

Research Article

# Epidemiology of Ocular Morbidities in Rural Ponda Taluka, Goa

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## A B S T R A C T

**Introduction:** Ocular morbidity is among the most under-reported public health problems in the developing world. The estimated number of visually impaired people in the world is around 1.3 billion. India has around 8 million blind and 62 million visually impaired individuals. There are several published studies describing the profile of ocular morbidities in rural areas across India, however such studies on ocular morbidities in rural Goa are rare. The present study was undertaken to generate evidence on this important public health problem.

**Materials and Methods:** The present study was conducted between March to August 2018, after Institutional Ethics Committee approval. The study population included patients from the villages of Ponda Taluka, Goa; who reported to outreach camps. Informed consent was obtained. The data so obtained was entered into structured proformas. The data included socio-demographic details, history regarding any ocular complaints and a detailed ophthalmic examination.

The data was entered in Microsoft Excel 2010 version and statistical analysis was performed using Simple percentages and proportions.

**Result:** out of the 120 patients that were studied, 51.67% were aged between 60-80 years, 70% were males, and 61.67% were illiterate. 78.33% participants had refractive errors, 45.33% had cataract, 5.83% had glaucoma, 3.34% had retinal affection and 3.33% had corneal opacities.

**Conclusion:** Refractive errors were noted in majority of our study participants; followed by cataract, glaucoma, corneal opacities and others. A high percentage of patients with cataract and corneal opacities were probably due to low socio-economic background, illiteracy leading to a lack of awareness about common ocular problems and their treatable nature.

**Keywords:** Ocular, Morbidities, Profile, Epidemiology, Ponda, Goa

## Introduction

Ocular morbidity is among the most under-diagnosed and under-reported public health problems in the developing world, especially in South East Asia. The estimated number of visually impaired people in the world is around 1.3 billion<sup>[1]</sup>. India has around 8 million blind and 62 million visually impaired individuals.<sup>2</sup>

As per a survey conducted by NPCB in 2007 the prevalence of blindness in India was estimated to be 1%. The Goal of the program was to reduce it to 0.3%.<sup>3</sup> Ocular morbidity has huge physical, psychological and socio-economic implications.

The main causes of blindness in India are cataract (62.6%), refractive errors (19.7%), glaucoma (5.8%), posterior segment disorders (4.7%), surgical complications (1.2%), corneal blindness (0.9%), and posterior capsular opacification (0.9%) besides others (4.19%).<sup>3,4</sup>

There are several published studies describing the profile of ocular morbidities in rural areas across India, however such studies on ocular morbidities in rural Goa are rare. The present study was undertaken to generate evidence on this important public health problem.

The objectives of the study were as follows:

- To study epidemiology of ocular morbidities among rural population of South Goa.
- To identify the socio-economic factors associated with such ocular morbidities.

## Methods

A case series titled, "Epidemiology of ocular morbidities in rural Ponda taluka, Goa", was conducted over the period of 6 months from March- August 2018, after obtaining approval from the Institutional Ethics Committee (IEC). Consecutive sampling method was followed and the study population included patients of all ages and both sexes from various villages of the Ponda Taluka who reported to outreach camps conducted in areas with poor access to Ophthalmological services. Informed consent was obtained from the study participants.

The participants were interviewed by the investigators who administered all consenting study participants a pre tested pre designed study proforma. Their socio-demographic details were entered, history was obtained regarding any ocular complaints and a detailed ophthalmic examination was done by a senior ophthalmologist. The examination included a Torch and slit lamp examination, visual acuity, intraocular pressure measurement by Schiotz tonometer and fundus examination using direct and indirect ophthalmoscope. Gonioscopy was done where found necessary and special investigations such as B-Scan/CT scan were requested whenever indicated.

The data was entered in Microsoft Excel 2010 version and statistical analysis was performed. Simple percentages and proportions were used to express the results of study.

## Result

During the study period, a total of 120 consecutive patients were interviewed and examined. Socio demographic data studied included age distribution, sex distribution, type of fuel used in the household, level of education; and is depicted in Table 1-5 and Chart 1.

**Age Distribution:** Majority of the participants i.e. 62 (51.67%) belonged to the elderly age group between 60-80 years. This was followed by middle aged persons (40-60 years) i.e. 35 (29.17%). Youth between 20-40 years comprised 14 (11.67%) of the patients. Whereas only 4 (3.33%) were above 80 years and 5 (4.17%) were adolescents and children.

