

**Supplementary Table S7: Effects of sleep disorders on the tear film and its components.**

No.	Sleep Abnormality	Changes in Tear Film and Components	Relevant Paper
1	Eye closure	Lowered pH, osmolarity; enzyme ratio changes; increased secretory IgA, albumin levels, white blood cell count	Biochemistry, Tear Film (Chang & Purt, 2021), Current Eye Research (Tan et al., 1993)
2	SD	Increased tear osmolarity, shortened tear film break-up time, reduced tear secretion	SD Reduces Tear Secretion and Impairs the Tear Film (Lee et al., 2014)
3	OSA	Altered lacrimal gland structure, reduced tear secretion, corneal epithelial defects	OSA Affects Lacrimal Gland Function (Wang et al., 2022)
4	REM activity	Redistributed tears, reduced ocular surface dryness	Temporal sequence of changes in tear film composition during sleep (Tan et al., 1993)
5	Sleep position	Partially opened eyelids, increased tear evaporation	SD disrupts the lacrimal system and induces DED (Li et al., 2018)
6	Sleep quality	Altered lacrimal gland secretion rhythms, hormonal and autonomic system imbalances	Temporal sequence of changes in tear film composition during sleep (Tan et al., 1993)