Self-efficacy and self-care behaviours among adults with type 2 diabetes

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ABSTRACT

Background: Type 2 Diabetes Mellitus (T2DM) has an impact on an individuals' health and is influenced by glycemic control.
Aim: To examine the relationship between glycemic control, demographic and clinical factors on self-efficacy and self-care behaviours among adults with T2DM.
Design: A correlational, descriptive study was used. One hundred and forty Omani adults with T2DM were recruited from a public hospital.
Methods: Data on self-efficacy, self-care behaviours and glycemic control were collected between April and July 2016. The study was approved by the College Ethics Committee and Hospital Board. Bivariate and multivariate analyses were conducted.
Results: Most adults had a fasting blood glucose >7.2 mmol/L (90.7%), with the majority demonstrating 'uncontrolled' or poor HbA1c of >8% (65%). Variance of self-care behaviour (20.6%) and 31.3% of the variance of the self-efficacy was explained by the age, duration of diabetes, medication, HbA1c and prevention of activities of living.
Conclusions: Adults with T2DM with poor glycemic control were more probable to have poor self-efficacy and self-care behaviours. Glycemic control has an effect on improving diet, exercise, medication, foot care efficacy and behaviours.
Clinical relevance: The study recommends using these findings to plan self-efficacy and self-care behaviour to improve glycemic control among adults with T2DM.

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1. Introduction

Type 2 diabetes mellitus (T2DM) is caused by body's lack of ability to produce or use insulin and is related to aging, obesity, impaired glucose metabolism and physical inactivity. Uncontrolled diabetes mellitus (DM) is linked with long-term complications (Zhang, Chen, & Chen, 2008). Globally, it is projected that the number of adults with T2DM will significantly increase, with >80% of these adults from developing countries (Wild et al., 2004). In the Sultanate of Oman, the prevalence of T2DM increased from 12.2% of the population in 1991 to 16.1% in 2000 (Al-Lawati et al., 2012). The mortality due to diabetes complications in age group 20–79 years was 1213.75 in Oman (Guariguata et al., 2014; Whiting et al., 2011). The mean diabetes-related expenditure per person was high (863.21 USD) (Ministry of Health, 2014), yet the diabetes outcomes were poor in Oman as 2.4% of them achieved control of HbA1C (<7%) (Ministry of Health, 2014). Most studies in T2DM in Western countries have focused on improvements in glycated hemoglobin (HbA1c), fewer hospitalizations, lower healthcare costs, and quality-of-life (Foster et al., 2007; Lorig et al., 2009).

Adults with T2DM with limited knowledge were less likely to practice diabetes self-management (Ayele et al., 2012) and problem solving (Shim et al., 2012). However, adults who acquire knowledge about the disease are unlikely to alter behaviour (Sharoni & Wu, 2012; Shi, Ostwald, & Wang, 2010). Many factors may influence glycemic control including education status, employment (Ayele et al., 2012; Venkataraman et al., 2012; Yoo et al., 2011), health literacy (Jahanlou & Alishan Karami, 2011; Venkataraman et al., 2012), family and social

support, positive mental attitude (Venkataraman et al., 2012), severity of diabetes and perceived barriers (Ayele et al., 2012; Chin, Huang, & Hsu, 2013; King et al., 2010), provider-patient communication (Gao et al., 2013) and social support (Osborn & Egede, 2010; Yoo et al., 2011). There is no documented study on the impact of glycemic control on self-efficacy and self-care behaviour among adults with T2DM in Oman. Secondly, understanding the factors that affect glycemic control among adults with T2DM in Oman will help to recommend tailored self-efficacy interventions.

It is hypothesized that glycemic control and demographic and clinical characteristics influence self-efficacy and self-care behaviours based on the self-efficacy model (Fig. 1). Perceived self-efficacy (confidence in ability) is 'an adult's beliefs about their capabilities to do what it takes to reach a specific goal' (Bandura, 1977). Self-efficacy and outcome expectation (belief that behaviour will have the desired effect) influence behaviour change (Bandura, 1995). Adults with T2DM may have adequate control over and adhere to self-management (Ott et al., 2000; van der Heijden et al., 2013). Understanding the relationships between demographic, clinical characteristics and glycemic control on self-efficacy and self-care behaviours among adults with T2DM is important to plan effective self-efficacy programs.

The aim of the study was to examine the relationship between demographic, clinical factors, and glycemic control on self-efficacy and self-care behaviours among adults with T2DM.

