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Teach back and pictorial image educational strategies on knowledge about diabetes and medication/dietary adherence among low health literate patients with type 2 diabetes

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ABSTRACT

Aims: To explore the impact of pictorial image and teach back educational strategies on knowledge, adherence to medication and diet among patients with type 2 diabetes and low health literacy in Saqqez, Iran.

Methods: In this randomized controlled trial, 127 patients with type 2 diabetes who had low health literacy were randomly allocated into three arms of the study (pictorial image, teach back, and control groups). The two intervention groups received education within three weekly sessions, each lasting 20 min. The level of functional health literacy in adults (TOFHLA), diabetes knowledge, and adherence to medication and diet were measured and compared in the three groups before and six weeks after the interventions. We used intention to treat analysis. Data were analyzed using ANOVA and Paired t test.

Results: Mean scores of knowledge, adherence to medication and diet revealed significant differences between two intervention groups and control group ($P < 0.001$) six weeks after intervention.

Conclusions: Both educational strategies increased knowledge, as well as adherence to medications and diet among patients with type 2 diabetes and low health literacy. Both educational strategies seem to be effective for patients with low health literacy and are recommended to be used according to patients' conditions.

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1. Introduction

Several studies have suggested that a large proportion of people with diabetes have difficulty managing their medication regimens as well as other aspects of self-management [1]. The self-managing activities can be particularly challenging when limited health literacy is an issue. Health literacy is defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” [2]. Evidence suggests that patients with low literacy may understand as little as 50% of what is told to them during medical encounters [3]. Moreover, patients with low health literacy may be embarrassed by their situation and hide their low level of literacy from healthcare providers who could possibly help [4].

Low literacy is common among patients with diabetes and is more highlighted among people with diabetes in developing countries [5,6]. In a study conducted to assess health literacy in Iranians, it was reported that 56.6% of individuals had low health literacy, and only 28.1% of people had sufficient health literacy [7].

Research studies have shown that level of health literacy is directly associated with health outcomes, particularly in those with chronic diseases including diabetes [4,8–10]. Inadequate health literacy poses a major barrier in people with chronic diseases who need to have ongoing self-management [3,11,12]. People with diabetes and limited health literacy are more likely to have poorer knowledge of diseases [12,13] and symptom recognition, poor glycemic control [14], find it more difficult to interpret food labels and estimating portion sizes, reduced self-confidence in management of diabetes, less self-management behaviors, poor communication with providers, and higher rates of retinopathy [15]. In fact, patients with diabetes who have multiple complications or experience repeated hospitalizations might have some of these problems because of unrecognized low health literacy [4].

While we are moving toward a consumer-center health care system, health care providers should provide clear, effective health communication, where individuals take an active role in health-care-related decisions, regardless of health literacy status [10,11]. Selecting appropriate strategies, based on deeper understanding of needs and competencies of patients with poor health literacy may help educators to communicate more effectively with patients [16].

Although patients with low literacy often rely on verbal instructions, they may have difficulty recalling and comprehending information [17]. It is widely believed amongst health literacy experts that incorporating a few simple techniques to improve communication and patients' understanding during clinical encounters are not only effective, but also feasible. These techniques include: (1) asking open-ended questions; (2) limiting the number of new topics addressed and the amount of medical jargon used during clinical encounters; and (3) asking patients to restate information or to teach back information [3].

One pedagogical methodology espoused for patients with limited health literacy is teach back in which the patient is asked to restate what they have learned back to the health

educator [18,19]. In this strategy, the educator tailors teaching and reassesses comprehension until the patient has mastered the information. Researchers have pronounced teach back a proven way to evaluate understanding of health teaching [17]. The teach back is also recommended as a top patient safety practice by the National Quality Forum [20].

Another strategy used for individuals with low health literacy is using visual aids and written materials to which they can refer after their visit [17]. Pictures, when added to written and verbal information, appear to be helpful. Studies have shown that pictorial aids improve recall, comprehension, and adherence and are particularly useful for dosing schedule, instructions on when to take medicine, side effects, and the importance of completing a course of therapy [21,22].

There are few published studies have introduced rigorous interventions that focus on health literacy strategies in low-literate patients with diabetes [4,13]. In a study conducted by Boren [4] to assess the published literature on health literacy and diabetes, she reported that two of the four health literacy intervention studies led to improve health outcomes. She concluded that there was a need to design and evaluate strategies to improve diabetes health outcomes in patients with low health literacy [4]. Moreover, in a randomized controlled trial, Rothman et al. [13] conducted a comprehensive disease management program that included strategies to overcome clinician deficits and patient barriers, including low literacy, for patients with diabetes and poor glycemic control. The program successfully improved blood pressure and glycemic control [13].

Regarding high prevalence of type 2 diabetes in Iran [7,23] and low health literacy among many of the patients [7], it is essential to evaluate different implemented strategies to promote self-management in patients with diabetes. Although some qualitative studies conducted in Iran have shown lack of patient education by physicians as a barrier to self-care [24], there are no culture-bound studies available to implement and evaluate educational strategies for low health literate patients with type 2 diabetes. This randomized controlled trial aimed to compare the impact of two educational strategies (i.e., teach back and pictorial image) on diabetes specific knowledge and adherence to recommended medication and dietary regimen in patients with type 2 diabetes.

2. Methods

2.1. Setting and patients

In this randomized controlled trial, 135 participants were recruited from a secondary care level diabetes clinic in Saqqez, Kurdistan from May 2011 to August 2011. This diabetes clinic provides outpatient care by physicians and nurse educators to patients with diabetes. The study team extended a telephone invitation to 400 individuals with type 2 diabetes who were registered to the clinic. From those contacted, 262 patients did not meet the criteria for inclusion in the study and two patients did not participate in the study due to lack of time. In addition, 11 patients dropped out of the study.

The criteria for inclusion of the participants in the study were as follows: diagnosed with type 2 diabetes for more

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