

ORIGINAL ARTICLE

Prevalence of ocular morbidity in rural population of eastern Uttar Pradesh, India

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Abstract

Background: Ocular morbidity is a significant problem in rural areas of India as it remains undiagnosed and neglected. **Aims & Objectives:** To determine the prevalence of ocular morbidity in the rural population of Barabanki, Uttar Pradesh. **Material & Methods:** A community based cross-sectional study was conducted in the villages around RHTC Satrikh of HIMS Barabanki. Ocular examination and vision testing was done among 812 people using ophthalmoscopic instruments. Information was collected using pre-tested questionnaire. Analysis was done using SPSS and appropriate Statistical tests. **Results:** Of the total 812 individuals interviewed, the prevalence of ocular morbidity was 41.3% (335 subjects had one or more ocular morbidity); with 88.8% elderly affected (age >65 years). Myopia was the most common ocular morbidity 14.8%, followed by cataract (14.3%) and hypermetropia (12.8%). Allergic and infective conjunctivitis affected 5.8% and 3.9%, respectively. The prevalence of Vitamin A deficiency disorder (including night blindness and bitot spots) was 1.3%. Higher ocular morbidity was present in houses with higher SES. Environmental conditions had no significant relation to ocular morbidity. **Conclusion:** The prevalence of ocular diseases among the elderly was highest and requires prompt attention. Myopia was the most common ocular morbidity having a prevalence of 14.8%, followed by cataract (14.3%) and hypermetropia (12.8%).

Keywords

Ocular morbidity; Myopia; Cataract.

Introduction

Worldwide approximately 285 million people are visually impaired, 90% of whom live in developing countries. Up to 80% of blindness and 85% of moderate or severe visual impairment is avoidable by prevention, treatment or cure.(1) India has nearly 12 million blind people, the major portion of them remain in rural and remote areas.(2) By the year 2020, the number of blind and visually impaired will

be twice the current level unless aggressive and innovative approaches are taken. Over the past few decades, the health standard of people living in rural areas has improved gradually, but visual health has been lagging and neglected. Undiagnosed ocular morbidity reduces quality of life and economic productivity significantly. Although Vision 2020 program has reduced avoidable blindness nationally, its impact on rural areas is lacking. Very few studies have been done to evaluate ocular morbidity in rural

population of North India, and none have evaluated the impact of socio-economic conditions in shaping the knowledge, attitude and practice of people regarding ocular morbidity.

Aims & Objectives

1. To determine the prevalence of ocular morbidity in rural population of eastern Uttar Pradesh.
2. To study the factors responsible for ocular morbidity.

Material & Methods

The study was observational cross sectional conducted at Rural Health Training Centre Satrikh, a rural field practice area of Hind Institute of Medical Sciences, Safedabad, Barabanki district, Uttar Pradesh among persons above 5 years of age. Sample Size was calculated on the basis of prevalence of ocular morbidity as 32.11% reported by Shrote *et al*. The sample size was calculated as 812 at 95% confidence interval and 10% allowable error by using the formula $n = 3.84 pq/l^2$. There are 16 villages under RHTC Satrikh, out of these, 8 villages were selected. The first village was selected randomly and then every third village was taken. The villages included in the sample comprised of a total population of 5200 having 931 households.(3) The First house of every village was selected randomly and then every 7th house was taken as part of the study. In each of the selected houses, each member aged five years and above in the house was included in the present study.

Institutional Human Ethics Committee of HIMS, approval was obtained prior to the start of study. The selected cases in each household were explained about the purpose of the study in their local language and informed consent was taken from them. Information about the families included in the present study was collected on a pretested schedule covering socio-demographic characteristics, housing and environment, history & ocular examination.

Ocular examination was done using a standard torch. Visual acuity was tested using Snellen's chart, and recorded for each eye. Near vision chart was used to test the visual acuity at a distance of 25 cm from the eyes. Complete examination of the eye was done from the lids, lacrimal apparatus, orbits, visual axis, conjunctiva, cornea, sclera, anterior chamber, and iris, pupils, lens and color vision. Opacity of lens when detected with the help of a torch light was then confirmed by ophthalmoscopic examination. Fundoscopic examination of every subject was done,

each eye was examined separately. The fundus was examined in a dark room of the house and without dilatation of pupils. The fundus examination findings were noted for each eye.

All data was compiled on MS Excel and statistical analysis was done using trial version of SPSS software.

