Dry eye disease in India

Dear Editor:
Recently a study from north India reported 32% prevalence of dry eye disease (DED), and based on symptoms 81% were severe DED.[1] Another study from south India reported 1.46% DED incidence.[2] The authors predicted that within the end of next decade, large number of urban and rural populations would have DED.

We recently published our findings of meibomian gland dysfunction.[3] Here we present the unpublished findings of the study related to DED as a secondary analysis.

The results are summarized in Tables 1 and 2. The crude and age-adjusted prevalence rate of DE was 17.7% and 19.0% (95%CI: 15.7–22.1%), respectively. The crude and age-adjusted prevalence rate in males was 15.2% and 18.4% (95%CI: 14.1–22.8%), and in females was 20.5% and 23.3% (95%CI: 18.2–28.4%), respectively.

Our results of lower prevalence offer a different perspective. Some other Indian studies have also reported lesser prevalence rates—18.4%[4] and 15.4%,[5] which are more aligned to ours, and less alarming.

All the above studies[1-5] are hospital-based, and generalization of results should be done cautiously. Studies[4,5] reporting low DE prevalence like ours, are from less urban areas than those[1,2] reporting higher prevalence. The degree of urbanization influences lifestyle, and exposure to environmental risk factors which may explain the differences. Ocular symptoms were less reported in our study. It is possible that the OSDI questionnaire that we used, and which has been designed specifically for a western population, was less suitable in our setting. Our diagnosis criteria was more stringent than others,[1] which may be a reason for the lower prevalence rate. It is also possible that DE is less uniformly distributed across India, with pockets of higher prevalence. Therefore, any extrapolation[2] to whole of India must be done with circumspection. A multi-centric study across India may provide a more representative magnitude of DED.

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Table 1: Result of different Dry Eye Disease tests in 570 subjects

DED tests	Number of patients (percentage)	Mean±SD (range)
Ocular Surface Disease Index score ≥13	140 (24.6)	9±12.9 (0-83)
Tear film height <0.3 mm	64 (11.2)	0.4±0.1 (0.1-0.7) mm
Tear film break-up time <10 seconds(s)	386 (67.7)	8.3±3.7 (1-15) s
Lissamine Green stain score ≥2	36 (6.3)	0.3±0.7 (0-4)
Schirmer's I test ≤5 mm at 5 mins	74 (13.0)	20.2±11.1 (0-35) mm

Table 2: Dry eye disease diagnosis (*n*=570)

DED diagnosis criteria	Number (percentages)
TFOS DEWS II	
DED: OSDI ≥13 + one of either TBUT <10 seconds or LGS ≥2	101 (17.7)
Evaporative DED: OSDI + TBUT	77 (13.5)
Aqueous tear deficient DED: OSDI + TBUT/LGS + Tear film height <0.3 mm	23 (4.0)
Japanese Dry Eye criteria	
Probable DED: Any 2 of: OSDI ≥13 or TBUT <10 seconds or LGS ≥2	126 (22.1)
Definite DED: All 3 of OSDI ≥13 or TBUT <10 seconds or LGS ≥2	13 (2.3)
Other combinations	
OSDI ≥13 + Schirmer's I ≤5 mm at 5 mins	28 (4.9)
OSDI ≥13 + Schirmer's I <10 mm at 5 mins	40 (7.0)
Meibomian gland dysfunction	272 (47.7)
Symptomatic meibomian gland dysfunction (OSDI ≥13)	71 (12.4)
Schirmer's I >5 mm at 5 mins + TBUT <10 seconds but no Meibomian gland dysfunction	148 (26.0)
Schirmer's I ≤5 mm at 5 mins with Meibomian gland dysfunction	45 (7.9)

DED: Dry eye disease; OSDI: Ocular surface disease index®; TFOS DEWSII: Tear film & Ocular Surface Society Dry Eye Workshop II; TBUT: fluorescein tear film break-up time; LGS: lissamine green score; TFH: Tear film height

Conflicts of interest

There are no conflicts of interest.

Samrat Chatterjee, Deepshikha Agrawal, Arpit Sharma

Cornea and Anterior Segment Services, MGM Eye Institute, Raipur, Chhattisgarh, India

Correspondence to: Dr. Samrat Chatterjee, Cornea and Anterior Segment Services, MGM Eye Institute, 5th Mile, Vidhan Sabha Road, PO Mandhar, Raipur, Chhattisgarh - 493 111, India.
E-mail: samrat@mgmeye.org

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