

Magnitude, causes and management of avoidable blindness: A cross-sectional study in Pravara Rural Hospital of Rural Medical College, Maharashtra, India

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Abstract

There are an estimated 180 million people worldwide who have a visual impairment. Out of that number, nearly 45 million are blind and four out of five of them live in developing countries. One-third of the world's blind people (15 million) and 50% of the world's blind children (0.7 million) live in the South-East Asia Region. Approximately 90% of all the cases of blindness in this region are avoidable. The present study was conducted in a tertiary health center, Pravara Rural Hospital of Rural Medical College Loni, Maharashtra, India, to examine the magnitude of preventable causes of blindness and to investigate the various causes responsible for blindness along with treatment offered. Out of 703 patients examined in the ophthalmology department in January 2011, 588 (83.6%) patients had avoidable blindness 525 from the outpatient department and 63 from the inpatient department. The Most common cause was cataract (60.95%), followed by refractive error (26%), whereas vitamin A deficiency and retinopathy were least common causes of avoidable blindness in our study. The baseline data presented by the present study about magnitude, causes and management of avoidable blindness will help to make 'Vision 2020' successful.

Key words: Avoidable blindness, Rural area, Tertiary health center, India.

Introduction

Visual impairment and blindness due to ocular disease is a significant public health problem in the many parts of the world including India. An estimated 180 million people worldwide are visually disabled, of whom nearly 45 million are blind, four out of five of them living in developing countries¹. As far as the South-East Asia Region is concerned, one-third of the world's blind people (about 15 million) and 50% of the world's blind children (approximately 0.7 million) live in this Region and 90% of this blindness in the Region is avoidable.² Blindness is one of the most significant social problems in India. According to the National Survey on blindness 2001-02, the prevalence of blindness in population 50 years and above was 8.5% and estimated prevalence in general population was 1.1%.³ Over 90% of the 12 million blind people in India are living in the rural areas, most of whom are most likely to unserved and unreached by healthcare services.⁴ The concept of avoidable blindness (i.e. preventable and curable) has gained increasing recognition in recent years. Avoidable blindness is defined as blindness (visual acuity less than 3/60) which could be either treated or prevented by known and cost effective measures.⁵ Main causes of avoidable blindness are cataracts, refractive errors, childhood blindness including

Practice points

- In South-East Asia Region, 90% of blindness is treatable and avoidable.
- The present study shows that a higher prevalence (83.6%) of patients was suffering from avoidable blindness in a tertiary hospital based in a rural area of India.
- Senile cataract was the most common cause followed by refractive error and both the causes are treatable and avoidable.
- Findings will help to develop and implement appropriate programs to prevent blindness.
- Large-scale studies are needed to identify the magnitude of the about avoidable blindness and their effective management to make 'Vision 2020' successful.

congenital cataracts etc. It has been estimated that blindness costs the world \$25 billion annually in lost productivity. The cost is three times higher if the cost of rehabilitation care

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givers is included. Therefore a global initiative has been taken to eliminate avoidable blindness by the year 2020.⁶ India is committed to the goal of elimination of avoidable blindness by 2020 - which is in line with 'Vision 2020'.⁴ 'Vision 2020' is a global initiative for the elimination of avoidable blindness, a joint program of the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB).⁷

Understanding the causes and demographic variables associated with visual impairments and their association with treatment seeking behavior in addition to barriers to eye care in rural area of India is important⁸. To eliminate avoidable blindness in India, all the components of disease control like surveillance, infrastructure development, and human resource management must work efficiently. It is also necessary to conduct relevant research to obtain valid and reliable data on causes and magnitude of blindness and effectiveness of eye care delivery system in the country.⁹ The aim of this study was to examine the magnitude, causes and management of avoidable blindness in Pravara Rural Hospital of Rural Medical College Maharashtra, India.

Materials and Methods

A cross-sectional, retrospective and record-based study was conducted in Pravara Rural Hospital of Rural Medical College Loni, Maharashtra, India. The study area is a rural area in Ahmednagar district of Western Maharashtra where majority of population is engaged in agricultural work. All the patients who attended ophthalmology outpatients department (OPD) and admitted in ophthalmology wards of Pravara Rural Hospital Loni from 1st January 2009 to 31st January 2009 were included in the study. Total number of patients was 703, out of which 625 were OPD patients and 78 were indoor patients.