2. Method

2.1. Participants

The Sultanate of Oman is located in the Middle East and has an estimated total population of 2,172,002 million (Ministry of Health, 2014). Adults with T2DM registered at the diabetes clinics at a public hospital, were invited to participate in the study across four months April–July in 2016. The sampling framework was obtained from the electronic patient records maintained in the hospital information system. All the participants who volunteered for the study were screened for the inclusion criteria. Adults aged 18 to 80 years, diagnosed with T2DM with a duration of >2 years, able to provide self-care, communicate and converse in Arabic or English language were included in the study. Adults who were newly diagnosed with T2DM, or known Type 1 Diabetes Mellitus, cognitive/speech impairment using mini-mental status examination, diagnosed mental and/or physical disabilities were excluded from the study.

2.1.1. Sample size

A power analysis was conducted using Cohen's power table for a two-group comparison (Cohen, 1992). A total of 160 adults were required to achieve 80% power to detect a medium effect size ($f = 0.25$), at the 5% level of significance (α) with a standard deviation of 1% (Amsberg et al., 2009). One hundred sixty participants were recruited using simple random sampling and random numbers among 1–2000 generated in Microsoft Excel software.

2.2. Research design

This is a descriptive, cross-sectional design used to assess glycemic control on self-efficacy and self-care behaviours among adults with Type 2 Diabetes.

2.3. Measures

Based on the conceptual framework and aims of the study standardized measurements were used to assess the person, efficacy expectations, outcome expectations and outcome.

2.3.1. Sample characteristics

According to the self-efficacy model, the 'Person' is measured in terms of demographic, clinical and psychological characteristics. *Demographic characteristics* included age, gender, years of formal education, and income. *Clinical characteristics* included duration of diagnosis, diabetes education, and compliance to medications (insulin and oral hypoglycemic agents). *Psychological factors* like diabetes (DM) prevention from doing normal activities of daily living, understanding of diabetes
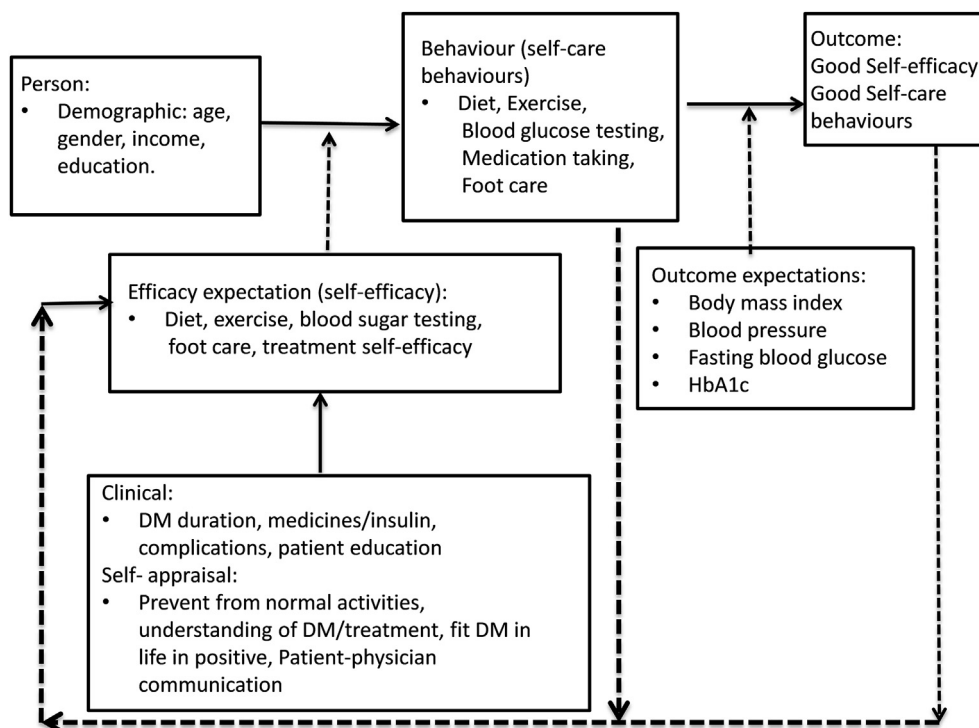

Fig. 1. Self-efficacy and self-care behaviours among adults with the type 2 diabetes. Measured in study (Bandura, 1995; Shortridge-Baggett & Van der Bijl 1996).