**Sex Distribution:** Out of 120 participants, majority i.e. 84 (70%) were males, while about one third i.e. 36 (30%) were females.

**Level of Education:** Among the total study participants majority i.e. 74 (61.67%) were illiterate, followed by those who had primary education 26 (21.67%), secondary education 10 (8.33%), higher secondary education 5 (4.17%) and graduation 5 (4.17%).

**Fuel Usage:** Most of the study participants i.e. 92 (76.67%) use LPG whereas 20 (16.67%) use coal or wood as fuel for cooking purposes. Around 8 participants (6.67%) use both.

**Visual Acuity:** Based on WHO classification of low vision the participants studied were grouped into; no visual impairment 66 (55%), visual impairment I 19 (15.83%), II 29 (24.17%) or blindness III 4 (3.33%), IV 2 (1.67%).

Most of the Patients i.e. 94 (78.33%) had refractive errors. In some cases more than one type of refractive error was noted.

Majority of the participants 92 (76.67%) had presbyopia, followed by hypermetropia 52 (43.33%), myopia 37 (30.83%) and astigmatism 22 (18.33%).

**Corneal Opacity:** Four patients (3.33%) had corneal opacities. The causes of corneal opacities being trauma, corneal degeneration or dystrophies.

**Cataract:** Out of 120 participants, 58 patients (48.33%) had cataract. The highest rates of cataract were among elderly individuals, those from lower social classes, using coal wood and dung as fuel, illiterates. Younger individuals who presented with cataracts were those following trauma, or developmental cataracts.

**Glaucoma:** Seven patients (5.83%) that were studied were found to have glaucoma. 6 patients were aged more than 40 years. One young patient aged 24 years, was found to have

angle recession glaucoma following blunt ocular trauma.

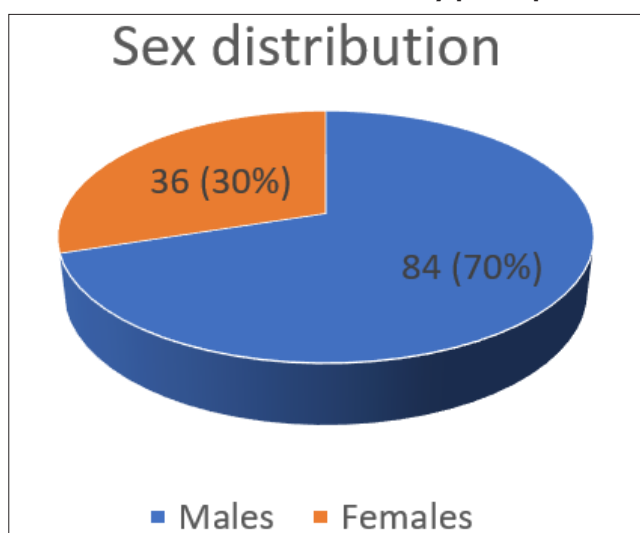
**Optic Neuropathy:** One patient (0.83%) had optic atrophy due to trauma (Traumatic Optic Neuropathy).

**Retinal and Macular Diseases:** Four patients (3.34%) presented with retinal and macular diseases such as, retinal detachment, age related or hereditary macular degeneration and macular hole.

**Table 1. Age distribution of study participants**

Age group (years)	Number of patients	Percentage (%)
<20	5	4.17
20-40	14	11.67
40-60	35	29.17
60-80	62	51.67
>80	4	3.33
Total	120	100

**Chart 1. Sex distribution of study participants**



**Table 2. Visual Impairment among study participants**

Categories of Visual impairment	Vision	Number of patients	Percentages (%)
No visual impairment	> 6/18	66	55
Visual impairment			
Category I	6/18 – 6/60	19	15.83
Category II	6/60 – 3/60	29	24.17
Blindness			
Category III	3/60 – 1/60	4	3.33
Category IV	1/60 – PL	2	1.67

**Table 3. Distribution of ocular morbidities among study participants**

Ocular Morbidities	Number of patients	Percentages (%)
Refractive Errors	94	78.33
Hypermetropia	52	43.33
Myopia	37	30.83
Astigmatism	22	18.33
Presbyopia	92	76.67
Cataract	58	48.33
Aphakia	2	1.67
Corneal opacities	4	3.33
Glaucoma	7	5.83
Optic neuropathy	1	0.83
Retinal detachment	2	1.67
Macular pathology	2	1.67
Prosthetic eye	1	0.83

(Note: Since same patients had more than one type of refractive error, the total exceeds the number of study participants.)

