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ORIGINAL RESEARCH

Knowledge, Attitude, and Practices Regarding Vector-borne Diseases in Western Jamaica

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Abstract

BACKGROUND Outbreaks of vector-borne diseases (VBDs) such as dengue and malaria can overwhelm health systems in resource-poor countries. Environmental management strategies that reduce or eliminate vector breeding sites combined with improved personal prevention strategies can help to significantly reduce transmission of these infections.

OBJECTIVE The aim of this study was to assess the knowledge, attitudes, and practices (KAPs) of residents in western Jamaica regarding control of mosquito vectors and protection from mosquito bites.

METHODS A cross-sectional study was conducted between May and August 2010 among patients or family members of patients waiting to be seen at hospitals in western Jamaica. Participants completed an interviewer-administered questionnaire on sociodemographic factors and KAPs regarding VBDs. KAP scores were calculated and categorized as high or low based on the number of correct or positive responses. Logistic regression analyses were conducted to identify predictors of KAP and linear regression analysis conducted to determine if knowledge and attitude scores predicted practice scores.

FINDINGS In all, 361 (85 men and 276 women) people participated in the study. Most participants (87%) scored low on knowledge and practice items (78%). Conversely, 78% scored high on attitude items. By multivariate logistic regression, housewives were 82% less likely than laborers to have high attitude scores; homeowners were 65% less likely than renters to have high attitude scores. Participants from households with 1 to 2 children were 3.4 times more likely to have high attitude scores compared with those from households with no children. Participants from households with at least 5 people were 65% less likely than those from households with fewer than 5 people to have high practice scores. By multivariable linear regression knowledge and attitude scores were significant predictors of practice score.

CONCLUSION The study revealed poor knowledge of VBDs and poor prevention practices among participants. It identified specific groups that can be targeted with vector control and personal protection interventions to decrease transmission of the infections.

KEY WORDS dengue, Jamaica, KAP, malaria, vector-borne diseases

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INTRODUCTION

Dengue fever is the most common human arboviral infection globally and is responsible for more illness and deaths than any other arboviral disease.[1] It is an acute mosquito-transmitted viral disease characterized by fever, headache, muscle and joint pains, rash, nausea, and vomiting. An estimated 3900 million people in 128 countries are at risk for dengue infection.[2] The incidence and geographical distribution of dengue have greatly increased in recent years. Currently, it is estimated that 390 million dengue infections occur each year, with about 100 million manifesting clinically with varying degrees of severity of the disease[3]; a small proportion progress to severe dengue. With the growing incidence of severe dengue epidemics since the 1970s, the World Health Organization (WHO) has reported cases across the Americas, South-East Asia, and the Western Pacific exceeding 1.2 million in 2008 and more than 3 million in 2013, based on official data submitted by member states.[4] These numbers continue to increase: 2.35 million cases of dengue were reported in the Americas alone in 2013; of this number, 37,687 were cases of severe dengue.[4] The dengue virus is carried and spread by species of mosquitoes in the genus *Aedes*. Of these species, the primary vector is *Aedes aegypti*. Other *Aedes* species that transmit dengue include *Aedes albopictus*, *Aedes polynesiensis*, and *Aedes scutellaris*.

Dengue is endemic in Jamaica, with epidemics reported as recently as in 2012. In that year, 93% of American missionaries returning from Jamaica showed serologic evidence of recent or past infection with the Dengue Virus.[5] The Dengue Virus-1 serotype was first reported in the Americas region in 1977 after an outbreak that began in Jamaica and expanded to Cuba, Puerto Rico, and Venezuela and eventually to the rest of the Caribbean countries, Mexico, Central America, and the northern countries of South America.[6] A study conducted in Jamaica in 2009 found the seroprevalence of dengue immunoglobulin (Ig)G and dengue IgM antibodies to be 100% and 3.6%, respectively.[7] The high seroprevalence of dengue IgG antibodies suggests that the Jamaican population might be at increased risk for dengue hemorrhagic fever and dengue shock syndrome. It was recently reported that in a 2007–2008 epidemic of dengue in Jamaica, 3165 tested sera showed seropositivity for dengue, leptospirosis, and malaria at rates of 38.4%, 6%, and 6.5%, respectively.[8] This highlights the presence of 3 concurrent epidemics with dengue seroprevalence being the highest in the country. Between January and December 2012, the Jamaican Ministry of Health recorded 5384 clinically suspected cases of dengue fever, with 732 laboratory-confirmed cases and 10 confirmed dengue-related deaths.[9]

The Jamaican Ministry of Health has been working tirelessly to prevent dengue outbreaks and fatalities through the implementation of control interventions.[9-11] As with many community health problems, the knowledge, attitudes, and practices (KAPs) of the population play a major role in implementation of control measures. However, little is known of the KAPs of Jamaicans in the control and prevention of vector-borne diseases (VBDs). Although the WHO declared Jamaica free of malaria in 1965,[12] between November 6, 2006 and February 3, 2007, the Jamaican Ministry of Health confirmed 280 cases of malaria due to *Plasmodium falciparum* on the island.[13] This outbreak was brought under control in September 2007.[14] In light of the recent outbreak of the Chikungunya virus leading to a declaration of a "national emergency" in Jamaica, it is very important now, more than ever, to assess and address matters that are imperative to preventing future VBD outbreaks and epidemics in the country.[15] The goal of this study was to assess KAPs of selected communities in western Jamaica regarding control of VBDs such as dengue and malaria.

METHODS

Study Setting. At the time of this study, the population of Jamaica was estimated at about 2.7 million.[16] This study was conducted in the 4 parishes under the Western Region Health Authority (WRHA) namely, St. James, Westmoreland, Hanover, and Trelawny (Fig. 1), with a total population of 472,611 (17% of the entire country).[17]

Study Design and Participants. A cross-sectional study was carried out between May and August 2010 among people visiting the Cornwall Regional Hospital in St. James, the Falmouth Hospital in Trelawny, the Noel Holmes Hospital in Hanover, and the Savanna-la-Mar Hospital in Westmoreland. Participants were either patients or family members of patients waiting to be seen by a health care official. Participants were recruited from the outpatient clinics, the pharmacy areas, and the emergency departments of the 4 hospitals. The aim of the study was explained to potential participants and they were asked to participate.