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## Review

# Effectiveness of individual strategies for the empowerment of patients with diabetes mellitus: A systematic review with meta-analysis

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## ABSTRACT

**Aims:** To identify and evaluate the effectiveness of individual empowerment strategies in patients with diabetes mellitus (DM).

**Methods:** A systematic review was performed in the PubMed, Scopus, Science Direct and BVS. For meta-analysis and evaluation of Cochrane Risk and Bias, Revman V 5.2 software was used.

**Results:** Eleven studies of 1073 publications met the inclusion criteria. The strategies used were individual consultations, phone calls, sessions via a website and use of a booklet. Glycemic Hemoglobin (HbA1c) was used to evaluate the effectiveness of the strategies, and 45.4% of the studies also used the Diabetes Empowerment Scale. Five studies (45.5%) showed significant improvements in HbA1c reduction, improvements in self-efficacy (18.2%), knowledge levels of DM (18.2%), quality of life (18.2%). However, after meta-analysis, no statistically significant improvement was found for HbA1c.

**Conclusion:** This systematic review showed that individual strategies for DM empowerment were not effective in reducing HbA1c, despite contributing to improvements in psychosocial parameters. Therefore, individual strategies need to be reviewed so that they become effective in DM control.

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## 1. Introduction

Diabetes mellitus (DM) is one of the chronic non-communicable diseases with the greatest economic impact on health systems, and has been considered a worldwide epidemic [1]. This is justified due to the increase in life expectancy, obesity, sedentary lifestyle and survival of individuals with the disease, especially in developing countries [1–3]. It is estimated that in 2015 there were about 415 million people with DM in the world and that this number will exceed 640 million in 2040 [1].

DM is a condition that requires chronic care, both by the patient himself and by the health services, burdening the health system. The economic costs to the health system, to society and to the patient themselves are accompanied by intangible costs of great impact, such as anxiety and loss of quality of life [4,5]. Acceptance of disease, implementation of required behavioral changes, and adherence to treatment are both difficult goals to achieve and essential for adequate disease control [6]. To successfully control DM, patients should be able to set goals and make effective daily decisions consistent with their values and lifestyle [7]. In this sense the education of the DM patient is a tool inserted into the concept of empowerment that allows the increase of self-care and self-control of their condition [8].

Empowerment is a way to increase the patient's ability to think critically and act autonomously, helping them to become free and responsible for their life [7,9]. Studies have shown that the empowerment of patients with type 2 DM can reduce levels of glycated hemoglobin (HbA1c), improve self-perception of the disease and their ability to control it through psychological, habitual and behavioral changes [8,10–12].

Diverse empowerment strategies, both collective and individual, have been implemented around the world to improve metabolic control and self-care capacity of patients with DM [8,10,13,14]. Individual strategies have been used to promote a closer relationship between the professional and patient, greater knowledge of the individual needs, and lifestyle of

each patient. Therefore, this study aims to identify and evaluate the effectiveness of individual empowerment strategies in DM patients.

## 2. Material and methods

### 2.1. Study design

A systematic review was conducted based on the PRISMA Statement guideline [15].

### 2.2. Eligibility criteria

Established as “PICOS”: “P” (problem): patients with diabetes mellitus; “I” (intervention): individual intervention strategies for empowerment; “C” (control): patients without intervention for empowerment; “O” (outcomes): reduction of HbA1c; “S” (study design): randomized controlled trials. From “PICOS” the guiding question was established: “Are individual empowerment strategies effective in DM control?” Randomized non-language restricted trials that described strategies to empower patients with DM and to assess HbA1c values of patients were considered eligible. Review articles, editorials, letters to the editor, news reports, comments, as well as the results of dissertations, theses or abstracts published in annals of congress or scientific journals, articles with collective strategies or using both strategies: individual and collective, were excluded.

### 2.3. Information sources

The systematic review was carried out in the PubMed, Scopus, Science Direct and BVS databases with studies published as of August 13th 2016, without restricting any start date of the collection, since the objective was to retrieve all articles that undertook clinical trials to identify individual empowerment strategies independent of the year of publication.

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