Medical Sciences (JNIMS), Imphal, Manipur during the period August 2014 - July 2016. Only those patients having a minimum 40% visual disability were considered for the study.

Vision was tested by using the standard Snellen's Vision Chart at a distance of 3 meters and Landolt's C Chart for those who were illiterate. Intra-ocular Pressure (IOP) was measured in suspected cases with Schiottz tonometer. External examination of the eyes was done using torch light and binocular loupe. In the hospital, slit-lamp examination was done in more detail. Posterior segment was examined with direct ophthalmoscope after dilatation with tropicfrin. Diagnosis was based on medical history and ocular examination. Causes of blindness, percentage of visual disability and purpose of disability certificate were noted.

RESULTS

Of the total 340 cases who had a minimum of 40% visual disability, 223 (65.58%) were males and the remaining 117 (34.42%) were females giving a M:F ratio of 1.9:1. The mean age (SD) of the study subjects was 26.87(±19.38) years. The youngest patient was a female child aged one year who was

diagnosed as an ophthalmos of both eyes and the oldest was a female aged 96 years having glaucomatous optic atrophy. Regarding age distribution, 107 (31.47%) cases were children aged up-to 14 years, 159 (46.76%) cases were aged 15-40 years, 58 (17.06%) cases were from the age-group of 41-65 years and 16 (4.71%) cases were geriatrics aged more than 65 years [Table 1].

Table 1: Age-wise distribution of visual handicap cases.

Age (Yrs)	Male	Female	Total (%)
0 to 14	72	35	107 (31.47)
15 to 40	106	53	159 (46.76)
41 to 65	34	24	58 (17.06)
>65	11	5	16 (4.71)
Total	223 (65.58)	117 (34.42)	340 (100)

Of the total 340 cases, 293 (86.17%) cases were from the valley and 47 cases (13.83%) were from the hill areas. A total of 182 (54%) cases (116 males and 66 females) were collected from the Disability Assessment Camps and the remaining of 158 (46%) cases (107 males and 51 females) were collected from the eye OPD of JNIMS, Imphal. The maximum number of patients belonged to the age-group of 15-40 years. In all the age group, males outnumbered the females [Table 2].

Table 2: Distribution of cases by residence and type of tracing-out.

Residence	Through assessment camps			Through hospital OPD			Total (%)
	M	F	Total	M	F	Total	
Valley area	107	62	169	80	44	124	293 (86.17%)
Hill Area	9	4	13	27	7	34	47 (13.83%)
Total	116	66	182 (54%)	107	51	158 (46%)	340 (100%)

The number of patients with 40% visual disability was 95 (27.95%), with 75% disability it was 59 (17.35%) and with 100% disability it was 186 (54.70%) [Figure 1].

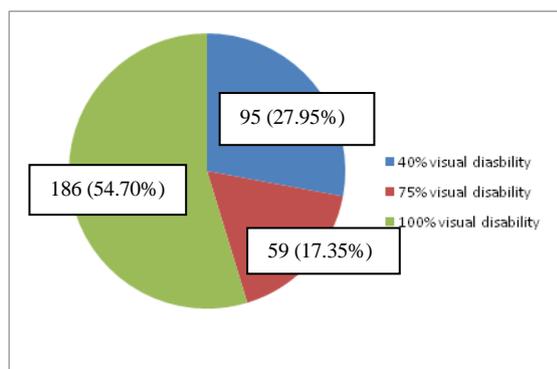


Figure 1: Percentage of visually disabled individuals.

The leading cause of blindness was congenital ocular malformations (28.23%) cases which included microcornea, microphthalmos, anophthalmos and coloboma uvea. Corneal diseases (14.41%) comprising of scar, ulceration, anterior

staphyloma, keratomalasia, degeneration were the second commonest cause of blindness. Optic atrophy (12.94%), retinitis pigmentosa (7.35%), refractive error (6.76%), posterior segment disorders including retinal detachment, CRVO, retinal dystrophies (6.76%), complicated cataract (6.17%), lens-related disorders/diseases comprising of aphakia, dislocation, subluxation, displaced IOL (4.11%), age-related macular degeneration (2.94%), uveitis (2.94%), glaucoma (2.35%) and others like nystagmus, squint, staphyloma (5%) were the important causes of blindness [Table 3].

110 (32.35%) patients took the disability certificate for educational purposes, 96 (28.25%) patients for financial help, 68 (20%) patients for Income tax purposes, 33 (9.70%) patients for service-related purposes, 18 (5.30%) patients for travel concession and 15 (4.40%) patients for no specific reason [Table 4].

