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## Original Research Article

## Ocular morbidity during nationwide lockdown among patients attending ophthalmic department in a tertiary care center

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## ABSTRACT

**Background:** During this pandemic times majority of the people with ocular complaints were either scared to approach health facility, fearing the chances of contracting the disease, COVID -19 or due to lack of regular functioning of ophthalmic clinics. Hence it is important to understand about the pattern of ocular morbidity during this phased relaxation of lock down.

**Materials and Methods:** This cross sectional hospital based study was conducted in the outpatient department of Ophthalmology at Sri Muthukumaran Medical College Hospital and Research Institute, Chennai, from September 2019 to November 2019. A total of 234 patients were included in the study. Data analysis was done using SPSS version 18.

**Results:** Common ocular morbidity reported was refractive errors (35.9%) followed by cataract (20.1%), pseudophakia (11.1%), conjunctivitis (9%), age related macular degeneration (7.3%), blepharitis (5.6%), foreign body (5.6%), retinopathies (4.7%), glaucoma (3%) and corneal opacity (2.6%). Also 17.5% of cases reported that they had ocular complaints during the complete lock down.

**Conclusion:** Pattern of ocular morbidity during the lock down was found to be similar to the pattern prevailed before the pandemic COVID 19. Considerable proportion of cases reported ophthalmic complaints during the nationwide lockdown and hence policies should be made in such a way that during these unexpected circumstances also, the essential ophthalmic care centers should be functional with easy access to the population.

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## 1. Introduction

Ocular morbidity is defined as spectrum of ocular diseases which includes both visual impairing and non-impairing conditions experienced by a group of people or population.<sup>1</sup> Many of these visual impairing conditions remains as a major public health problem not only in the developing countries but also in some of the developed countries and thus these conditions require proper clinical assessment, rehabilitation and surveillance.<sup>2</sup> Though there are several epidemiological factors like age, gender, socioeconomic status, addictions, etc. were reported as risk factors for the development of ocular morbidities, the prevalence of different ocular morbidity changes with place and time.<sup>3</sup>

Due to COVID -19 pandemic, the Government of India (GoI) has posed a nation-wide complete lockdown for all non-essential services with effect from March 25, 2020. The complete lock down was slowly and partially being relaxed over time by the government for the people to back to their new normal routine life and this phased manner of lock down relaxation is being continued with several restrictions. Due to these unprecedented measures, the functioning of regular and routine health checkups in the health care facilities was drastically affected. Since ophthalmology is a stand-alone specialty with relatively fewer eye and life threatening emergencies, most of the practices have temporarily shut down.<sup>4</sup> During this pandemic times majority of the people with ocular complaints were either scared to approach health facility, fearing the chances of

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contracting the disease, COVID -19 or due to lack of regular functioning of ophthalmic clinics. Hence it is important to understand about the pattern of ocular morbidity during this phased relaxation of lock down.

## 2. Objectives

This study was conducted to assess the ocular morbidity and also to assess the proportion of cases with ocular morbidity during lockdown among the patients attending an ophthalmic outpatient department.

## 3. Materials and Methods

This cross sectional hospital based study was conducted in the outpatient department of Ophthalmology at Sri Muthukumaran Medical College Hospital and Research Institute, Chennai, from August 2020 to September 2020. Except those who didn't give consent for their participation in the study, all patients who attended the outpatient department during the study period were included in the study. A total of 234 patients were included in the study.

The principal investigator explained the purpose of the study to each participant and a written consent was obtained prior to the commencement of the study. Data collection was done using a proforma with questions related to their ocular morbidity, ocular complaints during the complete lockdown and how they were able to manage the same.

Data analysis was done using Statistical Packages for Social Sciences (SPSS) version 18. Chi square test was done to assess the association between different parameters and awareness about glaucoma. p value of < 0.05 was considered as significant.

## 4. Results

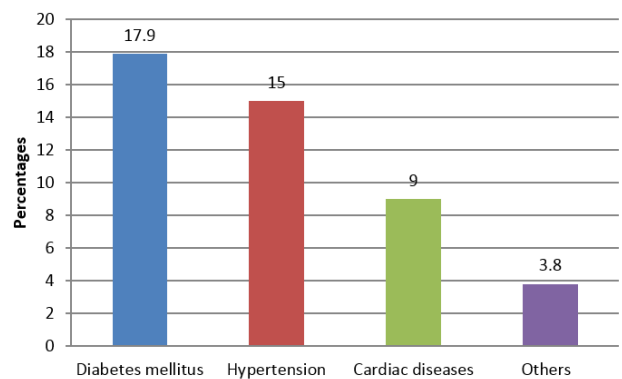
In the present study majority of the study participants (56.8%) were adults belonging to age group 18-60 years and 26.5% were elderly (> 60 years) and 16.7% were pediatric population (< 18 years). Majority of the participants (51.7%) were males and 48.3% were females. Also in this study, 14.5%, 58.5% and 26.9% of participants were from urban, semi urban and rural residence. (Table 1)

The common chronic illness reported among the study participants was diabetes mellitus (17.9%) followed by hypertension (15%), cardiac disorders (9%) and other chronic illnesses like thyroid disorders and cancer were reported among 3.8% of participants. (Figure 1)

Majority of the participants (78.2%) gave ocular complaints in both eyes whereas 21.8% had ocular complaint in only one eye. Use of spectacles was reported by 31.6% of cases whereas 68.4% of case did not use any spectacles. Past history of ocular surgery was reported by 15.8% of study participants and past history of ocular trauma was reported by 7.7% of study participants.