**Table 4. Level of education among study participants**

Education	Number	Percentage (%)
Illiterate	74	61.67%
Primary Education	26	21.67%
Secondary Education	10	08.33%
Higher Secondary Education	5	04.17%
Graduation	5	04.17%

**Table 5. Fuel usage among study participants**

Fuel	Number	Percentage (%)
LPG	92	76.67%
Coal/ Wood	20	16.67%
Both	08	06.67%

## Discussion

Majority of study participants presented with refractive errors (78.33%) which is higher than that found in similar studies such as Venkataramana et al in a study in rural population in South India (56%) and Singh et al in Allahbad (21.59%)<sup>[4,6]</sup>. Amongst which myopia was noted in 30.83% of the participants. Results were similar to studies conducted by Raju et al in rural areas in Tamil Nadu (26.99%) and by Dandona et al in Andhra Pradesh (31%), but higher than that found by Haq, Khan et al in a study conducted in rural population of Aligarh (11.5%).<sup>7,8,9</sup>

Hypermetropia was found in 43.33% of the study participants which was higher than that found in many such similar studies such as Cacodcar JA et al in North Goa (30%), Raju et al in a study in Tamil Nadu (18.70%), Dandona et al in a study done in Andhra Pradesh (17.9%) and Haq, Khan et al in a similar study done in Aligarh (9.8%).<sup>5,7,8,9</sup> The higher number of participants with hypermetropia can be attributed to the fact that majority of our study participants were aged above 60 years.

Around 18.33% participants presented with astigmatism and were comparable to 15% as reported by Cacodcar JA et al in North Goa and 12.94% by Dandona et al in Andhra Pradesh.<sup>5,8</sup>

Corneal opacities were noted in 3.33% of the participants which is comparable to 2.99% as found by Singh MM et al in elderly population in Central India and Haq, Khan et al in Aligarh (4.2%) but lower than 9.5% as reported by Cacodcar JA et al in North Goa.<sup>5,6,10</sup>

Around 48.33% of the participants were found to have cataract; which is higher than 33% in North Goa in a study by Cacodcar JA et al., 27.7% in a study by Soundarssanane et al in Pondicherry and 40.4% in Central India in a study by Singh et al.<sup>5,6,11</sup>

Many of the study participants were illiterate (61.67%) and about 16.67% were those using coal, wood or cow dung as fuel, suggesting lower socio economic background. Similar results were found by Haq, Khan et al, where 32.8% were illiterates and 24.9% belonged to low socio economic background.<sup>9</sup> The lower socio economic status is evident from the 16.7% participants using coal, wood or cow dung as fuel, and 61.67% illiterate participants.

The high percentage of patients with corneal opacities and cataract is probably due to lower socio economic status, illiteracy and lack of awareness about ocular problems. Many of these individuals had not visited an ophthalmologist earlier and had probably ignored their ocular symptoms.

Around 5.83% of the patients presented with glaucoma. This was comparable to findings of many similar studies conducted in rural areas in India by Venkataramana et al. (6%), Awasthi et al (4.2%), Jain and Modi (4.8%), Singh et al. (4.83%), Cacodcar JA et al. (4.5%), Singh MM, Murthy et al. (3.1%).<sup>4-6,10,12,13</sup>

## Conclusion

Refractive errors were noted in majority of our study participants; followed by cataract, glaucoma, corneal opacities and others. A large no of the participants belonged to lower socioeconomic class and were illiterates. A fair proportion used coal, wood or cow dung as fuel, suggesting a lower socio-economic background. A high percentage of patients with cataract and corneal opacities were probably

due to low socio-economic background, illiteracy leading to a lack of awareness about common ocular problems and their treatable nature. Also there is lack of health facilities in these areas and patients presented in large numbers because it was in a camp setting with easy accessibility. Hence such camps are a very important way of reaching out to patients in areas where there are scanty health care facilities.

**Conflict of Interest:** None

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