DISCUSSION

There have been many surveys done abroad^[3-4] and inside India^[5-10] regarding the prevalence and causes

of blindness. The current study finding of more males having a visual disability than the females was found to be similar to the findings made by other study groups.^[5,6] The higher proportion among the

males could be attributed to the increase outdoor activities of males as well as needing the certificates more in comparison to females.

Table 3: Distribution of cases by cause of blindness.

Sl. No.	Causative Factors	Hospital	Assessment camp	Total Visual disability (%)
1.	Congenital ocular malformation	49	47	96 (28.23)
2.	Corneal diseases	24	25	49 (14.41)
3.	Optic atrophy	18	26	44 (12.94)
4.	Retinitis pigmentosa	13	12	25 (7.35)
5.	Refractive Error	9	14	23 (6.76)
6.	Posterior segment disorder	8	15	23 (6.76)
7.	Complicated cataract	11	10	21 (6.17)
8.	Lens-related	8	6	14 (4.11)
10.	ARMD	4	6	10 (2.94)
11.	Uveitis	4	6	10 (2.94)
12.	Glaucoma	3	5	8 (2.35)
13.	Others/Misc	7	10	17 (5.0)

Table 4: Reasons for obtaining visual handicap certificate.

Purpose	No. of individuals	Frequency
Educational purpose	110	32.35%
Financial assistance	96	28.25%
Income Tax Purpose	68	20.0%
Service Purpose	33	9.70%
Travel Concession	18	5.30%
No specific reason	15	4.40%

Out of the 340 patients, only 47 patients (36 males and 11 females) came to obtaining a blind certificate from the hill districts. This may be because of poor transport facility, lack of communication and lack of awareness about the importance of disability certificate.

The maximum number of patients 159 (46.76%) were in the age-group of 15-40 years. This is the age-group of getting job, travel concession and paying income tax. This implies that getting a disability certificate was more important among the working age-group. Similar observations were made by Patil B et al from their study done in Karnataka.^[7] Patients above the age of 65 years were significantly less in number. This finding was comparable to study findings made by Bunce et al (1998).^[11]

Congenital ocular malformation (28.23%) was the leading cause for obtaining visual handicap certificate. It was seen in the form of bilateral anophthalmos, microphthalmos, nystagmus and colobomas. This finding could not be compared with any previous study findings, as there was no peer-reviewed study published.

Corneal blindness with 49 (14.41%) patients was the second major cause for obtaining a handicap certificate. This finding was comparable with the study findings made by Joshi RS and P Brijesh et al.^[5-6] It was seen in the form of corneal opacity (scar) and anterior staphyloma. Many patients had

bilateral opacity suggesting vitamin A deficiency, which might have been precipitated by measles and debilitation. This condition could have been avoided by creating awareness about intake of vitamin A rich food and immunization against measles. A survey carried out in a tertiary care eye hospital, Hyderabad, India showed that 11.6% of blind patients had corneal opacity.^[12]

Optic atrophy was the third leading cause of permanent blindness in the current study with 44 (12.94%) patients. The majority of the patients had bilateral optic atrophy with 100% disability.

Retinitis pigmentosa with 25 (7.35%) patients was the fourth leading cause of permanent blindness. In earlier studies conducted by various authors, retinitis pigmentosa was found to be the leading cause of blindness certification.^[5-6] This fairly common disease could be related to the increased consanguinity and lack of genetic counseling in the region. A study done on retinitis pigmentosa patients in various states of India showed a predominance of autosomal recessive inheritance pattern and also, more than 92% of cases had a positive history of consanguinity.^[10] Increased burden of Retinitis pigmentosa patients warrants genetic counseling to be given seriously.