**Table 1:** Demographic profile of study participants

| Variables                | Frequency | percentage |
|--------------------------|-----------|------------|
| <b>Age group</b>         |           |            |
| < 18 years               | 39        | 16.7       |
| 18-60 years              | 133       | 56.8       |
| > 60 years               | 62        | 26.5       |
| <b>Gender</b>            |           |            |
| Male                     | 121       | 51.7       |
| Female                   | 113       | 48.3       |
| <b>Area of residence</b> |           |            |
| Urban                    | 34        | 14.5       |
| Semi urban               | 137       | 58.5       |
| Rural                    | 63        | 26.9       |



**Fig. 1:** Proportion of cases with chronic illnesses

**Table 2:** Associated ocular findings

| Variables                             | Frequency | percentage |
|---------------------------------------|-----------|------------|
| <b>Ocular complaints</b>              |           |            |
| One eye                               | 51        | 21.8       |
| Both eyes                             | 183       | 78.2       |
| <b>Use of spectacles</b>              |           |            |
| Yes                                   | 74        | 31.6       |
| No                                    | 160       | 68.4       |
| <b>Past history of ocular surgery</b> |           |            |
| Yes                                   | 37        | 15.8       |
| No                                    | 197       | 84.2       |
| <b>Past history of ocular trauma</b>  |           |            |
| Yes                                   | 18        | 7.7        |
| No                                    | 216       | 92.3       |

The common ocular morbidity reported in this study was refractive errors (35.9%) followed by cataract (20.1%), pseudophakia (11.1%), conjunctivitis (9%), Age related macular degeneration (7.3%), blepharitis (5.6%), foreign body (5.6%) and retinopathies (4.7%). Also glaucoma was reported in 3% of study participants, corneal opacity in 2.6% of cases, trichiasis, dry eyes and blindness in 0.9% of cases each, dermoid cyst and squint in 0.4% of cases, each.

In this study 17.5% of cases reported that they had ocular complaints during the complete lock down whereas 82.5% did not have any ocular complaints. Among those who had

**Table 3:** Proportion of cases with ocular morbidities

| Ocular morbidities | Frequency | percentage |
|--------------------|-----------|------------|
| Blepharitis        | 13        | 5.6        |
| Trichiasis         | 02        | 0.9        |
| Dermoid cyst       | 01        | 0.4        |
| Conjunctivitis     | 21        | 9.0        |
| Corneal opacity    | 06        | 2.6        |
| Dry eyes           | 02        | 0.9        |
| Cataract           | 47        | 20.1       |
| Pseudophakia       | 26        | 11.1       |
| Retinopathies      | 11        | 4.7        |
| ARMD               | 17        | 7.3        |
| Refractive error   | 84        | 35.9       |
| Glaucoma           | 07        | 3.0        |
| Blindness          | 02        | 0.9        |
| Foreign body       | 13        | 5.6        |
| Squint             | 01        | 0.4        |

ocular complaints, majority (31.7%) used over the counter medications from pharmacy followed by 22% of cases took already prescribed medication by ophthalmologist, 19.5% took home remedies, 12.2% took self medications, 9.8% took consultation through telephone or online platforms and only 4.9% of cases consulted a ophthalmologist.

**Table 4:** Proportion of cases with Ocular complaints during lock down

| Variables   | Frequency | Percentage |
|---|-----------|------------|
| <b>Had ocular related complaints during complete lock down?</b> |           |            |
| Yes   | 41        | 17.5       |
| No  | 193       | 82.5       |
| <b>How did you manage it during lock down? (N=41)</b>           |           |            |
| Home remedies   | 08        | 19.5       |
| Self medication   | 05        | 12.2       |
| Tele/online consultation  | 04        | 9.8        |
| Over the counter medications                                    | 13        | 31.7       |
| Took already prescribed medications by ophthalmologist          | 09        | 22.0       |
| Consulted a ophthalmologist for emergency                       | 02        | 4.9        |

## 5. Discussion

Over 90% of world blind people are residing in sub-Saharan Africa and Asia and especially among the people in the rural areas.<sup>5</sup> Globally, the major causes of visual impairment are refractive errors (43%), un-operated cataract (33%) and glaucoma (2%). About 65% of all people suffering from visual impairment are aged 50 and older.<sup>6</sup> The global causes of blindness are cataract (51%), glaucoma (8%), age-related macular degeneration (AMD) (5%), childhood blindness and corneal opacities (each 4%), uncorrected refractive

errors and trachoma (each 3%), diabetic retinopathy (1%) and undetermined causes (21%).<sup>6</sup> Visual impairment of the aged population is one of the main causes of diminished independence, mobility restriction, falls and fractures.<sup>7,8</sup> Ironically almost all of these causes are potentially preventable and or easily treatable, but the bulk of the victims in Africa and Asia are either too poor, ignorant or do not have eye-care services available to them.

