

MONITORING SYSTEMS AND INTEGRATED SURVEILLANCE

INNOVATIVE COMMUNITY-BASED DATA COLLECTION TO UNDERSTAND AND FIND SOLUTIONS TO RAINFALL-RELATED DIARRHOEAL DISEASES IN ECUADOR

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CONTEXT

Climate variability and climate change have the potential to alter the transmission of diarrhoeal diseases, one of the leading causes of death and disability worldwide. The aim of the study was to establish the relationship between seasonal rainfall in the rainy season (December to May) and in the dry season (June to November) with the numbers of registered cases of diarrhoeal diseases in the canton Eloy Alfaro (population 39 739; Census 2010) located on the north western part of the coastal region of Ecuador, near the border with Colombia, and subject to the direct influences of El Niño Southern Oscillation (1,2).

NEW APPROACHES

The diarrhoeal diseases information was obtained from data taken from a passive surveillance system grouping data from 12 ministry of health public health centres scattered in the study area, covering the period 2008–2012. Diarrhoeal diseases is defined as three or more loose stools in a period of 24 hours, within the last week. This surveillance system is completed with data collected by the Association of Health Promoters Area Bourbon whose members are performing preventive, curative, educational and socio-organizational activities. Their community-led epidemiological surveillance system has been active in the area for over a decade and is supported by the Centre for Community Epidemiology and Tropical Medicine, a Catholic nongovernmental organization with close ties to local health authorities, the ministry of health and the Central University of Ecuador. Information collected in epidemiological notebooks by health promoters is presented at monthly community meetings via 'Life stories', a comprehensive compilation of the stories behind sentinel events (serious cases and avoidable deaths) as the main instrument to analyse the causes behind the events, and to propose feasible solutions.

The study used precipitation datasets recorded by the Cayapas weather station, managed by the National Institute of Meteorology and Hydrology (INAMHI). The precipitation measurements are performed according to international technical standards of the WMO.

Enabling environment

Capacity-building

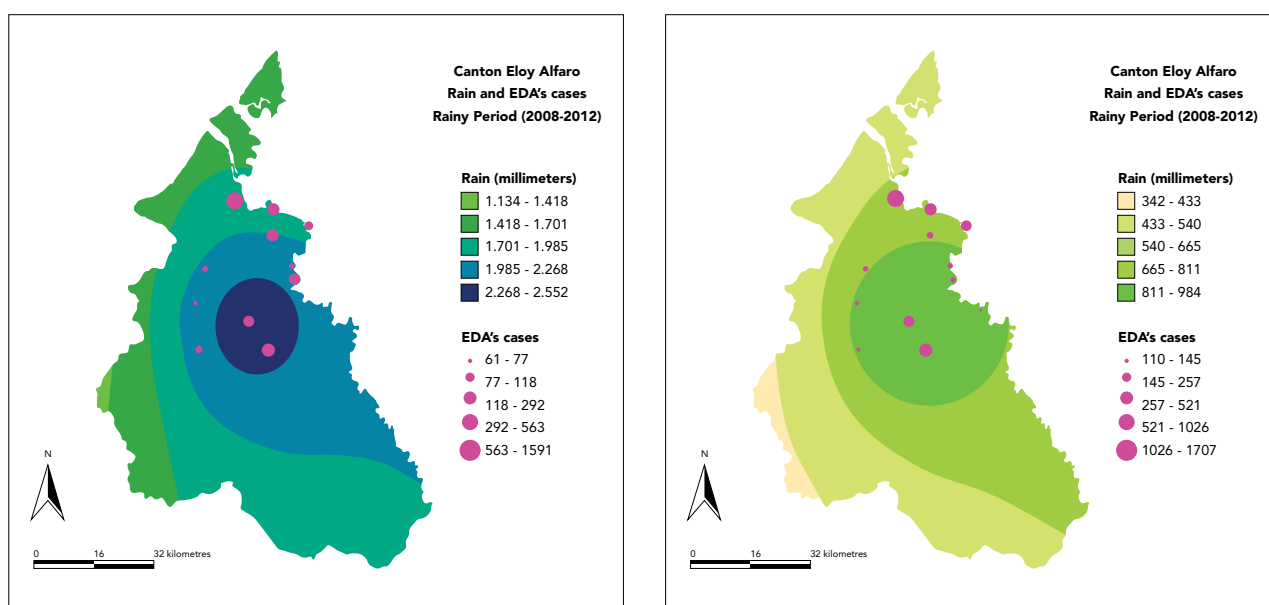
Research

Product and service development

Application

The method of principal component analysis and correlation was used for data analysis and it helped establish that the number of diarrhoeal disease cases reported during the dry period is larger than those cases reported during the rainy season (3). This information was shared with the local authorities and nongovernmental organizations to undertake actions to improve drinking water quality (such as proposing chlorination at various points along the piped distribution systems and distributing chlorine tablets for use by households) and with the ministry of health to include factors linking climate and health in national health policies (4). Climate information is now being provided on request to the district and zonal health authorities. To fully understand this climate–health relationship, other social, cultural and biophysical factors must be considered.

Figure 5.3 Influence of climatic seasonality on diarrhoeal disease.



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The total numbers of diarrhoeal disease reported in the 12 health centres during 2008-2012 varied between 61-1591 cases in the rainy season, and 110-1707 cases in the dry season. This indicates that diarrhoeal diseases are more prevalent during the dry season (51.3 cases per 1 000 inhabitants) than in the rainy season (47.8 cases per 1 000 inhabitants) (5–11).

BENEFITS AND LESSONS

There is a need to strengthen the capacities of the regional team responsible for drinking-water safety. Although there is capacity to analyse water samples for microbiological and chemical contamination, increased awareness and capacity at the community level are needed to achieve community-led initiatives that will implement water safety principles for their own water sources, distribution and storage systems. One way forward is by facilitating inter-community exchanges, as many such water safety initiatives already exist in neighbouring regions.