

New smartphone app to predict dry eye disease in children

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Scientists have developed a smartphone app that can quickly tell a health professional whether someone is suspected of having dry eye disease, a chronic and incurable condition that affects approximately one in five adults in the UK – and is becoming increasingly prevalent in youngsters glued to their screens.

The app, developed by researchers at Aston University in conjunction with UK industry, can be rolled out across GP surgeries, pharmacies and can even be used at home. It is being showcased for the first time at the Royal Society Summer Science Exhibition, where scientists will conduct the first large-scale survey of dry eye in young people.

"Dry eye is traditionally considered an old person's disease, but we are increasingly seeing it surface in children," says Professor James Wolffsohn of Aston University. "This is likely because of prolonged screen use, which makes us blink less and speeds up the rate our tears evaporate. We need to do more to understand the health implications of children glued to smartphones, tablets and game consoles for hours at a time, which is why we will use our app to launch the first large scale survey of dry eyes in children at the Royal Society this week."

The app incorporates some simple questions and a quick test which measures how long you can comfortably stare at a screen without blinking. The team at Aston University, who are part of a cross-European health project, developed the app to support [health care professionals](#) such as GPs and pharmacists, who generally don't have

access to the equipment and expertise to confirm a diagnosis of dry eye.

The team's research, which is being displayed at the Not a dry eye in the house exhibit at the Royal Society Summer Science Exhibition, shows that people with [dry eyes](#) have disrupted tear films that raises the 'saltiness' of tears. This in turn increases the rate tears evaporate from the surface of the eye, making cells more susceptible to damage and raising the need not just for adequate eye protection, but also to treat [dry eye disease](#) as early as possible to prevent further damage.

The researchers have also found the eye's surface becomes more susceptible to UV radiation damage when someone has a more 'salty' tear film due to dry eye.

Every day, an eyelid travels the length of a football pitch to keep eyes moist. With every blink, healthy eyes spread lubricating tears across the surface of the cornea, nourishing cells and providing a thin layer of protection against the environment, irritants and bugs.

Dry eye disease occurs when the eyes do not produce enough tears or when tears evaporate too quickly from the surface. Dry eye sufferers are constantly left feeling like they have something in their eye, and symptoms also include vision impairment and sore, watery eyes that cause extreme discomfort.

About one in five UK adults suffers from dry eye disease, and women have a higher prevalence of the disease compared with men. The risk of developing dry eye also increases with advancing age, and the number is predicted to rise even further because the condition is also associated with heavy screen use.

Professor Wolffsohn adds, "There is a certain irony in using technology to diagnose the ills caused by technology, but sight is a precious sense to

protect and our app is an effective way of raising awareness about this persisting and debilitating condition. Our research has the potential to guide people to more appropriate treatment at an earlier stage, and we hope to empower patients to do their bit to reduce the burden on the NHS."

Provided by The Royal Society

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