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The feasibility of a self-management education program for patients with type 2 diabetes mellitus: Do the perceptions of patients and educators match?

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ABSTRACT

Aims: To compare the feasibility experienced by patients with type 2 diabetes mellitus in a self-management educational program to the hindrance assessed by the educator of the program.

Methods: Twenty-five type 2 diabetes patients on maximally tolerated oral hypoglycaemic agents followed a 6-month educational program consisting of five components: background, medication, physical exercise, nutrition and blood glucose self-monitoring. Medication was unchanged during the study. Outcome measures were feasibility encountered by the patient, hindrance observed by the educator and HbA_{1c}-level.

Results: The feasibility encountered by patients was significantly related to the hindrance assessed by the educators (ρ 0.756, $p < 0.001$). Feasibility increased significantly for three components but not for physical exercise and nutritional advice. Mean HbA_{1c}-level decreased from $8.2 \pm 1.1\%$ before onset of the program to $7.2 \pm 1.3\%$ 6 weeks after termination of the program.

Conclusions: Feasibility experienced by the patients matched the hindrance noticed by the educators. This might have led to an increase in patients' self-efficacy, which in turn gives an improvement in self-management and glycaemic control.

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1. Introduction

Optimalisation of glycaemic control is important for the prevention and reduction of acute and chronic complications [1–3]. Self-management education and behaviour change can be considered an essential part of the approach of patients with type 2 diabetes mellitus, at least in the short term [4,5]. The effect of self-management educational

programs, however, appears to diminish with longer follow-up [4,6]. Supporting self-management means the use of effective strategies that include assessment, goal setting, action planning, problem solving and follow-up [7]. Problem solving primarily needs mutual understanding with patients about the origin of the problems in achieving the goals that doctors, diabetes nurses and dieticians propose [8].

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It has been shown that the enhancement of self-efficacy in patients with chronic diseases, such as type 2 diabetes mellitus, has a positive effect on behaviour change [9–11]. In other words, self-efficacy is an important contributor to the success of self-management educational programs, although especially in patients with newly diagnosed type 2 diabetes, high self-efficacy does not automatically lead to high self-management [12]. Self-efficacy is defined as ‘the expectation to be able to execute behaviour required to master a task’ [13] and indicates both whether the patient experiences the proposals made by diabetes care providers during self-management education as applicable in daily routine and whether self-management will lead to the desirable behaviour change.

Four important sources of information may increase self-efficacy: performance accomplishments, vicarious learning, verbal persuasion and self-appraisal of emotional and physiological responses [14]. Of these self-efficacy-enhancing methods only verbal persuasion appears to be often used [15]. We hypothesised that verbal persuasion will only be effective if the patient experiences no major obstacles in the execution of the self-management program and that therefore self-efficacy will only be enhanced if patient and educator are in agreement on the feasibility of the different parts of the educational program.

In the present study the feasibility of different components of a self-management educational program experienced by the patients was compared to the obstacles or hindrance assessed by the educators of the program.

2. Methods

2.1. Participants

The patients described in the present study were part of a large randomized controlled trial (RCT) performed in 57 general practices in and around the city of Utrecht, The Netherlands [5]. All patients were younger than 76 years of age, treated only in the general practice and used the maximum feasible dosage of oral hypoglycaemic agents, mostly sulphonylurea and metformin. For inclusion, patients were required to have an HbA_{1c} \geq 7.0% (normal range 4.0–6.0%). Exclusion criteria were: severe co-morbidity (defined as having an illness that surpasses the impact of diabetes mellitus); insufficient understanding of spoken Dutch to follow instructions; or requirement of insulin therapy in the short run on account of severe hyperglycaemic symptoms. Examples of severe co-morbidity were: lung cancer, leukaemia, dementia and recent cerebral infarction. In the RCT the patients were randomly allocated to a 6-month educational program by a diabetes nurse or to usual care. This study concerns the 25 patients that were randomly allocated to the educational program group.

Patients remained under care of their general practitioner during the course of the study. They were managed according to the Dutch guideline on type 2 diabetes mellitus [3]. This guideline recommends 3-monthly check-ups during which the general practitioner focuses on symptoms of hypo- or hyperglycaemia and measures a fasting blood glucose level. The general practitioner was asked not to alter medication

during the study, unless a patient developed severe hyperglycaemic symptoms.

2.2. Educational program

Two skilled diabetes nurses provided the self-management education program in one-to-one sessions. The program was developed in collaboration with the Dutch Association of Diabetes Nurses. It focused on the following five components: general information and background on diabetes mellitus (backgrounds); reinforcing compliance with actual medication (medication); importance of physical exercise (physical exercise); importance of losing body weight and nutritional advice (nutritional advice). All patients were taught how to perform home blood glucose self-measurements on a regular basis (self-monitoring of blood glucose or SMBG). Each patient was given a blood glucose meter (Glucotouch; Lifescan Benelux, Beerse Belgium) and necessary materials (reagent strips and lancets).

Per individual a total of 6 sessions were given in a 6-month period. The interval between the sessions varied between 3 and 6 weeks. Each session took between 15 and 45 min. An outline of the program is given in Table 1.

2.3. Outcome measures

During each session of the educational program the patient scored the feasibility of the components that were discussed during that session. Independent of the patient the diabetes nurse scored the obstacles she felt were present for the patient for these components (hindrance). The feasibility and hindrance were scored on a 5-point scale. On the scale for feasibility 1 represented ‘not feasible’ and 5 represented ‘feasible’. On the hindrance-scale 1 represented ‘no hindrance’ and 5 represented ‘large amount of hindrance’. All sub-items per component of each session were added and meaned after which the result was expressed as percentage: 1=0% and 5=100%.

HbA_{1c}-level was measured four times: before onset of the sessions (t_0), after 3 months (t_3), 6 weeks after the last session (t_6) and 12 months after the last session (t_{12}) by turbidimetric inhibition immunoassay (Hitachi 917; Roche Diagnostics, Basel, Switzerland; normal range 4.0–6.0%).

2.4. Statistical analysis

As mentioned before, the 25 patients in this study were the intervention group of a larger RCT [5]. On forehand no power or sample size calculation was performed for this sub-study. A retrospective power calculation showed the statistical power of this study is too small for conclusions to be made concerning the effect of the perceived feasibility of the educational program on the change of HbA_{1c}-level.

The data used were not normally distributed and non-parametric tests were used in the analyses.

The changes in feasibility experienced by the patient and the change in hindrance assessed by the diabetes nurse were evaluated. Per component of the program the difference in scored feasibility and hindrance between the last and first session during which the component was discussed were cal-

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