Study links deforestation and malaria

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Credit: Andrea Piacquadio from Pexels

Nearly 130 million hectares of forest—an area almost equivalent in size to South Africa—have been lost since 1990, according to a recent report by the Food and Agriculture Organization of the United Nations.

A new study of 67 less-developed, malaria-endemic nations, titled

Anthropogenic Forest Loss and Malaria Prevalence: a Comparative Examination of the Causes and Disease Consequences of Deforestation in Developing Nations, finds a link between deforestation and increasing malaria rates across developing nations. The study, published in *AIMS Environmental Science*, was led by Kelly Austin, associate professor of sociology at Lehigh, and co-authored by Lehigh graduate students Priyokti Rana and Megan O. Bellinger.

Malaria is an infectious disease tied to environmental conditions, as mosquitoes represent the disease vector. Deforestation, Austin notes, is not a natural phenomenon, but rather results predominantly from human activities, or anthropogenically.

The study builds on evidence that patterns in climate change, deforestation, and other human-induced changes to the natural environment are amplifying malaria transmission.

"Human-induced changes to the natural environment can have a powerful impact on malaria rates," she says.

The analytic research strategy used also allowed the authors to look at the causes of deforestation, in order to have a broader focus on the upstream or human-induced causes of land-use change that impact malaria vulnerabilities.

Results of the study suggest that rural population growth and specialization in agriculture are two key influences on forest loss in developing nations.

Deforestation from agriculture comes in part from food that is exported to more-developed countries, Austin notes. "In this way, consumption habits in countries like the U.S. can be linked to malaria rates in developing nations."

Deforestation can impact malaria prevalence by several mechanisms, including increasing the amount of sunlight and standing water in some areas. According to the study, in general, increasing standing water and sunlight is favorable for most species of Anopheles mosquitoes which are the key vector of malaria transmission.

Austin hopes her research could help facilitate changes in agricultural practices. Austin says leaving some trees and practicing more shade and mixed cultivation, rather than plantation agriculture which involves clear-cutting forests, could help to mitigate some of the harmful impacts.

Although there have been major improvements in malaria prevention, diagnosis, and treatment in many nations over the last several decades, Austin and her colleagues say that malaria remains a leading cause of death and threat to health in many regions and countries across the global South.

Provided by Lehigh University