Proper Eyeglass Hygiene is Good for Eye Health

Hygiene in everyday life has become more important than ever in recent months. We regularly wash our hands, disinfect door handles and surfaces. However, what is often forgotten is not in front of us but on our noses: our eyeglasses. Professor Markus Egert of Furtwangen University was able to show that eyeglass lenses and frames are contaminated with germs. The professor of microbiology is an expert on hygiene in everyday life and has been researching for many years the germ load of objects in daily use. ZEISS incorporated these research insights in developing its new eyeglass lenses, a premium anti-reflective lens coating that deactivates viruses and bacteria on the lens surface.[1]

In the interview, Prof. Egert talks about the contamination of eyeglasses.

Professor Egert, you have researched the hygiene of eyeglasses. What was the result?
Eyeglasses are contaminated with microorganisms. We have confirmed this in two studies. This is not surprising, as eyeglasses are placed in the middle of the face, in close contact with ears, eyes and nose - in other words, places where the natural skin flora already hosts many germs. In addition, people often touch their eyeglasses during the day, bringing bacteria, viruses or even fungi onto the frame and lenses. It is possible that germs can then get close to the eyes.

What have you found on the spectacle frames, especially which pathogens?
We identified mainly typical skin and mucous membrane bacteria. The proportion of potentially pathogenic, meaning possibly harmful bacterial types, was around 60 percent.

The most heavily colonized areas were those in direct contact with the skin, such as temple tips or nose pads. The lowest bacterial density was found on lenses. A peak value was 660,000 bacteria per square centimeter on a nose pad. These included pathogens of eye diseases such as conjunctivitis or endophthalmitis, particularly severe eye infections. We detected, for instance, Staphylococcus epidermidis, Staphylococcus hominis and Staphylococcus aureus, types with antibiotic-resistant variants.

Have you found viruses on the eyeglasses you tested?
We assume that there are also lots of viruses on eyeglasses. However, viruses are much more difficult to detect than bacteria. Such tests are currently in the development stage.

Are all eyeglass wearers dealing with the same microbes?

[1] Tested by ISO 21702:2019(E) for enveloped viruses and tested by ISO 22196:2011(E) for Gram-negative and Gram-positive bacteria. Efficacy proven after 24 hours as defined by ISO.

We studied the eyeglasses of young students and those of residents of elderly nursing homes. We found that there is a significantly greater range of different bacteria living on the glasses of the elderly than on those of the younger people in the study. That was expected because skin flora becomes more diverse with age. However, it highlights that eyeglasses are a very personal object - so personal that some situations can become worrying from the standpoint of hygiene.

What is the best way to protect against bacteria and viruses on eyeglass lenses?
Eyeglass lenses and frames should be cleaned regularly. Wiping them with a wet eyeglass cleaning tissue is an excellent way to remove germs. This removes about 95 percent. Alcohol-free cleaning wipes are more protective for plastic frames. Simply wiping with microfiber cloths - which most people do – only reduces germs by 85 to 90 percent.

Is there anything else we can do to prevent microbes on eyeglasses?
An additional component in eyeglass hygiene is offered by eyeglass lenses with a special coating that has an antiviral and antibacterial effect, for example, by the use of silver. However, that should not lead one to stop cleaning the eyeglasses. Instead, cleaning them should become a routine hygiene habit once or twice a day, just like washing your hands regularly.

What is your personal advice for eyeglass wearers to protect their eyes from bacterial infections?
It is important to understand that eyeglasses are an object that can affect personal hygiene and health. Those who keep their eyeglasses clean are practicing preventive health care. They are protecting themselves better than eyeglass wearers who do not clean their eyeglasses. Hygienically clean eyeglasses may also contribute to interrupting the transmission chain of infections more efficiently. We don't know for sure; a study on this is still pending.

Do you think that people who wear eyeglasses are aware of the contamination of their eyeglasses and pay enough attention to it?
Hygiene is unfortunately still a generally taboo subject. However, it has inevitably received more attention due to the COVID-19 pandemic, and I hope that people will remain sensitized to this issue. The basic rule in all hygiene matters is that an exaggerated fear of germs is unnecessary and brings no advantage. However, everyone needs to observe proven effective hygiene measures and general health protection.

ZEISS Vision Care interviewed Professor Markus Egert in April 2021.