## Original Article

# Diabetes self-management (DSM) in Omani with type-2 diabetes

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ABSTRACT

*Objective:* The aim of this study was to assess the status of diabetes self-management (DSM) among Omanis with type-2 diabetes and its relationship with glycemic control and demographic variables.
*Methods:* A correlational descriptive design using questionnaire was conducted with a convenience sample of 266 Omani patients with type-2 diabetes to collect the data.
*Results:* The findings indicated that DSM among the study subject is sub-optimal. Only 1% of them were regular on SMBG; 9.5% of them exercise regularly; and 18% of them maintain healthy diet practices. No significant relationship between DSM and glycemic control ($p$ >0.05) was found. DSM was found to be associated with age, gender, level of education, and duration of diabetes. Examining the differences between two regions in Oman (Muscat & Aldhakiliyah) indicated that participants from Muscat differ only in practicing SMBG.
*Conclusion:* Results indicated that many Omani patients with type-2 diabetes do not perform DSM consistently.
*Practice implications:* The findings of this study set the stage to develop teaching strategies that will improve DSM and subsequently improve diabetes management in patient with type-2 diabetes in Oman.

## 1. Introduction

Diabetes mellitus is a serious health problem [1,2]. Globally, every seven seconds someone dies from diabetes, accounting for four million deaths annually [1]. Diabetes management takes the form of a comprehensive approach that includes medical care, psychosocial care, life-style changes, education, continuous monitoring, and self-management. The main goals of diabetes treatment are: (1) to improve the quality of life (QOL) of patients with diabetes and (2) improve glycemic control to prevent or delay the development of diabetes-related complications. Such goals cannot be achieved without involvement of patients in the management plan. This involvement occurs through diabetes self-management (DSM) with patients assuming an independent role in the care of their diabetes [3,4].

DSM is considered a critical part of diabetes management. Research has shown that DSM improved the QOL of patients with diabetes and contributed to preventing and lessening the severity of long-term diabetes-related complications [5,6]. However, DSM is a multifaceted and complex process. The patient is responsible to care for his/her diabetes; this requires commitment, specific skills, knowledge, and confidence. Further, DSM is a life-long and cumbersome journey, in which the patients need to adjust to a new lifestyle, make decisions, and perform specific tasks.

The Sultanate of Oman (short name: Oman) is located in the southeastern quarter of the Arabian Peninsula. Administratively, Oman is divided into 11 governorates (provinces) [7]. The Omani population enjoys a free national health care program. This program is regulated, delivered, and maintained by the Ministry of Health (MOH).

Diabetes mellitus is recognized as a major health problem in Oman [8]. The National Diabetes Prevention and Control Program (NDPCP) was established to prevent, manage, and monitor the progression of diabetes mellitus. An important goal of the NDPCP was to establish educational programs and conduct research in the area of diabetes mellitus. Further, a national diabetes registry for all newly diagnosed cases of diabetes was established. Screening for diabetes was made available at every primary health care center throughout the country. Each of these centers is demographically located to serve about 10,000 people [9]. Moreover, standardized guidelines for diagnosis, management, and follow-up were implemented by the MOH.

In 2000, diabetes mellitus in Oman affected 11.6% of the individuals aged above 20 [10]. According to the International Diabetes Federation (IDF) [1], it was estimated that the prevalence of diabetes mellitus in Oman in 2010 was 13.4%. The most recent study conducted in Oman related to diabetes reports that the prevalence of diabetes is 12% [11]. Diabetes-related complications such as retinopathy [12,13] and micro-albuminurea [14] are escalating in prevalence.

Studies conducted in Oman indicated a high prevalence of diabetes, lack of awareness, and lack of knowledge of diabetes and its complications among Omani people [10,15,16]. Other studies indicated that diabetes mellitus care is suboptimal. Al-Mandhari et al. [17] found that only 2.4% of the study participants ($n = 241$) met the international treatment goal of HbA1C < 7%. One of the most important approaches the researchers recommended to improve the quality of care of diabetes in Oman was to teach DSM. Similarly, Venugopal et al. [18] found that 77.2% ($n = 7442$) of the participants had poor glycemic control (HbA1C > 7%). Moreover, Alyaarubi [19] found that diabetes care in Oman was hampered by many obstacles such as lack of human resources, medications, and laboratory support. In this study, the researcher recognized that use of health care models that involve patients in the care of their diabetes through implementing self-management programs was a key element in improving the quality of diabetes care in Oman.

Although DSM is considered the cornerstone of diabetes management [6,20–22], there is a significant knowledge gap about DSM in Oman. Understanding DSM of the Omani population will serve as the basis for health care providers to develop and implement appropriate interventions that target reduction and prevention of the devastating diabetes-related complications, and the subsequent financial and personal costs associated with this disease. Therefore, this study aimed to assess the status of DSM among Omani patients with type-2 diabetes from two regions of Oman. Research questions guided this study were the followings: (1) What is the level of DSM reported by Omanis with type-2 diabetes? (2) What is the relationship between level of DSM reported by Omanis with type-2 diabetes and level of glycemic control (measured by HbA1c)? (3) What is the relationship between the level of DSM reported by Omanis with type-2 diabetes and their demographic characteristics? (4) What are the differences between regions of Oman (Muscat and Aldhakiliyah) on the level of DSM?

## 2. Methods

### 2.1. Study setting, population, and sample

This cross-sectional descriptive study was conducted between April and August 2012 in the Sultanate of Oman at two governorates (provinces); Muscat and Aldhakiliyah. Both these governorates work under the MOH and have many health centers that provide health care services at the primary care level. Thirteen health centers from Muscat region and five from Aldhakiliyah were included in this study. Muscat governorate is located in the North of Oman, and considered an urban area. Aldahkiliyah governorate is located in the central part of Oman, 100 miles away from the capital Muscat, and considered a rural area [16]. A convenience sample of 266 Omani patients with type-2 diabetes who aged 20 years and older participated in the study. Patients who were diagnosed with type-2 diabetes for less than one year were excluded from the study to allow for the experience with self-management.

### 2.2. Recruitment and data collection procedure

Data was collected by the PI and research assistants from each health center. A list of patients who potentially met the inclusion and exclusion criteria of the study was obtained from the National Diabetes Registry (NDR) of each health center. Subjects were then approached and invited to participate in the study on the day of their appointments.

### 2.3. Measurements

Level of DSM was measured by the diabetes self-management scale (DSMS) [23]. The development of the DSMS was guided by Orem's Self-Care Theory [24], empirical work by Sousa and Zauszniewski [25], the ADA [3], and the AADE7 self-care behaviors framework [5]. This scale measures DSM across different components: healthy eating, being active, monitoring of blood glucose, taking medication, problem solving, foot care, and reducing risks. The DSMS is a Likert-type scale with each item score ranging from 0 (strongly disagree) to 5 (strongly agree). It consists of 60 items, with a minimum score of 0 and maximum score of 300, in which high scores indicate high levels of DSM. In consideration to the confusion that the