

ORIGINAL RESEARCH

Addressing Noncommunicable Disease on Short-Term Medical Trips: A Longitudinal Study of Hypertension Treatment in Santo Domingo



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Abstract

BACKGROUND Noncommunicable diseases (NCDs) are the leading cause of mortality worldwide and pose complex challenges in developing nations. Short-term medical trips, which often operate independently of government and pharmaceutical companies, are in a unique position to address NCDs in developing nations. In 2010, the Dominican Aid Society of Virginia shifted the focus of their semiannual clinic to addressing NCDs in Paraíso, Santo Domingo.

OBJECTIVE This study analyzes the longitudinal impact of a short-term medical trip on the control of hypertension in their patient population.

METHODS Returning patients were identified through a review of medical records from 2014 and 2016. A sample of patients who only visited in either 2014 or 2016 were matched on sex and age and served as an internal comparison group. A generalized linear mixed model was applied to assess changes in blood pressure, the proportion of patients receiving blood pressure treatment, and the intensity of blood pressure treatment within and between returning and new patients over the study period.

FINDINGS There was a significant decrease in diastolic blood pressure within returning patients. Change in systolic blood pressure was significantly different between returning and new patients, with improvement in returning patients. There was a significant increase in the proportion of new patients receiving blood pressure treatment and a higher intensity of blood pressure treatment over time. The change in the proportion of patients receiving blood pressure treatment in the new patient group was significantly higher than that of the returning patient group.

CONCLUSIONS Short-term medical trips with a recurrent presence in a community may improve control of hypertension and other NCDs in developing nations. Further research into the impact that short-term medical trips may have on NCDs is needed.

KEY WORDS blood pressure, global health, hypertension, noncommunicable disease, official medical mission, short-term medical trips.

INTRODUCTION

Noncommunicable diseases (NCDs), including cardiovascular disease, diabetes, and cancer, are the leading causes of mortality worldwide.^{1,2} Several

lifestyle-related risk factors (eg, tobacco use, hypertension, and obesity) are recognized as major contributing factors to morbidity and mortality from NCDs.^{1,3,4} Developing nations are currently experiencing growth in chronic NCDs, with death rates

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inversely associated with average income.⁵ As a result, NCDs inhibit progress toward the Millennium Development Goals and are a barrier to economic development in impoverished nations.^{1,6,7} These nations disproportionately bear the burden of NCDs because it is estimated that 70% of deaths in lower- and middle-income countries are associated with NCDs and 48% of deaths caused by NCDs occur before the age of 70.^{1,3,4,8}

The increasing rates of NCDs as well as the disproportionate increase in NCDs in developing countries pose challenges for medical volunteers traveling from higher-income to lower-income countries. Participants in short-term medical trips are faced with the task of understanding the complexity of NCDs within the target population and providing a sustainable intervention, all within a very short time frame.⁹ In addition, they must take into account cultural norms of medical care and limitations within the existing medical system (eg, high cost of and limited access to medical treatment).^{9,10} Addressing the needs of patients with NCDs requires a long-term commitment, whereas participants in short-term medical trips may only have days or weeks to provide care.¹¹

Despite many World Health Organization initiatives to draw attention to NCDs, many programs to address these conditions suffer from lack of funding, inadequate resources, and little support from community and national leaders.¹²⁻¹⁴ Thus, short-term medical trips might have an advantage in that they often operate independently of pharmaceutical companies, medical equipment suppliers, and political ties. These trips offer unique opportunities to coordinate integrative solutions by engaging and supporting existing health systems to help provide continuity of care for patients with chronic NCDs.

Participation in short-term medical trips by medical students, residents, and physicians has increased dramatically over the past few decades. In 2008 alone, about 500 US-based organizations spent an estimated \$250 million on 6000 different short-term medical trips.¹⁵ Although a more recent gross estimate has not been made, this price has likely increased over the past 10 years.¹⁶ Although these organizations cite several benefits for the individuals who participate (eg, clinical skills, cultural sensitivity, familiarity with novel diseases), 95% of them lack any form of significant data collection to evaluate patient outcomes.^{17,18} Indeed, data collection and management are complicated because clinics may lack the necessary technology, data storage capacity, and reliable internet access. Although some

empirical studies of short-term medical trips exist, the focus of this research has been the social, economic, and diplomatic impacts of these trips.^{16,19} After conducting a literature search, the authors found that almost no research has examined the impact of short-term medical trips on health outcomes of patients, especially related to NCDs. To help address this gap in data, this study presents the impact of a recurring short-term medical trip on the treatment of NCDs in the Dominican Republic.

In the Dominican Republic, hypertension is the second leading cause of death and diabetes is the sixth leading cause of death; nearly 35% of Dominicans suffer from hypertension and approximately 10% have diabetes.²⁰ The Dominican Aid Society of Virginia coordinates semiannual short-term medical trips, which last 6 days, bring an average of 25 volunteers, and during which an average of 750 patients are treated in the barrio of Paraíso, a section of the Villa Mella barrio in Santo Domingo Norte. Dominican Aid Society of Virginia-led medical trips have been conducted in Paraíso since 2006. In 2010, the team began to focus on the assessment and treatment of NCDs as the impact of these conditions on the community became more apparent and as the team leadership became more aware of the previously noted impact of NCDs on developing nations. This study reports on the impact of continuity of patient care provided via a short-term medical trip on control of hypertension in a semiurban barrio in the Dominican Republic and discusses the implications of these findings for short-term medical trips overall. This study assessed hypertension given its prevalence in the community, its impact on multiple other health conditions, and as an example for studying other NCDs.

METHODS

All patients were required to be at least 18 years of age, to have a complete medical record (eg, last name and blood pressure measurements must be present), and not to be pregnant. When sex was missing, the research team used other health information in the electronic health record to complete this field when possible. If sex could not be determined with certainty, the record was excluded. Using medical records from the nonprofit Dominican Aid Society of Virginia, 2 groups were identified: the returning patient group included patients seen in both 2014 and 2016 and the new patient group was composed of patients seen only in 2014 or 2016 but not in both years. The new patient group was used as an internal

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