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## Review

# Knowledge and practices of diabetes care providers in oral health care and their potential role in oral health promotion: A scoping review



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## ABSTRACT

**Aim:** Oral health complications are common in people with diabetes yet very little is reported about the oral health care provided in diabetes care setting. This study reviewed global evidence on the oral health care knowledge and practices of diabetes care providers and the role of non-dental health professionals in oral health promotion.

**Methods:** A systematic search of five databases was undertaken with key search terms using a scoping review framework. Relevant studies published till October 2016 in the English language were included (n = 30) and no restrictions were placed on the study design, quality or setting.

**Results:** Most diabetes care providers are not addressing oral health care with the main barriers being time constraints and limited oral health knowledge. Diabetes educators (DEs) could engage in oral health promotion with few studies showing this model of care can translate into improved patient outcomes. However, no appropriate oral health training programs and assessment tools exist for DEs. With proper training, non-dental professionals like nurses have successfully incorporated oral healthcare in other settings.

**Conclusions:** DEs are well placed to promote oral health in diabetes care setting. Further research is needed to identify barriers and oral health resources to support DEs in this role.

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## 1. Introduction

Diabetes mellitus (DM) affects approximately 415 million people worldwide and this number is expected to rise to 642 million by 2040 [1]. Data published in 2015 estimated that diabetes was associated with the five million deaths and cost more than \$673 billion in health care expenses worldwide [1]. Mortality and morbidity data from global statistics show that diabetes is a major risk factor for chronic disease related deaths such as, cardiovascular disease and renal failure [2].

Studies show individuals with diabetes are more likely to have poor oral health and suffer from different oral complications such as, extensive xerostomia (reduction or absence of saliva), dental caries (tooth decay), oral candidiasis (infection of the yeast fungus *Candida albicans*), lichen planus (chronic inflammatory disease), burning mouth syndrome (chronic oral pain condition) and tooth loss [3–6]. The most prevalent is periodontal (gum) disease [7–10], which is often presented as the sixth complication of diabetes following other micro and macro vascular complications [3]. People with diabetes are at greater risk of dental problems because they have an elevated level of inflammatory mediators in their periodontal tissue along with proinflammatory cytokines which induce inflammation and destroy the cells that repair the damaged connective tissue or bone, leading to greater periodontal bone loss. As a result, periodontal diseases are more common among people with diabetes with the frequency and severity greater among those with poorly controlled diabetes [11]. It is therefore important to maintain good diabetic control to minimise the risk of periodontal disease.

Recent reviews show that diabetes and periodontal disease have a bidirectional relationship, meaning that diabetes increases the risk of periodontal disease, which in turn compromises glycemic control [12–14]. Research also suggests that people with diabetes and periodontal disease are at increased risk of having multiple complications [12] such as, cardio-

renal mortality [15], microalbuminuria, and end-stage retinal disease [16]. Furthermore, consistent results from systematic reviews and meta-analysis show that periodontal treatment has beneficial effects on glycemic control, that is, reduction in glycated haemoglobin (HbA1C) ranging from 0.3% to 0.7% [17–22]. Large studies have also confirmed that reduction in HbA1c or intensive blood glucose management in both type 1 and type 2 diabetes contributes to reduced diabetes complications [23,24].

Consensus guidelines both at international (International Diabetes Federation-IDF) [25] and national level (Royal Australian College of General Practitioners-RACGP) [26] recommend that all diabetes care providers should ensure their patients receive an oral health review and referrals to a dentist if periodontal disease is identified. Despite the link between diabetes and oral health and clear guidelines, surveys from several countries indicate people with diabetes have a low level of oral health knowledge, awareness, and compliance with good oral health behaviours and also have a lower probability of visiting a dentist regularly [6,27–32]. In light of the evidence on the importance of oral health care for people with diabetes, diabetes care providers could play an important role in this area. However, there has been no comprehensive review undertaken focusing on current oral health care practices of diabetes care providers and their potential role in oral health promotion. A comprehensive review of the evidence would help identify gaps in current practice and inform future strategies for diabetes care providers.

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## 2. Aim

The aim of this review was to examine global evidence on: the knowledge and practices of diabetes care providers in oral health care/management of people with diabetes; and the role of non-dental professionals in oral health promotion.

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