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Assessing prevalence of and barriers to medication adherence in patients with uncontrolled diabetes attending primary healthcare clinics in Qatar

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ABSTRACT

Background: Studies conducted in Qatar have reported a high prevalence of diabetic nephropathy, retinopathy, and neuropathy. These complications are often associated with poor medication adherence and uncontrolled diabetes. The objectives of this study were to determine the rate of medication adherence among patients with uncontrolled diabetes, and to compare the characteristics and identified barriers between patients with good and those with poor medication adherence.

Method: A cross-sectional quantitative study was conducted among patients living in Qatar with uncontrolled diabetes attending primary healthcare clinics from October 2016 to January 2017. An interviewer-administered questionnaire comprising three sections was utilized in the study: patients' characteristics, Adherence to Refill and Medications Scale in Diabetes (ARMS-D), and barriers to medication adherence. ARMS-D is a validated tool that is used to identify adherence level among patients with diabetes. Descriptive and inferential statistics including regression analysis were used for data analysis.

Results: A total of 260 patients were included in the analysis. Overall, 73% (n = 191) were nonadherent to their diabetes medications (ARMS-D score above 11). Nonadherent patients reported the majority of the pre-determined barriers to medication adherence with forgetfulness being the most commonly reported barrier. Multivariate linear regression analysis found age, ethnicity, education level, income level and HbA1c to be independent predictors of adherence.

Conclusion: The findings of this study reaffirm the notion that non-adherence to medications among patients with uncontrolled diabetes within primary care setting is higher than the general diabetes population. This high prevalence is concerning and necessitates urgent interventions. Nonetheless, an in-depth understanding of barriers to medication adherence often requires qualitative research approach as these barriers are very complex and multifactorial in nature.

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1. Introduction

Diabetes is a chronic non-communicable disease of public health significance and its prevalence has reached epidemic proportion globally. Despite the recent advances and improvements in the diagnosis, therapeutics, and management of diabetes, diabetes-related hospitalizations and mortality commonly occur [1–5]. In 2015 alone, approximately 5 million diabetes-related deaths occurred globally [6]. The Middle East and North Africa (MENA) region ranks the second highest in the prevalence of diabetes in the world after North America and Caribbean region (10.7% vs. 11.5%, respectively) [6]. Countries forming the Gulf Cooperation Council (GCC), comprising of Bahrain, Kuwait, Oman, Qatar, Kingdom of Saudi Arabia (KSA), and the United Arab Emirates (UAE), are amongst those with the highest prevalence of diabetes within the MENA region [7–9]. For instance, Kuwait and KSA both have a comparative prevalence of 20%, followed by Bahrain (19.6%) and UAE (19.3%) [6]. Qatar, a country with a reported population of more than two million people, has a diabetes prevalence of 13.5% and is expected to maintain its high prevalence rank up to the year 2035 [6,7,10]. Over 500 diabetes-related deaths were reported in the country in 2015, making diabetes the fifth leading cause of death in Qatar [5,8,11].

Studies have reported the prevalence of diabetes complications in Qatar including nephropathy, retinopathy, and neuropathy to range from 9.7–12.4%, 12.5–18.4%, and 9.5–12.6%, respectively. These complications are strongly linked to poor medication adherence and poor glycemic control [4,12]. Therefore, diabetic patients with poor glycemic control are particularly at risk of diabetes-related complications and other adverse outcomes including premature mortality [1–5]. One of the most likely reasons underpinning poor glycemic control is nonadherence to drug therapy [13,14]. Given that nonadherence to medications is a common phenomenon among patients with diabetes in general [15–17], one could predict that the magnitude of the problem may be even higher among patients with uncontrolled diabetes. To the best of our knowledge, no previous study has reported the prevalence of non-adherence among diabetic patients with poor glycemic control living in Qatar [18]. Therefore, the primary objectives of this study were to: (1) determine the rate of medication adherence among patients with uncontrolled diabetes living in Qatar using a self-reported measure and; (2) compare the characteristics and identified barriers between patients with good medication adherence and their counterparts with poor medication adherence.

2. Methods

2.1. Study design and setting

This was a cross-sectional quantitative study involving patients with uncontrolled diabetes [defined as glycosylated hemoglobin A1c (HbA1c) >7%, or a fasting blood glucose >130 mg/dL] using a pre-validated researcher-administered questionnaire. The study was conducted in two conveniently selected primary healthcare centers under the Primary Healthcare Corporation (PHCC) in Qatar: the Airport Health Center and the West-Bay Health Center. The PHCC is under governmental support and comprises of 21 different primary health centers distributed across the country [19]. The centers provide a broad range of services, including, but not limited to, outpatient management, immunization, health education, and antenatal care. In addition, there are some specialized clinics such as cardiology, family medicine, dental, dietician, and non-communicable disease (NCD) clinics [19]. Moreover, the centers receive a large number of patients with different health conditions on a daily basis who are managed, treated and followed as outpatients or referred to tertiary hospitals as necessary. Patients with diabetes are managed within the NCD clinics and receive education about the disease and its medications from the physician or from the health educator within the center.

The protocol of the study was approved for ethical compliance by the Research Section, Department of Clinical Affairs, PHCC (Ref: PHCC/IEC/16/04/013).

2.2. Inclusion/exclusion criteria

Participants were included in the study if they were: 18 years old or above, diagnosed with diabetes for at least one year, living in Qatar and following up with the primary healthcare center for at least one year at the time of recruitment, having records of blood glucose levels and HbA1c monitoring in the respective center's medical records, judged as having uncontrolled diabetes [defined as HbA1c values above 7%, or a fasting blood glucose above 130 mg/dL (>7.2 mmol/L)] [20], and able to speak English and/or Arabic. On the other hand, pregnant women; patients with a history of gestational diabetes, psychosis, HIV/AIDS, cancer, Alzheimer's disease; and patients on dialysis were excluded from the study due to the circumstances associated with these conditions that may influence medication adherence.

2.3. Sample size and sampling technique

The sample size was determined based on the prevalence of 86% for uncontrolled diabetes (derived from an unpublished study), the reported prevalence of diabetes in Qatar of 13.5% [3,8,10], and a 95% confidence interval. Therefore, the minimum effective sample size needed to address the primary study objective was 163.

A convenient sample of patients who fulfilled the eligibility criteria was recruited from the two primary health centers while waiting to collect their medications at the outpatient pharmacy. The potential participants were identified as they arrive at the pharmacy to collect their medications through the pharmacy database. If the patient fulfilled the inclusion criteria, the researcher then asked them if they were willing to participate in the study. If they agreed, they would then sign an informed consent form and answer the questionnaire in a quiet area within the center.

2.4. Study instrument

The study instrument comprised 56 items divided into three sections: (1) sociodemographic and clinical characteristics;

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