

STEPHEN PETZINGER to present at the Public Health Services & Systems Research (PHSSR) Keeneland Conference in Lexington, KY.



Background

Infectious disease threats know no borders, especially in a world where potentially deadly infectious disease is only one day's plane travel from anywhere in the world. Thus, it is not surprising that nations are increasingly recognizing the need for global health security, by strengthening local capacity to prevent, detect, and respond to public health threats that indeed could have global implications. Specifically, pertussis is known to have 3-5 year cyclical peaks in which the disease declines and reemerges in a population. Regardless of the underlying stimulus, pertussis infections have been steadily on the rise in the U.S. over the past three decades. Likewise, globalization is a key challenge to health around the world, but establishing measurable associations between globalization and health is extremely complex. Although a growing amount of literature has appeared in recent years, none seem to focus their efforts on a particular process of globalization, a specific component of health, or the results of their interactions in a specific country or region.

Research Objective

Research has yet to examine the specific relationship between population mobility and pertussis incidence in the U.S. I submit that one key aspect of globalization, specifically population mobility, helps explain the rise in pertussis experiences in the U.S. today.

Data Sets and Sources

This research utilized data sets from multiple sources, including the World Health Organization, the U.S. Department of Commerce, the U.S. Department of Homeland Security, the U.S. Census Bureau, the U.S. Department of Labor, and America's Health Rankings from the United Health Foundation.

Study Design

This paper reviews the scholarly literature that describes a connection between globalization and health, and then analyzes, both qualitatively and quantitatively, the links between population mobility and the increasing levels of pertussis in the United States. Quantitatively, I compared state level data, including the population mobility rate, median household income, unemployment rate, uninsured rate, and state health ranking, over a number of years, to the pertussis incidence during those years.

Analysis

Regression analysis was done with pertussis cases as the dependent variable and population mobility as the primary independent variable, while controlling for the other independent variables listed above.

Principal Findings

An exhaustive review of the literature reveals an undeniable connection between population mobility and increases in infectious diseases. Additionally, quantitative analyses also support the notion that population mobility (0.159, $p = 0.00$) has a similar effect on pertussis cases in the United States.

Conclusions

Statistical analysis supports the hypothesis that population mobility is significantly associated with pertussis cases in the U.S. Additionally, ample qualitative evidence supports an association between the two.

Implications for Public Health Practice and Policy

Pertussis is still a cause of morbidity and mortality around the world, including highly developed nations such as the United States. The next step should be to focus on specific associations that have the greatest threat for epidemic and pandemic results in the population of the United States. Achieving this will require immediate action and support by the public, global health professionals, and health policy-makers alike.