

## Tear Osmolarity of Students with Contact Lenses

*Eriks Elksnis, Guna Laganovska*

*Rīga Stradiņš University, Department of Ophthalmology, Latvia*

**Introduction.** It is a globally accepted opinion that wearing contact lenses affects ocular surface physiology, and with the modern diagnostic examination improvement, physicians have the ability to research contact lens wearing effect on different ocular surface components. According to the World Health Organization, the numbers of contact lens wearers are increasing rapidly across the globe every year and the age of the wearers is becoming lower. It is also strongly believed that contact lens wear can increase tear film osmolarity, which may produce adverse corneal effects as well as be associated with dry eye symptoms.

**Aim, Materials and Methods.** The purpose of the study is to research tear osmolarity changes in high school and university students who are wearing contact lenses.

In this perspective, single-center, cohort study students were divided into two groups according to their educational membership, including only those, who were constantly wearing contact lenses for at least a year. The obtained results were compared with the control group, which consisted of eyeglasses and contact lens independent students. The tear osmolarity was measured with TearLab Osmolarity System. The results were analyzed with Microsoft Excel and IBM SPSS Statistics.

**Results.** In total, 79 students were examined, 14 in high school and 21 in university contact lens wearers groups. The control group consisted of 15 participants in high school and 19 in university. The mean age in high school group was 17 years and 24.3 years in university group. The average tear osmolarity in high school contact lens wearers group was 300.4 mOsm/L in the right eye and 299.8 mOsm/L in the left, comparing with the control group, where tear osmolarity measurements were 294.5 in the right and 296.6 in the left eye. The tear osmolarity in the university age group was 301.5 mOsm/L in the right and 303.7 mOsm/L in the left eye compared with the control group, where the results were 298.2 mOsm/L in the right and 297.3 mOsm/L in the left eye. The tear osmolarity difference between the groups was statistically approved with ANOVA Repeated measures analysis ( $p < 0.05$ ).

**Conclusions.** Study confirms that contact lens wearers in high school and university age have elevated tear osmolarity, compared with eyeglasses and contact lens free students.