

As Ebola deaths rise, researcher sees parallels with devastating medieval plague

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Historian Nukhet Varlik of Rutgers University-Newark says new knowledge of the medieval Black Death can improve our understanding of modern epidemics. Credit: Rob Forman/Rutgers University

If you think that Ebola is bad – and it is – the current outbreak in West Africa is small compared with another deadly epidemic that engulfed much of the globe centuries ago. It is realistic to estimate that during the Middle Ages, plague – also known as the Black Death – wiped out 40 to

60 percent of the population in large areas of Europe, Africa and Asia, according to Nükhet Varlik, an assistant professor of history at Rutgers University-Newark.

Varlik has just published research piecing together evidence on how the Black Death spread beginning in the 14th century. She says new information that she and other [plague](#) researchers have found may be very relevant to other disease outbreaks both now and in the future.

"For example, we are learning now that the earth's climate apparently changed prior to the Black Death," says Varlik. "In that case it was a period of global cooling. It is possible that rainfall then increased and made vegetation more available, which in turn added to the rodent population, and rodents spread plague. Evidence is increasing that each time before a large pandemic, something has happened in the environment."

Varlik is not predicting that modern climate change will cause another pandemic, but her work – which appears in a chapter in a new [volume](#) titled *Pandemic Disease in the Medieval World: Rethinking the Black Death* – illustrates how events that shift the balance between humans and nature apparently can trigger calamities in ways never considered before.

For centuries, accounts of medieval plague have relied mostly on the written historical record. That record is skewed heavily toward selective accounts from Europe, a part of the world on which historians, Varlik notes, love to concentrate. Varlik focuses instead on the Ottoman region, which was centered in what is now Turkey and extended through the Middle East into the Balkans and North Africa. She says plague appears to have been as rampant there as in Western Europe.

Varlik also goes beyond the standard written sources by turning to genetic and physical evidence that only recently became available

through advanced technology. According to Varlik, the new findings fill in many knowledge gaps – and sometimes even contradict what the Europeans and others recorded on paper.

Varlik says it makes sense that the physical record would differ in certain ways – because there is no reason why centuries-old documents should be any more reliable than many of today's blog posts and TV stories. "Following the news about the Ebola outbreak," she says, "I've seen so many parallels to the kinds of descriptions of plague that I've seen in the historical sources. In a way, it's the same emotional response."

The evidence shows that interactions between humans and the natural world, especially rodents and insects that transmit disease, played an essential role in repeated episodes of sickness and death that occurred over several centuries – a fact Varlik says is missing from much of the written history. An important contributor, she says, was the ability of [plague bacteria](#) to thrive in rodents in the wild.

"Some species of wild rodents sustain the disease but they don't get sick," says Varlik, "or they don't die of it massively themselves, so in that sense they perpetuate the pathogen. Even rodents such as rats, which do die from plague in large numbers, reproduce so quickly that they still are able to sustain and spread disease."

As a result – through the Middle Ages and beyond – after outbreaks of the Black Death would recede as all epidemics eventually do, renewed human contact with disease-carrying animals appears to have reignited them. Varlik says current theories suggesting that diseases such as HIV/AIDS, Ebola and certain forms of human flu originated in animals or birds are better understood in light of work such as hers.

So, too, she says, is [climate change](#). According to Varlik, even a

fluctuation in average temperature by one degree can cause some species to flee a region while others remain, changing ecosystems and potentially spreading disease in unpredictable ways. Other manmade changes such as destruction of rain forests may also tip an unknown balance, she says, putting humans and pathogens into close proximity as our ancestors and plague-carrying rodents once were.

"It is living testimony," Varlik concludes, "that plague is not so much a medieval disease, but something we can observe and learn from."

Provided by Rutgers University

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