After obtaining necessary permission from the concerned authorities, the case records of the individual patients were obtained from the Medical Records Department of Pravara Rural Hospital. Case records prepared by faculty members of ophthalmology Dept were studied in detail by the author and first co author. Each case record was studied and the cause and treatment given for the individual patient was recorded. The magnitude of avoidable causes of blindness and its classification was done as per guidelines discussed in the literature.^{4,6}

Results

Out of 703 patients examined in ophthalmology department (both outpatients and inpatients departments), 588 (83.6%) patients had avoidable blindness. The number patients with avoidable blindness in outpatients and inpatients departments were 525 and 63 respectively. Analysis of cases was done according to causes and magnitude. Most common cause was cataracts followed by refractive errors whereas vitamin A deficiency and retinopathy were least common causes of avoidable blindness (Table 1). Out of 525 OPD patients, 320 (61%) patients had cataracts among

them 205 (64.1%) had immature senile cataracts and 109 (34.1%) had mature senile cataracts and 6 (1.9%) had congenital cataracts. While among indoor patients, 23 (51.1%) had immature, 21 (46.7%) had mature senile cataracts and 1 (2.2%) had congenital cataracts. The patients were operated by following procedures: extra capsular cataract extraction 18 (40%) small incision cataract surgery 10 (22.2%) and phacoemulsification 17 (37.8%). All the patients treated for cataract were given intraocular lens implantations.

Table 1: Magnitude of avoidable causes of blindness in outpatients and inpatients departments

Causes	Number of patients	
	Outpatients	Inpatients
Cataract	45 (71.4%)	320 (61%)
Refractive error	-	141 (26.9%)
Corneal ulcer/opacity	12 (19%)	33 (6.3%)
Glaucoma	4 (6.4%)	15 (2.9%)
Diabetic Retinopathy	2 (3.2%)	8 (1.5%)
Hypertensive Retinopathy	-	6 (1.1%)
Vitamin A deficiency	-	2 (0.4%)
Total	63	525

Refractive error was present in 141 (26.9%) OPD patients myopia and presbiopia were the two commonest refractive errors observed among the study population (Table 2). Corneal opacity/ulcer was present in 6.3% of OPD and in 19% patients admitted in hospital. Glaucoma was present in 2.9% of OPD patients while in 6.4% patients admitted in the ophthalmology wards were suffering from glaucoma. Diabetic retinopathy was present among 8 (1.5%) OPD patients and 2 (3.2%) admitted patients. They were treated by oral hypoglycemic drugs and insulin, depending on their glucose levels. Laser photocoagulation was advised for one patient. Hypertensive retinopathy was seen identified in 6 OPD patients and antihypertensive drugs were prescribed for them. Two patients with uncontrolled hypertension were referred to superspeciality hospital for further management. Ocular manifestations of Vitamin A deficiency were seen only in 2 (0.4%) OPD patients.

Table 2: Distribution of outdoor patients having refractive errors (n=141)

Refractive errors	No of patients
Myopia	58 (41.13%)
Presbiopia	52(36.8%)
Hypermetropia	21(14.8%)
Pseudophakia /Aphakia	10(7.1%)
Total	141

Discussion

In the present study, we found high prevalence (83.6%) patients suffering from avoidable blindness in a tertiary hospital based in a rural area in India and cataracts (61%) was the most common cause of visual impairment. Rapid Assessment of Avoidable blindness conducted in 2006-2007 in India under the National Blindness Control Program also identified cataracts (62.6%) as the main cause of avoidable blindness.¹⁰ Similarly, study conducted by Thulasiraj and Nirmalan¹¹ also found cataract as the most common cause of blindness in rural area of South India. From these studies, there emerges a strong need for effective programs in India to realize the goal of the 'vision 2020'.

Visual impairment due to uncorrected refractive error has immediate and long-term consequences in children and adults¹². In our study, out of 525 OPD patients 141 (26.9%) patients had refractive errors and myopia; presbiopia were the commonest refractive errors. As mentioned in Global Report, 153 million people were estimated to be visually impaired due to uncorrected refractive errors and the prevalence of uncorrected refractive error was almost 20% among adults >50 years¹². Data from the Andhra Pradesh Eye Disease study showed that refractive errors constituted 12.5 % of the blindness and 59.4% of the visually impaired.¹³ The magnitude of corneal opacity in our study was 6.9%, more common than glaucoma (2.9%), which was similar to the study conducted by Khandekar and Riyami,¹⁴ in which the prevalence of glaucoma and corneal opacity was 3.1% and 6.8% respectively.

Conclusion

This study identified a higher number of patients who were suffering from avoidable blindness in a tertiary hospital based in a rural area of India. Senile cataract was the most common cause followed by refractive error and both the causes are treatable and avoidable. The baseline data of this study about magnitude, causes and management of avoidable blindness will help to develop and implement appropriate programs to prevent blindness. Large-scale studies should be conducted in South-East Asia Region to identify the magnitude of the avoidable blindness and implement effective programs to make 'Vision 2020' successful.

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