Parrey et al<sup>9</sup> conducted a study and reported that the commonest ocular morbidity as conjunctivitis (31.7%) followed by refractive error, cataract, diabetic retinopathy and strabismus in 20.9%, 14.8%, 8% and 3.1% cases, respectively. In an another study, Parrey et al<sup>10</sup> performed another study and reported that cataract was found to be the main cause of visual impairment (30.7%) followed by refractive error (24.7%) and diabetic retinopathy (13.2%). In their study 10.1 % had shown unilateral visual impairment while 1.8% had shown unilateral blindness with the other eye normal.

In another study conducted by Lawrence et al<sup>11</sup> reported that 22.6% of their study subjects underwent ocular surgery in the past. They found that 8.5% of their study subjects had previous history of ocular trauma and the reasons for ocular trauma was accidents followed by physical attack, insect and landmine fragments respectively.

Singh et al<sup>12</sup> conducted a study and reported that ocular morbidity was common among those aged above 60 years. The main causes of ocular morbidity in the study population were cataract (41.9%), uncorrected refractive errors (21.6%), xerophthalmia (10.2%) and glaucoma (4.8%).

Sarita et al<sup>13</sup> performed a study and reported that refractive error was the most common ocular morbidity accounting 26.8% followed by conjunctivitis 20.6%, cataract 11.8%, pterygium 6%, chalazion/stye 4%, ectropion/entropion 3.9%, keratitis 3.8%, dry eyes 2.8%, and corneal opacities 2.3%.

In a study conducted in India by Singh MM et al<sup>14</sup> showed that refractive errors accounted for 40.8%, followed by cataract 40.4%, aphakia 11.1% and pterygium 5.2%.<sup>4</sup>

Thevi et al<sup>15</sup> performed a study and reported that cataract (22.9%) was the most common eye disease, followed by retinal diseases (11.5%) and ocular trauma (9.8%). Visual impairment was noted in 8.2% patients, severe visual impairment in 1.1% and blindness in 3.2%.

Kumar et al<sup>16</sup> performed a study and reported that 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 was among 1.3% of cases.

Pooja et al<sup>17</sup> conducted a study and reported that 30.1% of study participants were between 20-30 years of age. More than half (59.1%) of the subjects were males and myopia was found to be most common ocular morbidity

(17.2%) followed by Cataract (16.1%), hypermetropia (15.6%), allergic conjunctivitis (11.8%) and corneal opacity (10.2%). Percentage of other ocular morbidity less than 10% comprised.

Seema et al<sup>18</sup> in their study conducted among school children stated that the overall prevalence of refractive error was 18.3. Refractive error was positively associated with school student belongs to nuclear type family, watching television and using computers or smart phone and not playing outdoor game or playing for less than one hour.

Venkatraman et al<sup>19</sup> conducted a community based study and reported that 72.9% of the study population was in 18-45 years age group, which is almost similar to this study. They reported the prevalence of ocular morbidity as 13.9%. Common ocular morbidity was refractive errors (6.4%) followed by cataract (4%) and corneal blindness (3%).

Vibha et al<sup>20</sup> in their study reported that visual impairment was found among 30% of cases and blindness in 8% of cases. The most common cause of blindness was cataract, followed by corneal opacity, glaucoma, refractive error, diabetic retinopathy, macular scar, age related macular degeneration, retinal detachment, retinitis pigmentosa. Also in their study they stated that visual impairment was more in individuals with low socioeconomic status.

Amrita et al<sup>21</sup> conducted a study and reported that most common ocular morbidity was refractive error (57.4%) followed by vitamin A deficiency(38.1%), color blindness (3.1%), nevus (3%), manifest squint (2.2%), ptosis (2.2%), conjunctivitis(0.9%) and sty (0.4%). There was statistically significant association among the variations of presence of ocular morbidities in the various age groups, among students attending Government or Private schools and socioeconomic status.

Sumita et al<sup>22</sup> performed a study and reported that most common clinical condition reported was strabismus (59.9%), followed by refractive errors (16.9%), lids related disorders (6.2%), orbit and adnexal developmental defects (4.6%), lenticular (3.3%), corneal and conjunctival (3.2%) and retinal disorders (2.1%). A total of 49.7% cases had avoidable or treatable causes of visual impairment. All these studies were conducted before the COVID -19 pandemic and to compare the pattern during the lockdown period, literates are not available.

## 6. Conclusion

Pattern of ocular morbidity during the lock down was found to be similar to the pattern prevailed before the pandemic COVID 19. Considerable proportion of cases reported ophthalmic complaints during the nationwide lockdown and hence policies should be made in such a way that during these unexpected circumstances also, the essential ophthalmic care centers should be functional with easy access to the population.

## 7. Acknowledgement

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## 8. Conflicts of Interest

All contributing authors declare no conflicts of interest.

## 9. Source of Funding

None.

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