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Multistrategic approach to improve quality of care of people with diabetes at the primary care level: Study design and baseline data

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ABSTRACT

Aim: To test the one year-post effect of an integrated diabetes care program that includes system changes, education, registry (clinical, metabolic and therapeutic indicators) and disease management (DIAPREM), implemented at primary care level, on care outcomes and costs.
Methods: We randomly selected 15 physicians and 15 nurses from primary care units of La Matanza County to be trained (Intervention-IG) and another 15 physicians/nurses to use as controls (Control-CG). Each physician-nurse team controlled and followed up 10 patients with type 2 diabetes for one year; both groups use structured medical data registry. Patients in IG had quarterly clinical appointments whereas those in CG received traditional care. DIAPREM includes system changes (use of guidelines, programmed quarterly controls and yearly visits to the specialist) and education (physicians' and nurses' training courses). Statistical data analysis included parametric/nonparametric tests according to data distribution profile and Chi-squared test for proportions.
Results: Baseline data from both groups showed comparable values and 20–30% of them did not perform HbA1c and lipid profile measurements. Majority were obese, 59% had HbA1C ≥7%, 86% fasting blood glucose ≥100 mg/dL, 45%, total cholesterol ≥200 mg/dL, and 92% abnormal HDL- and LDL-cholesterol values. Similarly, micro and macroangiopathic complications had not been detected in the previous year. Most patients received oral antidiabetic agents (monotherapy), and one third was on insulin (mostly a single dose of an intermediate/long-acting formulation). Most people with hypertension received specific drug treatment but only half of them reached target values; dyslipidemia treatment showed similar data.

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Conclusions: Baseline data demonstrated the need of implementing an intervention to improve diabetes care and treatment outcomes.

1. Introduction

Diabetes complications, the major cause of morbidity, mortality and costs of diabetes, are significantly reduced by appropriate control of blood glucose and associated cardiovascular risk factors (CVRFs) [1–7]. Cost of these treatments is within the range of currently accepted preventive interventions [6,8].

Despite available evidence supporting these benefits, prevention strategies have not been widely incorporated into clinical practice [9], and care received by people with diabetes is frequently far from optimal [10–15].

Several factors contribute to this disappointing situation, namely: (a) an inefficient health system unable to cope with the care of chronic diseases and unwilling to pay for preventive interventions [16–18]; (b) inadequate knowledge and experience of health care providers [13], (c) inappropriate providers' attitude toward application of guidelines [19,20], (d) limited patient access to care, (e) poor compliance with self-care and treatment and (f) scant attention paid to the psychological impact of the disease and to patient education [9,20]. Lack of continuous evaluation and systematic registry of medical outcomes with concomitant treatment adjustments close the vicious circle that leads to poor care outcomes [10,12,21]. In this context, late diabetes diagnosis and inappropriate control/treatment are the final common path leading to the high morbimortality of the disease. In this regard, early detection and treatment of type 2 diabetes reduces cardiovascular morbimortality, and intensity of glucose and other CVRF treatment after diagnosis is less important than the timeliness of its initiation [22].

Effective models of diabetes care which include system changes and patient and/or physician education help to overcome most of the above mentioned problems. System changes most widely implemented included provision of specific care guidelines and reminders, improved access to care by reduction of financial/administrative barriers to care, and patient/provider feedback to monitor care outcomes. Indeed, a review of educational interventions in disease management programs of chronic diseases, including diabetes, concluded that most programs directed at providers and patients improved care outcomes; however, little is known about the relative effectiveness and costs associated with different combinations of system changes and educational interventions [23]. A recent report on cost-effectiveness of two guideline strategies implemented at secondary care level in the Netherlands, concluded that both strategies were cost-effective compared to usual care [24]. However, further research is needed to evaluate, at different care levels, the relative cost-effectiveness of different combinations of system and educational interventions to determine the value of their inclusion in disease management programs [25]. This information is important to optimize allocation of healthcare funds, particularly in developing countries with limited economic resources.

In Argentina, the health care system includes three independent sectors: the public, the social security and the private sectors [26]. The public sector is mainly financed through taxes and provides universal access to free health care to 42% of the population (mostly unemployed and low-income population that are not insured by social security or private sector), through primary care units (PCU) and hospitals. PCU includes different kinds of disease management programs for the ambulatory treatment of chronic diseases with free supply of drugs through public entities; however, not all chronic diseases are fully covered. People with diabetes have free-access to human insulin, some oral drugs and a limited number of strips for self-monitoring blood glucose (SMBG), as part of public health system coverage. The social insurance sector includes more than 300 institutions organized at national and subnational levels by provincial government or labor unions, covering around 48% of the population. Degree of health coverage is determined by law in the Mandatory Medical Program (PMO), being financed by compulsory contributions made by employees (3%) and employers (6%). The private sector is financed through organized prepaid medical plans, and covers about 10% of the population; it operates like the social insurance system, using PMO as a reference standard of minimum level of coverage.

Attempting to answer some of the open questions, we are planning to implement at primary care level, an integrated diabetes care program that includes system changes, education, registry (clinical, metabolic and therapeutic indicators), education (physicians and nurses) and disease management (DIAPREM: **DIA**betes **P**rimary care, **R**egistry, **E**ducation and **M**anagement). DIAPREM will evaluate clinical and metabolic outcomes as well as economic cost during a one-year follow up. We are currently presenting its design and baseline data.

2. Research design and methods

2.1. *Background*

Argentina has 40,117,096 inhabitants (2010 National Census). Thirty-nine percent of this population lives in the province of Buenos Aires (15,645,667 inhabitants) of which 18% lives in the city suburbs of this province (7,221,077 inhabitants). Of these, 1,775,816 people live in the county of La Matanza. According to the prevalence defined by the 2013 National Risk Factors Survey, our diabetes population is around 2,892,000 people; only about half of them know they have the disease (1,445,973), 70% of those diagnosed is on regular treatment (1,012,181) and less than 50% attain preventive treatment goals (455,481). Half of this population receives free care from the public health sys-

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