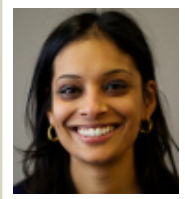


# Contact Lens Update

CLINICAL INSIGHTS BASED IN CURRENT RESEARCH

## Eye cosmetic usage and associated ocular comfort

December 17, 2014



Nadine Furtado is an Assistant Clinical Professor at the University of Waterloo's School of Optometry and Vision Science.

As Alison Ng points out in this issue's editorial, the use of ocular cosmetics dates back to the time of the Ancient Egyptians, when the colouring from plants and minerals was used to emphasize and enhance the appearance of the eyes.<sup>1</sup> Today, the use of eye shadow, mascara and eyeliner remains a popular trend because of their ability to highlight the eyes and increase facial attractiveness.<sup>2</sup> Ocular cosmetics are usually applied to the periocular area, but it is possible for these products to migrate onto the ocular surface and into the tear film.<sup>3</sup> Furthermore, it is common practice to apply eyeliner directly along the eyelid margin, often inside the mucocutaneous junction, thus facilitating ease of transfer to the ocular surface. Eye makeup that gains access to the ocular surface has the ability to cause undesirable effects, including eyelid dermatitis and de-stabilization of the pre-corneal tear film, leading to ocular discomfort and in extreme cases even result in keratitis.<sup>3</sup> Given the ability for makeup applied to the periocular area to gain access to the eye, a recent study by Ng et al. sought to explore the association between the use of eye cosmetics and ocular comfort.<sup>4</sup>

*Ng A, Evans K, North R, Purslow C. Eye cosmetic usage and associated ocular comfort. Ophthalmic Physio Opt 2012;32:501-7.*

### Methods

An online survey consisting of 22 questions was posted on the Cardiff University network. Participants responded to questions concerning demographic information as well as range and frequency of eye cosmetic usage. In addition, they were asked to gauge their dry eye symptoms based on the Ocular Surface Disease Index (OSDI) in addition to rating their subjective assessment of ocular comfort associated with and without eye makeup use.

### Results

Data from 1360 female respondents were analysed. Approximately 89% of participants stated that they used eye makeup, with 83% reporting "regular use", defined as three or more times per week. Mascara was the most frequently applied eye product, with 70% of individuals using this form of makeup.

The OSDI score for individuals who wore ocular cosmetics was greater than non-users, with median scores of 10.4 and 8.3, respectively, but this difference was determined not to be statistically significant. Furthermore, no difference was found between the OSDI score for those who were considered "regular users" versus "light users", which was defined as applying eye makeup less than three times per week. The differences for OSDI scores pertaining to eyeliner use, specifically design (pencil versus liquid) and application location (within versus outside the lash line) were also analyzed and found to be statistically insignificant.

Respondents who wore eye cosmetics were asked to score their perceived ocular comfort associated with eye makeup usage compared to occasions on which they wore no eye makeup. The median perceived comfort level without ocular cosmetic wear was significantly greater than with makeup use ( $p < 0.001$ ). This disparity was more pronounced in “light users” than in “regular users”.

### Discussion and conclusions

This study illustrates that the use of ocular cosmetics is highly prevalent and that there is a subjective perception of increased ocular discomfort associated with the use of eye makeup.

There was no significant difference between users and non-users of ocular cosmetics with respect to dry eye symptomatology based on OSDI scores. The authors attribute this finding to the fact that the OSDI scale may not be sufficiently sensitive to gauge ocular irritation, as it was specifically developed to assess the signs and symptoms associated with dry eyes. Additionally, non-users of eye cosmetics represented only 11% of respondents; this small percentage may have hindered the ability to establish statistical significant differences between the groups.

This study also specifically investigated the use of eyeliner, and whether the type and position of application affected comfort. No difference was found based on the results of this survey. However, it is plausible that eyeliner applied within the lash line has a greater ability to access the ocular surface and tear film, and accordingly, a greater propensity for adverse ocular consequences. Moreover, makeup close to the lid margin may directly impact the meibomian glands and have the potential to cause long-term effects on their morphology, as well as possible effects on meibum production.

Given the frequent and extensive use of ocular cosmetics, further investigation is warranted to better understand the mechanisms underlying ocular discomfort associated with the use of these products.

### REFERENCES

1. Lin T.J. Evolution of cosmetics: Increased need for experimental clinical medicine. *J Exp Clin Med* 2010;2(2): 49-52.
2. Mulhern R, Fieldman G, Hussey T, et al. Do cosmetics enhance female Caucasian facial attractiveness?. *Int J of Cosmet Sci* 2003;25: 199-205.
3. Malik A, Claoué C. Transport and interaction of cosmetic product material within the ocular surface: Beauty and the beastly symptoms of toxic tears. *Cont Lens Anterior Eye* 2012;35: 247-59.
4. Ng A, Evans K, North R, et al. Eye cosmetic usage and associated ocular comfort. *Ophthalmic Physio Opt* 2012;32: 501-7.