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Diabetes Research
and Clinical Practicejournal homepage: www.elsevier.com/locate/diabresInternational
Diabetes
Federation

Randomized controlled trial of a family-oriented self-management program to improve self-efficacy, glycemic control and quality of life among Thai individuals with Type 2 diabetes

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ARTICLE INFO

Article history:

Received 27 May 2016

Received in revised form

14 November 2016

Accepted 15 November 2016

Available online 19 November 2016

Keywords:

Health outcome

Family-oriented

Self-management

Type 2 diabetes

Randomized controlled trial

ABSTRACT

Aims: We evaluated a theoretically-derived family-oriented intervention aimed to improve self-efficacy, self-management, glycemic control and quality of life in individuals living with Type 2 diabetes in Thailand.

Methods: In a single-blinded randomized controlled trial, 140 volunteer individuals with Type 2 diabetes, recruited from a diabetes clinic in rural Thailand, were randomly allocated to intervention and control arms. Those in the intervention arm received routine care plus a family-oriented program that included education classes, group discussions, a home visit, and a telephone follow-up while the control arm only received routine care. Improvement in outcomes over time (baseline, Week 3, and Week 13 following intervention) was evaluated using Generalized Estimating Equations multivariable analyses.

Results: Except for age, no between-group significant differences were observed in all other baseline characteristics. Diabetes self-efficacy, self-management, and quality of life improved in the intervention arm but no improvement was observed in the controls. In the risk-adjusted multivariable models, compared to the controls, the intervention arm had significantly better self-efficacy, self-management, outcome expectations, and diabetes knowledge ($p < 0.001$, in each). Participation in the intervention increased the diabetes self-management score by 14.3 points ($\beta = 14.3$, 95% CI 10.7–17.9), $p < 0.001$. Self-management was better in leaner patients and in females. No between-group differences were seen in quality of life or glycemic control, however, in the risk-adjusted multivariable models, higher self-management scores were associated with significantly

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<http://dx.doi.org/10.1016/j.diabres.2016.11.013>

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decreased HbA1c levels ($p < 0.001$) and improved patient quality of life ($p < 0.05$) (irrespective of group membership).

Conclusions: Our family-oriented program improved patients' self-efficacy and self-management, which in turn could decrease HbA1c levels.

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1. Introduction

Diabetes mellitus is a growing chronic metabolic disorder that can lead to serious complications affecting individuals worldwide. In 2009 an estimated 7.5% of Thai adults (25 years or older) were living with diabetes [1]. In 2010, this condition was ranked among the leading causes of death among Thai individuals, with diabetes mellitus being the second leading cause of death in females [2]. This study focuses on Type 2 diabetes mellitus (T2DM), the predominant form of diabetes in Thailand.

While medical, nursing, and social services provide essential support for individuals living with a chronic condition [3], these services are often costly and limited in community settings in both developed and developing countries [4,5]. As a result of poor access to health services, people living in rural settings often have shorter lives and higher levels of illness and complication than those living in cities [6]. Although such community health practices, if in place, provide invaluable support to patients with a chronic illness, they cannot provide the continuous follow-up required to fully meet patients' needs [7]. These professional services may also have a debatable impact on individuals' quality of life or improvement of other medical outcomes [8].

The scarcity of resources to support patients living in rural communities resulted in the recognition of the key roles that family members can have in the care of the chronically ill. Consequently, in the past decade, self-management health programs have progressively included family members [9]. Numerous studies have shown health care strategies involving family members can improve self-efficacy, knowledge about the condition, and self-care skills in individuals with a chronic condition such as T2DM [10–13]. A systematic review and meta-analysis of 52 randomized controlled trials found how such programs can improve patients' perceived physical and mental health [12]; while another narrative systematic review discussed how these interventions could enhance glycemic control in individuals with T2DM [14].

However, the beneficial effects of family-oriented health care programs on patients' health outcomes have not been consistent [14,15]. Some studies have shown how these programs could improve patients' self-efficacy and overall management of their diabetes [10,11], while another found that such interventions did not improve self-management nor glycemic control [15].

Furthermore, such family-oriented interventions are more likely to be conducted on individuals with Type 1 diabetes and less likely to involve adult patients with T2DM. Hence, a family-oriented program that will involve adult patients together with their family members to improve diabetes

self-management and self-efficacy is necessary. These family-oriented health care programs, and especially those relating to the management of diabetes, are highly relevant in Thai society in which family members have a fundamental role to assist other family members with illnesses such as T2DM.

Self-efficacy represents the confidence to carry out a particular behavior in order to accomplish a specific goal [16,17]. There are two basic elements of self-efficacy: efficacy expectations (self-efficacy) and outcome expectations [18]. Self-efficacy develops confidence in an individual's ability to perform behaviors and to overcome barriers to achieving that goal. An outcome expectation is a person's belief that they will attain a positive health outcome resulting from specific behavior [18]. Diabetes self-management is defined as the ability of individuals with diabetes to manage their blood glucose levels, maintain personal hygiene, consume an appropriate diet, comply with medications, and sustain an acceptable level of physical activity [19].

Self-efficacy is broadly acknowledged to be a useful predictor of enhanced self-management [20]. An individual who has greater perceived efficacy will attempt to achieve a specific goal even in the face of barriers [16]. Various studies have found that T2DM educational programs based on self-efficacy theory can enhance self-management [17,21] and can delay the onset of complications arising from the condition [22].

1.1. Diabetes self-management in Thailand

The Diabetes Association of Thailand has defined the Clinical Practice Guidelines for persons with diabetes [23]. According to the Guidelines, all newly diagnosed cases should be provided with diabetes education and self-care support delivered by health care providers in groups or individually. Specific content and strategies (assessment, goal setting, planning, implementation, and evaluation) are outlined [23]. Although these Guidelines are informative, a high proportion of individuals with T2DM are unable to achieve glycaemic control (30% of men; 41% of women) [1].

Several diabetes self-management programs have been found to be effective in improving knowledge, self-care activities, glycaemic control, and quality of life for Thai individuals with T2DM [22,24,25]. Examples of Thai self-management practices include timely intake of medications, healthy eating, care of skin and feet, and engaging in regular physical exercise. Although the results are positive, diabetes self-management education has not as yet been standardized and a multidisciplinary team approach is not widely utilized [26] within Thai communities.

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