Results

[Table 1](#) shows the sociodemographic profile of study subjects. Of the total 812 individuals interviewed, there were 417 males (51.4%) and 395 females (48.6%). In the 5 to 24 year of age group there were 344 individuals (42.4%). Almost half the individuals were in the 25 to 64 years' age group and only 7.7% individuals were above 65 years of age. Majority of the individuals were Hindus (93.5%), and remaining (6.5%) were Muslims. Over one fourth (26.9%) were illiterate and 24.3% were educated up to primary school. 8.5% of individuals were graduate or above. Majority of the individuals were unemployed (56.2%). Most individuals were farmers, shop owners or clerks (20.1%). There were 13.6% unskilled workers and nearly 5% individuals were semi-professionals and professionals. According to modified B.G. Prasad Scale (3), over half of the individuals (52.8%) belonged to Class IV, 13.1% belonged to Class I and II and almost equal number belonged to Class V.(4)

More than half of the individuals resided in semi pucca houses (56%). A separate kitchen was available only to 39.7% of the individuals. Nearly half (45.4%) of the individuals used only LPG as cooking fuel and remaining 31.3% individuals used both LPG and wood as cooking fuel. Seventy percent individuals were found to be living in over crowded houses.

The overall prevalence of ocular morbidity was found to be 41.3% (335 subjects had one or more ocular morbidity). Among these, 199 (59.4%) individuals had one ocular condition, 112 (33.5%) had two conditions, 12 (6.5%) had three conditions and two people (0.6%) had four ocular conditions.

[Figure 1](#) shows the distribution of specific ocular morbidities in the population studied. Myopia was the most common ocular morbidity having a prevalence of 14.8% individuals, followed by cataract (14.3%) and hypermetropia (12.8%). Allergic and infective conjunctivitis affected 5.8% and 3.9% people, respectively. The prevalence of Vitamin A deficiency disorder (including night blindness and

bitot's spot) was found to be 1.3% in the population. Other conditions like glaucoma and colour blindness were found to be in less than one percent of the population.

[Table 2](#) shows the association of ocular morbidity with various socio-economic and demographic factors. The percentage of ocular morbidity was higher among the subjects belonging to SES I as compared to other socio-economic classes. The prevalence of ocular morbidity was 51% in SES II (OR=0.49, 95%CI=0.18-1.32, p=16), 65% in III (OR=0.35, 95%CI=0.13-0.89, p=0.02), 49% in SES IV (OR=0.41, 95%CI=0.16-1.02, p=05) and 48% in SES V (OR=0.52, 95%CI=0.20-1.38, p=19).

The prevalence of ocular morbidity was higher among the subjects living in kuccha (45.8%) house than Pucca (41.3%) and Semi-pucca (39.6%). The prevalence of ocular morbidity was found to be lower among those who had separate kitchen in the house (40.7%). There was not much difference in the ocular morbidity by fuel used for cooking. The prevalence of ocular morbidity was lower who had overcrowding (39.6%). There was no significant association between ocular morbidity and environmental conditions.

Discussion

The prevalence of ocular morbidity in this study was 41.3%. Singh *et al* (2012) observed the prevalence of ocular morbidity among the rural population of Allahabad to be 9.56%.(4) Shrote *et al* (5) reported the prevalence of ocular morbidity as 32.1%. Agrawal *et al* (6) also observed the ocular morbidity in general population being 53 %. According to Singh *et al* (4), the main causes of ocular morbidity were cataract (41.9%), uncorrected refractive errors (21.59 %), xerophthalmia (10.20 %) and glaucoma (4.83 %). Agrawal *et al* (6) also observed that the most common ocular morbidity was refractive error (86.4%) followed by cataract (22.5%) and conjunctivitis (6.0%). The finding of the present study was almost similar to other studies (Sherchan *et al* (7); Rizyal *et al* (8). Occupation of the subjects did not affect the prevalence of ocular morbidity in the present study. This finding was similar to the studies conducted by Neena *et al* (9) and Dandona *et al* (10) in which occupation was not associated with the prevalence of ocular morbidity.(9, 10) The socio-economic status of the subjects was observed to be significantly associated with the prevalence of ocular morbidity in this study. The socio-economic status

was reported to be associated with the prevalence of ocular morbidity in the studies conducted by Neena *et al* (9) and Dandona *et al* (10). The difference between the present study and these two studies might be due to the variation in the distribution of ocular morbidity across socio-economic groups. Occupation of the subjects did not affect the prevalence of ocular morbidity in the present study. This finding was similar to the studies conducted by Neena *et al* (9) and Dandona *et al* (10) in which occupation was not associated with the prevalence of ocular morbidity. The socio-economic status of the subjects was observed to be significantly associated with the prevalence of ocular morbidity in this study. The socio-economic status was reported to be associated with the prevalence of ocular morbidity in the studies conducted by Neena *et al* (9) and Dandona *et al* (10). The difference between the present study and these two studies might be due to the variation in the distribution of ocular morbidity across socio-economic groups.(10, 11)

