Social Media is an Early Indicator of Disease Epidemics

Social and news media trends correlated well with officially reported data during the 2010 Haitian cholera outbreak.

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January 17th, 2012 – During the 2010 Haitian cholera epidemic, information on disease parameters was transmitted faster via social media and internet news than health officials. This early informal data correlated significantly with later official case data.

Rumi Chunara, PhD, with Harvard Medical School, and colleagues reported their findings in the January 1st, 2012 issue of the *American Journal of Tropical Medicine and Hygiene*.

According to the authors, early epidemiologic assessment may be hindered during disease outbreaks because officially reported data are often unavailable for weeks. Since disease data from informal media sources, however, are available immediately, the authors set out to determine whether these unofficial reports correlated with officially released data.

Unofficial data from Twitter (188,819 tweets) and HealthMap (4,697 alerts), and official data from the Haitian Ministry of Public Health (MSPP) were examined from the first 100 days of the outbreak. The researchers compared the data over three major time periods of activity, corresponding to the initial period of the outbreak (Phase I: October 20 – November 3), the increase in cases during the flooding associated with Hurricane Tomas (Phase II: November 3 – December 1), and the first 100 days of the outbreak (Phase III: October 20 – January 28).

In phases I and II, MSPP hospitalization data correlated significantly with data from HealthMap (October 20 – November 3: 95% confidence interval [CI] = 0.55–0.88; November 3 – December 1: 95% CI = 0.63–0.85), and Twitter (October 20 – November 3: 95% CI = 0.71–0.93; November 3 – December 1: 95% CI = 0.36–0.72).

In the phase III (October 20 – January 28), however, MSPP hospitalization data correlated poorly with data from HealthMap (95% CI = 0.29–0.51), and Twitter (95% CI = 0.13–0.37).

Although the study showed that informal media sources can provide good indicators that a disease outbreak is occurring, and highlight its dynamics, the authors stated that "Further research is needed to determine if informal media will be a good measure of morbidity in other epidemics, and how such sources can best be used for monitoring and characterizing future infectious disease epidemics."

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