Age-related macular degeneration (ARMD) was seen in 10 (2.94%) cases in the present study. In India, the prevalence of ARMD ranges from 1.8% to 2.94% in different epidemiological studies.^[13,14] In a study conducted by Bunce C and Wormald R, the leading cause of certification for blindness and partial sight in England and Wales were ARMD (57.20%), glaucoma (10.90%), optic atrophy (3.10%) and hereditary retinal disorders (2.89%).^[3] In another study conducted by Joshi RS in central India, ARMD was found in 1.08% of cases and Patil B et al found it to be 10% of all blindness cases in Karnataka.^[5,6] Avisar R et al (2006) in their study, also showed the main causes of blindness in Israel as ARMD (28%), Diabetic Retinopathy (14%), and glaucoma (11.8%).^[15]

Preventable blindness constituted a major portion of blindness in the current study. Early diagnosis and management of these entities could have prevented blindness arising out of these conditions. Lack of facilities for diagnosis and management in rural and hilly areas of the state could be a main problem being faced. Lack of awareness about the preventable blinding conditions amongst the masses contributes to the delay in diagnosis of the condition.^[12] For the patients staying in remote areas, setting of diagnostic centers and quick referral to higher facilities for the treatment may be useful. Gogate P has stressed the importance of setting vision centers in the rural areas.^[16] Arranging periodic eye check-up camps in the remote areas may also be beneficial.

CONCLUSION

As yet, there was no appropriate treatment available for the most of the common causes of blindness found in this study. Only preventive measures held the key. Hence, there is a need to focus on genetic counseling and discourage consanguineous marriage to prevent congenital anomalies. Regular eye screening camps for school children is a must. More similar type of studies in other parts of the country to find out geographical differences in the cause of visual handicap is recommended.

REFERENCES

1. Schemannist tance of 3 meters and landolt C chart for illiterate. JF, Leplege A, Keita T, Resnikoff S. From visual function deficiency to handicap: Measuring visual handicap in Mali. *Ophthalmic Epidemiol.* 2002;9:133-48.
2. Ministry of Social Justice and Empowerment. Guidelines for evaluation of various disabilities and procedure for certification. Notification dated 1st June, 2001. The Gazette of India extraordinary. Part I. Section 1. No 154. Available from: <http://www.ccdisabilities.nic.in/eval2/page6.htm>. [Last Accessed on 2016 August 22]
3. Bunce C, Evans J, Fraser S, Wormald R. The BD8 certification of visually impaired people. *Br J Ophthalmol.* 1998; 82(1):72-6.
4. West SK, Blindness and visual impairment in the Americas and the Caribbean. *Br J Ophthalmol.* 2002;86:498-504.
5. Joshi RS: Causes of visual handicap amongst patients attending outpatient department of a medical college for visual handicap certification in central India. *Journal of Clinical Ophthalmology and Research.* Jan-Apr 2013;1(1):17-9.
6. Patil B, Pujar Ch, Manasa CN, Malikarjun C. Salgar: Study of causes of visual handicap amongst patients attending outpatient department for visual handicap certification in a medical college of Bagalkot district of Karnataka, India. *Medica Innovatica.* Dec 2015;4(2):13-16.
7. Dandona R, Dandona L, Srinivas M, Giridhar P, Prasad MN, Vilas K, et al. Moderate visual impairment in India: The Andhra Pradesh Eye Disease Study. *Br J Ophthalmol.* 2002; 86:373-7.
8. Dandona L, Dandona R, Srinivas M, Giridhar P, Vilas K, Prasad MN, et al. Blindness in the Indian State of Andhra Pradesh. *Invest Ophthalmol Vis Sci.* 2001;42:908-16.
9. Murthy GV, Gupta SK, Bachani D, Rose R, John N. Current estimates of blindness in India. *Br J Ophthalmol.* 2005; 89:257-60.
10. Vinchurkar MS, Sathye SM, Dikshit M. Retinitis pigmentosa genetics: A study of Indian population. *Indian J Ophthalmol.* 1996; 44:77-82.
11. Bunce C, Evans J, Fraser S, Wormald R. The BD8 certification of visually impaired people. *Br J Ophthalmol.* 1998; 82(1):72-6.
12. Herse P, Gothwal VK. Survey of visual impairment in an Indian tertiary eye hospital. *Indian J Ophthalmol.* 1997; 45:189-93.
13. Woo JH, Sanjay S, Au Eong KG. The epidemiology of age related macular degeneration in the Indian subcontinent. *Acta Ophthalmol.* 2009;87:262-9.
14. Azad R, Chandra P, Gupta R. The economic implication of the use of anti-vascular growth factor drugs in age related macular degeneration. *Indian J Ophthalmol.* 2007;55:441-3.
15. Avisar R, Frilling R, Snir M, Avisar I and Weinberger D. Estimation of the prevalence, incidence rates and the causes of blindness in Israel, 1998- 2003. *IMAJ.* 2006;8:800-81.
16. Gogate P. Vision centers in small villages can still be useful. *Indian J Ophthalmol.* 2011;59:403-4.

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