Climate may play a role in the distribution and prevalence of trachoma

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High temperatures and low rainfall are important factors which influence the occurrence and severity of the active stages of trachoma—the most common cause of infectious blindness—according to a new study publishing November 7, 2013 in *PLOS Neglected Tropical Diseases*.

Researchers from the London School of Hygiene & Tropical Medicine and Sightsavers carried out the first systematic review to explore links between climate and trachoma. They found temperature and rainfall appear to influence the transmission of the infection in Africa, possibly because the eye-seeking flies which spread trachoma are more active at higher temperatures and are more abundant in areas with low rainfall.

Trachoma affects more than 40 million people, but it is estimated that 1.2 billion people worldwide live in areas where trachoma is found and are at risk of going blind. The bacterial infection is either passed from person to person by contact with infected secretions from the eyes or nose on hands and clothing, or by flies that land around children's eyes. Repeated infection in childhood can lead to blindness later in life.

The World Health Organization has resolved to eliminate blinding trachoma by 2020 and is working with governments and partners to roll out the SAFE strategy, which includes surgery to distorted eyelids, antibiotics for active infection, facial cleanliness and environmental improvement to reduce the spread of the infection.

However to ensure the disease can be eliminated on schedule, a greater understanding of all factors that affect the incidence of the disease is needed. This study brings together the evidence on the role climate factors have to play for the first time.

Study co-author Dr Sari Kovats, Senior Lecturer at the London School of Hygiene & Tropical Medicine, said: "Our findings will assist international efforts to map where trachoma occurs as we now have a clearer understanding of the role that altitude, temperature and rainfall can play. We need to increase research on the environmental determinants of blinding trachoma in order to make control measures more effective now and in the future."

Dominic Haslam, Director of Policy at Sightsavers and co-author of the study, said: "This review underlines the urgent need for organizations such as Sightsavers to step-up global efforts to eliminate trachoma, before regional climate shifts make the current situation worse. The blinding disease already causes devastating suffering to millions around the world, and yet we know that by promoting face washing, better hygiene and sanitation, we can help manage the spread of trachoma in endemic communities."

The researchers stress the limitations of the study; only eight papers that were identified in the literature search met the standard for inclusion in the review and all these studies were undertaken in Africa (in Mali [2], Burkina Faso [1], Ethiopia [3], Tanzania [1] and South Sudan [1]), so the findings may not be generalizable to other areas. The study was co-funded by Sightsavers and Irish Aid.

More information: Ramesh A, Kovats S, Haslam D, Schmidt E, Gilbert CE (2013) The Impact of Climatic Risk Factors on the Prevalence, Distribution, and Severity of Acute and Chronic Trachoma. *PLoS Negl Trop Dis* 7(11): e2513. DOI: 10.1371/journal.pntd.0002513

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