

Mask-Associated Dry Eye

The impact of the Covid-19 pandemic on many patients' lifestyles has shone new light on dry eye symptoms, with opportunities available for pharmacy staff to meet this need.



Wearing a face mask is an important part of preventing the spread of Covid-19, but masks can come with some not-so-great side effects like foggy glasses, and general irritation around the face.

A new study published in 'Cornea' has shown that improper face mask use may decrease tear film stability in those with moderate to severe dry eye.

With face masks becoming more commonplace due to the Covid-19 pandemic, researchers are reviewing the potential for them to cause ocular irritation or dryness. Researchers conducted a cross-sectional study of patients with moderate to severe DED to evaluate whether tear film stability worsens with the mask use.

They analyzed noninvasive tear film breakup time (NITBUT) in patients both while they wore a mask and after 10 minutes without wearing a mask. The study included 31 patients with a mean age of 57.6 ± 11.7 years (range 31–80) and 30 women (97%). Mean first NITBUT with a face mask was 6.2 ± 3.8 seconds (range 2.0–19.8), which increased to 7.8 ± 5.6 seconds (range 2.3–24.0) without the use of mask ($P = .029$), differences being -1.6 ± 0.7 seconds (CI 95% -3.1075 to -0.1770). Mean average NITBUT with a face mask was 12.3 ± 4.8 seconds (range 4.0–19.4) and increased to 13.8 ± 5 seconds (range 5.5–24.0) without the use of a mask ($P = .006$), the mean difference being -1.5 ± 0.5 seconds (CI 95%, -2.5290 to -0.4458).

"Increased eye rubbing and face touching behaviors because of

discomfort symptoms may alter the ocular surface and worsen tear film breakdown. Dry eye disease may exacerbate in these patients, increasing the risk of secondary infections, keratitis, exposure keratopathy, and other potential epithelial breakdown consequences to prolonged face mask wearing," the researchers explain.

The study's authors note a few limitations with their study, including that it only included patients with moderate-to-severe dry eye from one unit and that examination was only performed while wearing a mask to avoid the risk of contagion. Additionally, they acknowledge that there are other variables besides NITBUT that determine DED and dry eye symptoms.

The purpose of wearing face masks is to reduce the spread of air outwards from our nose and mouth, however if the mask is fitting poorly it allows the warm air we are breathing out to escape upwards which results in specs steaming or misting up.

Most individuals described an awareness of air blowing upward from the mask into their eyes. Exhaled air from breathing out is channeled up, out of the top of the face mask, and over the ocular surface. The increased airflow likely accelerates tear film evaporation, causing ocular surface irritation or inflammation. Dry eye symptoms include a feeling of dryness; eyes feeling gritty, sandy, irritated, itchy, or watery; or redness.

All face mask wearers are susceptible to dry eye symptoms; however, people at greater risk

of dry eye symptoms are those who are immunosuppressed, have other preexisting ocular surface conditions such as Sjögren's syndrome, are elderly with reduced tear film quality, contact lens wearers, and those who wear masks for extended periods. A worsening of subjective dry eye symptoms assessed by the Ocular Surface Disease Index was noted in staff and patients.

What is Dry Eye?

An estimated 10% to 30% of the population older than 40 years suffers from some degree of dry eye disease (DED). The condition tends to affect people above 60, and it is more common in women than men.

Around one in 13 people who are in their fifties experience dry eye syndrome, and the condition becomes more common with age. Up to a third of people age 65 or older may have dry eye syndrome.

The symptoms of dry eye syndrome usually affect both eyes and may include:

- feelings of dryness, grittiness or soreness, which get worse throughout the day
- redness of the eyes
- watering eyes, particularly when exposed to wind
- eyelids that stick together when waking up

These symptoms may get worse in smoky or hot environments.

When a patient presents with symptoms of a dry eye condition, such as irritation, grittiness, burning, soreness, watery eyes and visual disturbances generally affecting both eyes, a detailed history should be recorded by the pharmacist because it may elicit information about contributing factors.

Briefly, this should include details of the signs and symptoms, duration of symptoms and exacerbating factors, such as the environment, changes in humidity or computer use.

It should also record details of topical and systemic medicines taken by the patient, whether the patient wears contact lenses and if the patient has any dermatological, inflammatory or other systemic diseases.

A differential diagnosis for other eye conditions (such as conjunctivitis, allergy and acute red eye) should be established because initial presentation may be similar.

Pharmacists are in a critical position to identify the pharmacologic agents that can exacerbate or increase the risk of DED and advise patients regarding the most efficacious means of preventing episodes of dry eye.

Additionally, pharmacists can be instrumental in aiding patients by educating and recommending the many OTC products to manage and treat mild to moderate DED as well as direct patients with chronic and severe cases of DED to seek further medical care from an ophthalmologist when warranted.

The ultimate goal of dry eye treatment focuses on symptomatic relief, usually using tear supplements. Despite this, the underlying mechanism of symptomatic improvement with tear supplementation is still poorly understood. It is thought that increased tear volume, improved tear stabilisation, reduced tear osmolarity or a dilution of inflammatory biomarkers or a combination of these factors play a vital role.

Topical ocular lubricants are the mainstay of dry eye treatment, with the choice of tear substitute depending on the severity of the condition. Pharmacological interventions in all forms of dry eye conditions range in formulation, such as drops, sprays, gels and ointments.

For occasional or mild dry eye symptoms, OTC eyedrops (artificial tears) used regularly may provide relief. Preservative-free artificial tears are preferred, as they cause less irritation. Wearing glasses or sunglasses that fit close to the face (wraparound shades) or that have side shields can help slow tear evaporation from the eye surfaces. An indoor air cleaner to filter dust and other particles can help prevent dry eyes, as can a humidifier by adding moisture to the air, avoiding dry conditions, and allowing the eyes to rest when performing activities that require someone to use their eyes for long periods of time.