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Dry Eye Prevalence and Main Risk Factors Among Undergraduate Students

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Introduction: Dry Eye (DE) is a common, complex, and multifactorial disease of the ocular surface and tear film that results in discomfort and visual disturbance. Prevalence varies from 5 to 50%, according to criteria, age, sex, and population studied. A meta-analysis was conducted to determine the prevalence of DE for different diagnostic criteria stratified by age and sex and reported by the TFOS DEWS II (Tear Film Ocular Surface Dry Eye Workshop) epidemiology committee showing relevant higher n umber among youth. The prevalence of symptomatic and clinically diagnosed DE varied by age, and sex, but only one study included young participants.

Objective: This study aims to evaluate DE among a sample of undergraduate students from 2 major universities in Brazil, to comprehend symptoms, clinical signs presentation and most associated risk factors.

Methodology: Cross-sectional survey that included 2,140 students (1,649 from UNICAMP and 491 from UNIFESP). Three fields of knowledge were included:1,128 from biological; 699 from exact; and 313 from human area. All participants completed 2 self-applicable questionnaires about dry eye symptoms: Ocular Surface Disease Index (OSDI) and short questionnaire used in the Women Heath Study (WHS), both previously translated and validated to Portuguese. DE symptoms were considered positive if OSDI score >22 or reported severe symptoms and/or previous history of clinical diagnosis at WHS questionnaire. Indeed, a list of risk factors such as contact lens wear, medications, ocular surgery, and systemic disease associated to DE was presented. Participants who fulfilled criteria for DE symptoms underwent a complete clinical evaluation for signs of the disease evaporative and aqueous deficient DE: such as tear meniscus height, hyperemia, non-invasive tear break up time, ocular surface staining with fluorescein and lisamine green and Schimmer test.

Results: 2,140 participants aged 23.4 ± 5.2 years old, 56.1% female and 43.9% male were enrolled. OSDI score was 19.4 ± 16.2; 34.4% had OSDI had >22 and according to WHS 23.5% presented severe symptoms and/or previous history of clinical diagnosis. DE prevalence showed consistent sex differences, according OSDI scores 69.29% (510/736) female and 30.71% (226/736) male and with WHS questionnaire 64.8% (326/503) were female and 35.2% (177/503) were male (p<.0001). Most common risk factors were visual display use (50.1%), less than 6 hours of sleep/day (37.0%), oral contraceptive use (21.9%), contact lens wear (16.3%) and antiallergic use (15.1%). Univariate and multivariate analysis demonstrated that female sex, contact lens wear, ocular surgery, use of electronic devices over 6 hours/day, oral contraceptive, antidepressant, anti-allergic, sleep less than 6 hours/day as relevant related factors. Clinical evaluation demonstrated mild signs of ocular surface dysfunction, normal tear volume, tear film instability and evaporative DE, such as tear film instability: Schimer test <10mm 14.8%; TBUT <10sec 61.1%; Fluorescein >4 5.6%;

and Lisamine green >3 1.9%.

Conclusion: Dry eye is prevalent condition among undergraduate students. In this Brazilian youth sample, rates were higher than data recently published, that showed in the general Brazilian population over 40 years old, the overall rate was 12.8%. However, further investigation might be addressed to better understand related risk factors and clinical presentation.

Keywords: Dry eye; Prevalence; Young population; Brazil.