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Original Article

Impact of motivational interviewing on the quality of life and its related factors in type 2 diabetes mellitus patients with poor long-term glycemic control

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ABSTRACT

Purpose: The aim of this study was to evaluate the impact of motivational interviewing (MI) on the quality of life and its related factors in type 2 diabetes mellitus (T2DM) patients with poor long-term glycemic control.

Design and methods: One hundred ten T2DM patients with poor long-term glycemic control that were hospitalized in our institution were enrolled in this study and randomly assigned to receive either MI or routine diabetes education intervention. Patients' body mass index values, Homeostatic Model Assessment-Insulin Resistance (HOMA-IR) scores, and levels of glycated hemoglobin (HbA1C), triglycerides, high- and low-density lipoprotein cholesterols, Summary of Diabetes Self-management Activities and Diabetes Specific Quality of Life assessments were recorded before and six months after intervention.

Results: Baseline scores for all measurements did not differ between patients in the control and MI groups. Although MI resulted in a significant reduction of HbA1c and serum lipid levels compared with the baseline, the effect was not significantly different from the control intervention. However, the improvement in HOMA-IR scores was significantly greater in the MI group compared with the control intervention (2.8 ± 2.8 *vs.* 5.7 ± 4.7; $p = 0.000$). Moreover, MI significantly elevated diabetes self-management activities ratings compared with the control intervention (13.2 ± 3.4 *vs.* 10.9 ± 4.3; $p = 0.004$).

Conclusion: Compared to routine diabetes education, MI is a more effective approach for improving HOMA-IR and self-management of T2DM patients with poor long-term glycemic control.

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1. Introduction

Motivational interviewing (MI) is a client-centered technique that targets the ambivalence of patients to improve their intrinsic motivation and correct their behavior [1,2]. It is founded on establishing a good therapist-client partnership, which creates a friendly, supportive intervention environment that utilizes individualized communication skills and methods to respect the thoughts and feelings of the patient and promote compliance [3,4]. It was established by Miller and Rollnick in the early 1990s, based on the clinical treatment of patients with alcohol dependence [4], and has become one of the major techniques for behavior modification in the management of chronic diseases, such as pain control, diabetes mellitus, weight control, and human immunodeficiency virus prevention [5,6]. Although the efficacy of MI has been documented by a number of evidence-based medical studies [7–10], evaluation of its use China has been minimal. Therefore, the aim of this study was to examine the efficacy of MI in the management of Chinese type 2 diabetes mellitus (T2DM) patients with poor long-term glycemic control.

2. Patients and methods

2.1. *Patient selection*

Patients hospitalized in the Department of Endocrinology of The First Affiliated Hospital of Xi'an Jiaotong University between November 2010 and Mar 2011 were enrolled in the study. The research process had got approval of the ethics committee of the university. All the patients had provided informed consents for research participation. The criteria for inclusion in the study were: 1) patient age between 40 and 70 years with a diagnosis of T2DM according to the World Health Organization diagnostic criteria [11]; 2) one- to two-year history of diabetes; 3) glycated hemoglobin (HbA1c) $\geq$ 9%; and 4) an educational level of at least six years. Patients were excluded for: 1) disturbance of consciousness, cognitive disorders or defects in language communication; 2) presence of a severe acute disease or chronic disease (e.g. severe heart failure, lung function failure, tumors); or 3) if they were unwilling to participate in this study. Patients were then randomly assigned to groups receiving intervention with either MI or routine diabetes education.

2.2. *Intervention approaches*

Six-month interventional approaches were separately formulated for the two groups. During the first week of hospitalization, baseline measures were collected upon admittance to the hospital, and then immediately before the first intervention session. Diabetes education was conducted by therapists properly trained in a diabetes education program supported by the Chinese Medical Association. Therapists also received training in MI techniques.

2.2.1. *MI intervention*

The MI intervention program was comprised of 30-min monthly sessions centered on the behavioral change of the patient. Before the initial interview, the time for the intervention course was confirmed in a phone call, at which time the patient was asked to list the problems in the intervention and to think about it. The initial session was conducted in the education clinic, which is quiet and comfortable. At this time, the therapist established a mutual trust relationship with the patient and inquired about major concerns, lifestyle, personal hobbies, occupation, income, family members, etc. In the second session, treatment adherence and efficacy were evaluated and the plan was adjusted accordingly. The patient was praised for his/her effort and provided with further encouragement. In the third session, the benefit of the plan was discussed. In the fourth session, the patient's change in behavior over the previous three months was discussed and the improvement in health was evaluated. The patient was encouraged to continue following the plan. Over the next three months, telephone follow-ups were performed once a month to assess the compliance and to answer any questions raised during treatment.

The status of the patient was judged within each session as follows: 1) In the first stage (5 min), the patient is allowed to comment on their feelings and experiences of lifestyle, disease control, and so on. The therapist then reports on the patient's disease status, attitude, and difficulties encountered. 2) In the second stage (5–15 min), the therapist verbalizes the problem and the patient is guided to find a way to solve the problem from his/her point of view. 3) In the third stage (15–25 min), the therapist discusses the problems and solutions point-by-point with the patient. The patient's and therapist's solutions are both evaluated, and the patient is guided through the selection and implementation of the agreed-upon plan. In the final stage (25–30 min), the therapist once again invites the patient to express if he/she has any difficulties with executing the intervention plan. At this time, the intervention plan is confirmed to encourage the patient to execute the behavioral intervention. However, the extent of the intervention should not be emphasized. The patient is allowed to adjust the intensity of the compliance according to his/her practical situation, with the support of an expert who can help him/her to solve the problem.

2.2.2. *Control intervention*

Based on the Guideline of Diabetes Education of the Diabetes Branch of Chinese Medical Association, the routine "Five carriage" lecture was given in four courses of 30 min each. The first lecture was given in the first week of hospitalization, and the remaining three were given once a month following discharge from the inpatient learning center. The course contents included: diabetic diet and exercise therapies, blood glucose monitoring, and diabetes medications. Following completion of the course, monthly follow-ups were made by phone to track the compliance and to solve problems encountered during the six-month intervention.

2.3. *Evaluation methods*

2.3.1. *General information*

The following clinical data were recorded from all patients: name, gender, age, education experience, disease course, body mass index (BMI), Homeostatic Model Assessment-Insulin Resistance (HOMA-IR) score, and levels of HbA1c,