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Participative decentralization of diabetes care in Davao City (Philippines) according to the Chronic Care Model: A program evaluation

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ABSTRACT

Aim: To assess the effectiveness of the Diabetes Project in Davao City, Philippines, regarding diabetes care access, diabetes management and cardiovascular risk factors. The project was developed in accordance with the Chronic Care Model (CCM) framework.

Methods: A non-randomized cross-sectional survey was conducted in nine intervention and five control Barangays (villages). People with diabetes aged ≥20 years were interviewed using a structured questionnaire; height, weight, waist circumference, and blood pressure were measured; HbA1c was tested with a NSGP-certified point-of-care device. Logistic regression models were used to compare the two groups.

Results: The intervention group ($n = 503$) scored better than the controls ($n = 136$) on the following (OR, 95% CI): percentage of patients taking metformin (1.5, 1.0–2.2); and in the last 12 months: laboratory test for fasting blood sugar (1.6, 1.1–2.3), HbA1c (6.0, 2.4–15.1), lipid profile (1.7, 1.1–2.5), nutritionist visit (1.6, 1.0–2.5) and therapeutic education session (2.7, 1.8–4.0). Glycemic control (HbA1c < 7%) was also better in the intervention Barangays (1.6, 1.0–2.4). There were no statistical differences between the two groups for number of visits, and levels of other cardiovascular risk factors.

Conclusions: Our findings support the effectiveness of implementing the CCM framework in a low-to-middle income country on glycemic control and diabetes management.

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1. Introduction

According to the 2011 World Report on Disability, 66.5% of all years lived with disability in low and middle income countries are associated with five non communicable diseases: diabetes, cardiovascular diseases, chronic respiratory illnesses, mental disorders and cancer [1]. The International Diabetes Federation (IDF) reveals that 366 million people lived with diabetes worldwide in 2011; 4.6 million deaths could be attributed to diabetes and more than 10 million people lived with a diabetes complication such as heart attack, stroke, kidney failure, blindness and amputation leading to impairment and potential disability [2]. For these reasons, Handicap International has been involved since 2006 in the response to diabetes in order to mitigate impairments and disability associated with this health condition in resource-limited settings.

The Diabetes Atlas estimates diabetes prevalence for the Philippines at 8.2% among adults (2011). This represents 4.2 million people currently affected. Prevalence is expected to rise to 9.6% by 2030, representing 7.4 million people [2]. In such settings, people living with diabetes have limited access to care, therapeutic education, psychological and social support because of several structural, geographical and financial barriers [3,4]. A 2006 diabetes needs assessment in Davao City [5], the third largest urban center in the Philippines (1.3 million inhabitants) [6], found barriers to diabetes care similar to barriers in low and middle income countries elsewhere [3,4]. These barriers included health system organization geared toward acute diseases management; diabetes care and availability of medications limited to third level public hospitals and private clinics financially inaccessible for most of the population; lack of decision support tools, particularly at primary health care level; lack of trained health professionals on diabetes and cardiovascular risk factors; lack of awareness and peer support in the communities; lack of available data in the medical information system and lack of civil society support and advocacy groups.

In 2007 Handicap International launched a three-year pilot project for the prevention and care of diabetes in nine Barangays (villages) of Davao City. The Diabetes Project was carried out with four local partners, including the City Health Office, the Davao Medical Center, the Davao Diabetes Association, and the Davao Jubilee Foundation, a non-profit physical rehabilitation center. This project aimed to decentralize diabetes services at the primary health care and community levels using a participatory local development approach. The Chronic Care Model (CCM) [7] served as the conceptual framework to describe the project's intervention. The CCM model is a guide to improve the quality of chronic diseases management in order to reduce the quality chasm between current practice and optimal standards. It includes six components: (1) health system organization, (2) decision support, (3) delivery system design, (4) self-management support, (5) community resources and policies and (6) clinical information systems. The implementation of one or more components of the CCM has proven to be effective in high-income countries [8–10]. Nevertheless, prior to 2007, a comprehensive six-components CCM had never been implemented and evaluated in low-income settings, and no CCM evaluation had ever been conducted in the Philippines [9,11–16].

The main objective of the present study was therefore to assess the effectiveness of the Diabetes Project in Davao, which used the CCM framework, regarding access to diabetes care, diabetes management and cardiovascular risk factors outcomes.

2. Methods

2.1. Design

The Diabetes Project was evaluated using a non-randomized comparative cross-sectional survey conducted in nine intervention Barangays and five control Barangays of the City of Davao between June 10 and July 15, 2010. The Philippines Health Research and Development Consortium XI approved the study protocol. All participants gave their informed consent before being included in the study.

2.2. Intervention and control groups' selection

Handicap International and its partners selected the nine intervention Barangays in 2007 among the 182 Barangays of Davao City. Selection criteria included the following: established presence of all project partners in the Barangay, existence of a local health center and identified patients with diabetes within local communities. All selected Barangays were in Davao City proper. They were socially and politically stable, with relatively easy access to the national referral hospital. The choice was also made to represent a variety of socio-economic brackets. The five control Barangays were selected in 2010 based on feasibility, political stability and the existence of a public health center in each. Controls were geographically separate from intervention Barangays to lower risk of contamination. Their primary health care centers did not include diabetes care and multidisciplinary services.

2.3. Description of intervention

Between January 2007 and December 2010, local stakeholders from the intervention Barangays were given support for shifting the organization of the primary and community based care from an acute to a Chronic Care Model in a participative way. The intervention aimed to increase access to multidisciplinary integrated diabetes management in the communities. The framework for the intervention included the six components of the Chronic Care Model, as follows.

1. A local steering committee headed by the City Health Office (CHO) oversaw the **reorganization of the health system**, adapting the city legal framework and developing agreements within and across organizations for the integration of the specific diabetes services in the existing health system. 2. The CHO also developed **decision support** tools and local instruments adapted from international guidelines [17], including diabetes management guidelines and protocols, training modules, therapeutic education tools, foot care kits, health service provision and referral systems directory, community sensitization and advocacy tools. These tools and instruments