Taking Shelter From the COVID-19 Storm

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With the rapid spread of the coronavirus disease 2019 (COVID-19) pandemic in recent months, the role of social and behavioral measures to contain its spread has been at the forefront of public debate. Also known as nonpharmaceutical interventions, these public health measures in the US have included orders from state governors for residents to stay at home or shelter in place, close nonessential businesses, close public schools, and prohibit large social gatherings.\(^1\) To promote physical distancing, the state orders have been coupled with federal guidance for individuals to remain 6 feet or more apart and wear face coverings while outside their homes, as well as practicing consistent hand hygiene.

As the COVID-19 pandemic evolves, evidence is needed on the effectiveness of public health measures to determine whether and how they should be sustained or modified.\(^2\) Geographic differences in the implementation of these measures to contain COVID-19 provide an opportunity to estimate their association with the spread of novel coronavirus infections, thereby guiding crucial decisions that government officials must make in real time and often with limited information.

A new study in *JAMA Network Open* recently evaluated stay-at-home orders—one of the most common policies implemented by governors to contain the spread of COVID-19.\(^3\) Between March 19 and April 7, 2020, 42 states and the District of Columbia issued such statewide orders. In the bordering counties of 2 contiguous states—Illinois and Iowa—that are separated by the Mississippi River, Lyu and Wehby compared cumulative cases of COVID-19 infections using a difference-in-differences study design. Illinois implemented a statewide stay-at-home order on March 21, whereas Iowa is one of the handful of states that have not issued such an order.

The findings of this study were clear. During the week prior to Illinois' stay-at-home order, the bordering counties in Illinois and Iowa had similar rates of COVID-19 infections. One month after the Illinois order was implemented, the Illinois counties were estimated to have significantly fewer cases of COVID-19 (−4.71 cases per 10,000 residents) than the adjoining counties in Iowa.\(^3\) Lyu and Wehby estimated that the Iowa counties—with a population of approximately 462,000—experienced up to 217 excess COVID-19 cases after 1 month without a stay-at-home order. The authors also described their study findings in an episode of the *JAMA Network Open Editors’ Summary* podcast.

These findings are consistent with another recent study that used an event-study design to assess the growth rates of COVID-19 infections after states or counties implemented 4 different policies during March and April 2020: shelter-in-place orders, public school closures, bans on large social gatherings, and closures of entertainment-related businesses.\(^4\) In this study, shelter-in-place orders (synonymous with stay-at-home orders) and closures of entertainment-related businesses, such as restaurants, bars, and fitness centers, were associated with significant reductions in the growth rate of COVID-19 infections—commonly described as flattening the curve.

New studies of public health interventions against COVID-19 in the US build on research on such policies during the influenza pandemic of 1918 and 1919. In a 2007 study in *JAMA* analyzing historical influenza data from 43 US cities,\(^5\) earlier and more sustained school closures and cancellations of public gatherings were associated with significantly lower mortality during this prior pandemic. In a recent study in *JAMA* evaluating COVID-19 cases in Wuhan, China, the site of the initial outbreak, the incidence of new cases declined substantially after multifaceted public health measures were implemented.\(^6,7\)
Until an effective vaccine to protect against COVID-19 becomes widely available, the US and other countries around the world will continue to cope with the unpredictable spread of this viral infection that is too often deadly. Based on the new study by Lyu and Wehby in JAMA Network Open and other similar research, evidence is growing that orders to shelter at home have been a blunt but effective tool for slowing the initial surge of new infections. Societies must now implement more refined and vigorous approaches to widely test, trace, and isolate those who are unknowingly infected before they can spread the virus to other individuals in their communities.

ARTICLE INFORMATION

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