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Foot care behaviors among adults with type 2 diabetes

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ABSTRACT

Aim: The aim of the study was to determine factors influencing foot care behaviors among adults with type 2 diabetes.
Methods: A correlational descriptive study was conducted with a random sample of 160 adults with type 2 diabetes from the public hospital between April and July 2014.
Results: Just over 15% of the sample had a history of foot ulcers and almost 42% had numbness/tingling and pain in their feet. Positive foot care behaviors were correlated with higher income, higher educational attainment, lower body weight, positive attitude and higher awareness of diabetes and its management.
Conclusion: Targeting type 2 diabetes people with low level of education, low income and overweight may help to enhance their foot care and reduce foot complications in similar populations, Implications. Those most at risk of foot problems should be targeted for education to increase their awareness of ways to prevent and to manage foot problems.

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1. Introduction

Type 2 diabetes mellitus (T2DM) increases the burden on the health care system and has been called an "economical tsunami" [1,2]. Nearly 80% of the world's population with T2DM live in developing countries [3] and this prevalence is increasing in the Middle East region [4,5,6]. The prevalence of T2DM was 22% in 2014 in the Sultanate of Oman [4,7]. A 190% increase in the number of adults with T2DM has been projected from 75,000 cases in 2000 to 217,000 cases in 2025 in Oman [8,9]. By 2030, the prevalence of T2DM is expected to rise in Oman and this increase in prevalence may be attributed to sedentary lifestyle, urbanization, high calorie diet and low physical activity [10]. Some Omani adults lack knowledge and information on foot preventive measures [11].

2. Background

Foot ulcers are a major complication, occurring in 15% of adults with T2DM [12–14]. Inappropriate footwear and improper toenail trimming can increase the risk of developing foot problems. Foot syndromes like neuropathy, ischemia and infection can result in morbidity and possible amputation [3,6]. An estimated 15–25% of adults with T2DM develop foot ulcers during their lifetime, and up to 70% of all non-traumatic amputations in the world are considered a complication of diabetes [15]. Amputation can lead to severe adverse effects including high financial burden, physical disability and high morbidity. Quality of life (QOL) among adults with foot syndrome is significantly affected, with increased dependence on medical care, worsening pain and discomfort, limited physical functional status, and poor work capacity [16]. Improving foot care behavior is an effective strategy in minimizing subsequent foot complications [17,18]. Understanding the demographic and clinical characteristics influencing foot care behaviors (FCB) among adults with T2DM are helpful to reduce foot problems.

3. Theory

Self-efficacy regulates how people feel, think, motivate themselves, and practice self-care behaviors; a key factor of confidence to perform a given behavior [19,20] This confidence is the end result of cognitive processes that people use when acquiring knowledge, the factors that affect it [21,22], influence of self-care behaviors on foot care [16,23]. In this study, understanding factors related to foot care behaviors among the Arab adults is important to design foot care behavioral interventions (Fig. 1). The self-efficacy model in this study describes the adult person as a whole in terms of demographic and clinical characteristics. Behavior refers to the actual actions related to foot care behaviors. Outcome expectations include physical like foot problems, body mass index (BMI), fasting blood glucose (FBS), and glycosylated haemaglobin (HbA1c). There are no reported studies on foot care behaviors among adults with T2DM in Oman; therefore, this study is useful to plan strategies to prevent foot problems among adults with T2DM. In this study, the factors related to foot care behaviors among adults with T2DM in Oman were specifically examined.

4. Aim

The aim of the study was to examine the demographic and clinical characteristics influencing foot care behaviors among Omani adults with T2DM.

5. Material and methods

5.1. Design

A descriptive cross-sectional design was used for the study.

5.2. Population and setting

Adults with T2DM attending the diabetes clinics in a selected public hospital in Oman were included in the sampling framework. These adults had been assessed for their eligibility for inclusion in the study in the year 2014.

5.3. Sample size and sampling criteria

A total of 160 adults with T2DM were necessary to realize 80% power to identify a medium effect size ($f = 0.25$), at the 5% level of significance (α) with an standard deviation of 1% using multiple regression [24]. One hundred sixty adults were selected by systematic random sampling. Inclusion criteria included adults aged 18–80 years with T2DM for at least two years, ability to provide self-care; and ability to understand and communicate in Arabic or English language. Adults newly diagnosed with T2DM or type 1 diabetes with a cognitive/speech impairment, attention deficit, mental or physical challenges or disability, and inability to mobilize were excluded from the study.

6. Measurements

Based on the conceptual framework and aims of the study, the following measurements were used in the self-efficacy model (Fig. 1).

Person was measured as demographic and clinical characteristic. Demographic characteristics included age, gender, formal education, and income. Clinical characteristics included duration of diabetes, diabetes patient education, medications, prevention of activities of daily living (ADL), understanding of diabetes and management and attitude toward DM (ability to fit diabetes into life in a positive manner). Diabetes Knowledge Test (DKT) was developed and validated by the Michigan Diabetes Research and Training Centre [25]. DKT has 23 multiple choice questions with 4–5 options on diet, blood glucose testing, physical activity, medical treatment, complications, foot care, manifestations, sick days, and medication. The correct answers were scored 1 for each item and the total score was summed up. The total DKT scores were classified into poor (0–11) and excellent (12–23). Higher scores

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