Conclusion

The prevalence of ocular diseases among the elderly was highest and requires prompt attention. Myopia was the most common ocular morbidity having a prevalence of 14.8%, followed by cataract (14.3%) and hypermetropia (12.8%). The ocular morbidity is a frequent condition seen in the rural population of Barabanki, Uttar Pradesh affecting all the ages but more common in elderly population and it requires proper attention.

Limitation of the study

The study findings are applicable to the rural population of Barabanki and may be generalized with caution.

Relevance of the study

The study findings highlight the need for appropriate eye care services at the PHC/CHC level in the district.

Authors Contribution

All the authors had made substantial contributions to conception, design, data collection, analysis and interpretation of data; drafting the article, revising it critically for important intellectual content; and final approval of the version to be published.

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Tables

TABLE 1 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF STUDY SUBJECTS

Characteristics	No. (n=812)	%
Gender		
Males	417	51.4
Females	395	48.6
Age group		
5-24 years	344	42.4
25-64 years	405	49.9
>65 years	63	7.7
Religion		
Hindus	759	93.5
Muslims	53	6.5
Education		
Illiterate	218	26.9
Primary	197	24.3
Middle	157	19.3
High	113	13.9
Intermediate	58	7.1
Graduate	50	6.2
Post graduate	19	2.3
Occupation* (n=648)		
Profession/Semi-profession	32	4.9
Clerical, Shop-owner, farmer	130	20.1
Skilled worker	6	0.9
Semi- skilled	28	4.3
Unskilled	88	13.6
Unemployed	364	56.2
Socio-economic status		
I & II (Upper & middle)	106	13.1
III (Upper lower)	171	21.1
IV (Lower Middle)	429	52.8
V (Lower)	106	13.0

*Subjects under 15 years of age excluded

TABLE 2 ODDS RATIO FOR VARIOUS SOCIO-DEMOGRAPHIC FACTORS OF OCULAR MORBIDITY

Variables	Prevalence (%)	OR	95% CI	p-value
Age group				
5-24 years	27.33	Ref		
25-64 years	45.68	2.24	1.65-3.04	0.000
>65 years	88.89	21.28	9.5-47.39	0.000
Occupation				
Professional & Semi prof.	34.4	Ref.		
Clerical, shop-owner, farmer	41.5	1.35	0.60-3.04	0.46
Skilled worker	33.3	0.95	0.15-6.05	0.96
Semi- skilled	39.3	1.23	0.43-3.53	0.69
Unskilled	43.2	1.45	0.62-3.37	0.38
Unemployed	50.0	1.90	0.89-4.07	0.09
Education				
Illiterate	56.0	Ref.		
Primary	37.6	0.47	0.31-0.70	0.0001*
Middle School	37.6	0.47	0.31-0.72	0.0001*
High School	29.2	0.32	0.20-0.52	0.0001*
Intermediate	41.4	0.55	0.30-0.99	0.0001*
Graduate	36.0	0.44	0.23-0.83	0.05
Post-graduate	26.3	0.28	0.09-0.80	0.01*
SES				
Upper & middle	48.1	Ref		
Upper lower	36.3	0.44	0.32-0.81	0.01*
Lower Middle	40.3	0.88	0.11-0.98	0.001*
Lower	46.2	0.89	0.45-0.97	0.0001*
Kitchen				
Not separate	41.6	Ref.		
Separate	40.7	0.96	0.72-1.28	0.78
Fuel used				
Wood/ Cow Dung Cakes	45.5	Ref.		
LPG	36.9	0.77	0.43-1.19	0.12
LPG + Wood	44.5	0.89	0.41-1.54	0.44
Overcrowding				
Absent	45.1	Ref.		
Present	39.6	0.79	0.59-1.08	0.14
Electricity				
Absent	43.9	Ref.		
Present	37.6	0.77	0.57-1.02	0.07
Toilet facility				
Absent	42.8	Ref.		
Present	37.9	0.81	0.60-1.10	0.18

Figures

FIGURE 1 DISTRIBUTION OF OCULAR MORBIDITIES

