Original research

Using collaborative learning to improve diabetes care and outcomes: The VIDA project

Alberto Barceló[a,*], Elizabeth Cafiero[a], Melanie de Boer[b], Alejandro Escobar Mesa[c], Marcelina García Lopez[c], Rosa Aurora Jiménez[d], Agustín Lara Esqueda[d], José Antonio Martinez[d], Esperanza Medina Holguin[c], Micheline Meiners[a], Gerson Moreno Bonfil[c], Saturnino Navarro Ramirez[c], Enrique Pérez Flores[a], Sylvia Robles[e,1]

[a] *Pan American Health Organization, Washington, DC, USA*
[b] *Pan American Health Organization, Mexico*
[c] *Servicios de Salud de Veracruz, Mexico*
[d] *Secretaria de Salud de México, Mexico*
[e] *Johns Hopkins School of Public Health, USA*

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ABSTRACT

The prevalence of diabetes in Mexico among those 20–64 years of age has increased from 7.2% in 1993 to 10.7% in 2000. National population-based surveys in Mexico demonstrated that 50% of the total population with diabetes had blood glucose levels of 200 mg/dl or higher. Thus, diabetes care has become one of the most important public health challenges in this country. The aim of the study was to improve the quality of diabetes care in primary health care centers using the chronic care model and the breakthrough series (BTS) collaborative methodology.

Methods: Ten public health centers in the cities of Xalapa and Veracruz were randomly selected to participate in the project. Five of the health centers were randomly assigned to receive the intervention (intervention group) and the other five followed usual care (usual care group). The intervention was evaluated by A1c test before and after the intervention in both groups of patients. Patients were followed for 18 months from November 2002 to May 2004. Results were adjusted for the clustering of patients within practices and baseline measure.

Results: The proportion of people with good glycemic control (A1c < 7%) among those in the intervention group increased from 28% before the intervention to 39% after the intervention. The proportion of patients achieving three or more quality improvement goals

increased from 16.6% to 69.7% ($p < 0.001$) among the intervention group while the usual care group experienced a non-significant decrease from 12.4% to 5.9% ($p = 0.118$). The focus on the primary care team and the participation of people with diabetes were strategic elements incorporated into the methodology, expected to ensure sustainability of continued improvement of health outcomes. The intervention introduced modifications to solve problems identified by health teams in their practice and improved process and outcome measures of quality diabetes care. Most of the actions were directed at four components of the chronic care model: self-management support, decision support, delivery system design, and clinical information systems.

1. Introduction

The prevalence of diabetes in Mexico among those 20–64 years of age has increased from 7.2% in 1993 [1] to 10.7% in 2000 [2]. The State of Veracruz presented the highest prevalence of diabetes in Mexico, 16.1% in 2000. In 2000, a study by the Pan American Health Organization (PAHO) estimated that diabetes represented a total expenditure of US$ 15 billion in Mexico; most of which was due to indirect cost caused by premature mortality, and disability [3]. A recent study conducted in Mexico [4] estimated that between 2004 and 2006, the number of cases of diabetes in clinics and hospitals increased from 844,211 to 951,417 (12.7%). This represents an increase in the costs for diabetes care from US$ 56,461,948 (2004), to US$ 63,200,887 (2006), a 14% increase in just 2 years.

National population-based surveys in Mexico indicated that 50% of the total population with diabetes had poor metabolic control (as measured by blood glucose level of 200 mg/dl or higher) [1,2]. Although glycosylated hemoglobin (A1c) is the most accurate parameter to measure metabolic control, the available nationally representative data were based on fasting blood glucose (FBG). Recent priority-setting literature supports the use of FBG when HbA1c is unaffordable [5]; at the time of the surveys A1c was not covered by the public health system in Mexico. As a result of the increased prevalence and poor control of diabetes in Mexico, diabetes mortality has shown a sustained increase during the last decades. While diabetes ranked as the third cause of death in the general population in 1997 with a rate of 38.0 deaths per 100,000 population, it climbed to the first cause of death in 2000, accounting for 46,614 deaths and a reported mortality rate of 46.8 per 100,000 population [6,7].

To evaluate a more integrated approach to diabetes care we conducted a pilot project in the State of Veracruz. The aim was to improve the quality of diabetes care in primary health care centers using the chronic care model proposed by Wagner et al. [8,9] and the breakthrough series (BTS) collaborative methodology developed by the Institute for Healthcare Improvement (IHI) [9].

2. Methods

The project was implemented through the Secretariat of Health of the State of Veracruz, Mexico (SSVER) that provides care for 3,583,931 people which represents approximately half of the total population of the state of Veracruz (as of 2005). SSVER's beneficiaries are mostly people of low resources that do not receive medical benefits from the government social security system or health insurance through private employers.

Ten of the 23 SSVER health centers in the cities of Xalapa and Veracruz in the State of Veracruz were randomly selected to participate in the project. All the 10 centers implemented a clinical information system and all patients with diabetes were offered two glycosylated hemoglobin (A1c) tests and a lipid profile test at baseline and the end of project. Five of the health centers were randomly selected to receive the intervention (the intervention group) and the other five monitored their patients receiving usual care (usual care group). All patients participating in the project gave their written informed consent and the protocol was approved by the state ethical committee. The clinical information system was based on the QUALIDIAB [10] program of the Declaration of the Americas on Diabetes (DOTA). QUALIDIAB had been implemented with success before in several countries of Latin America (Argentina, Brazil, Chile, Colombia, Paraguay, and Uruguay). The clinical information system implemented in Veracruz consisted of paper-based records and a computer database. This database facilitated the preparation and dissemination of data abstracts to health providers to monitor quality of care. In addition to the clinical information system and biochemical tests, all centers provided patients the opportunity to participate in peer support groups.

A total of 43 primary care teams participated in the project; teams were made up of physicians, nurses and, in some centers, other professionals such as nutritionists, and psychologists. The study's outcomes were monitored through the clinical information system that consisted of the periodical review of the clinical charts of the 307 patients involved in the study (196 from the intervention group and 111 from the usual care group).

Participating health providers from the intervention center teams completed the Assessment of Chronic Illness Care (ACIC) questionnaire adapted for diabetes, before and after the intervention to help in the selection of priorities for interventions [9]. The ACIC is a self-evaluation tool through which health providers can identify areas for improvement in their care delivery; it is especially useful to conduct before a team begins a collaborative quality improvement cycle. The adapted version of the ACIC questionnaire in Spanish can be obtained from the authors.