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Knowledge, awareness, and behaviors of endocrinologists and dentists for the relationship between diabetes and periodontitis

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SUMMARY

Aims: This study aimed to compare the opinions of dentists and endocrinologists regarding diabetes mellitus (DM) and periodontitis, and to investigate the possible effects on their practice.

Methods: Cross-sectional data were collected from 297 endocrinologists and 134 dentists practicing in southern China using two separated questionnaires. Questions were close-ended or Likert-scaled. Statistical analyses were done by descriptive statistics, bivariate and binary logistic regression analysis.

Results: Compared with endocrinologists, dentists presented more favorable attitudes for the relationship of DM and periodontitis ($P < 0.001$). 61.2% of dentists reported they would frequently refer patients with severe periodontitis for DM evaluation, while only 26.6% of endocrinologists reported they would frequently advise patients with DM to visit a dentist. Nearly all of the respondents (94.4%) agreed that the interdisciplinary collaboration should be strengthened. The logistic regression analysis exhibited that respondents with more favorable attitudes were more likely to advise a dental visit ($P = 0.003$) or to screen for DM ($P = 0.006$).

Conclusions: Endocrinologists and dentists are not equally equipped with the knowledge about the relationship between DM and periodontitis, and there is a wide gap between their practice and the current evidence, especially for endocrinologists. It's urgent to take measures to develop the interdisciplinary education and collaboration among the health care providers.

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1. Introduction

Diabetes mellitus (DM) is a metabolic disorder characterized by hyperglycemia resulting from a defect in insulin secretion, insulin action, or both [1]. Patients with DM are 2–4 times more likely to develop cardiovascular disease than individuals without DM [2], making it the most common complication of DM. Other complications of DM include retinopathy, nephropathy, and neuropathy; it's a leading cause of blindness, end-stage renal failure and limb amputation [1]. The latest national survey data have documented that DM is a public problem in China. It is estimated that 113.9 million nationwide, or 11.6% of the Chinese adults population currently have DM [3].

For more than 15 years, substantive evidence has been emerging supporting bidirectional relationship between DM and periodontitis. On the one hand, DM is unequivocally confirmed as a major risk factor for periodontitis [4]. It's indicated that the risk of suffering periodontitis among patients with DM is about 2–3 times compared with people without DM [5,6], and the level of glycaemic control is vital to determine the risk and severity [7,8]. On the other hand, periodontitis is not only related to the development of DM, but also its complications [9–12]. Periodontitis may worsen glycaemic control, and the improvement of DM control could follow effective periodontal therapy [13,14]. It is worthwhile to note that Cochrane Collaboration recently reported a reduction in HbA1c of 0.4% 3–4 months after conventional periodontal therapy [15], a clinical impact equivalent to adding a second drug to a pharmacological regime for DM. Furthermore, studies have shown that poor perception of one's oral health among patients with DM has a strong negative impact on their health-related quality of life [16,17].

The dramatic increase of well-established bidirectional relationship between DM and periodontitis makes it essential for patients with DM to pay attention to their periodontal status. Unfortunately, studies indicated that many patients with DM are unaware of the potential association between DM and oral health [18,19]. Only 10.8% of patients with DM visit a dentist for regular check-ups, while the majority for an existing dental problem in India [20]. The application for dental services is also consistently low in some countries, with 63% in Finland and 43% in United Kingdom reporting dental attendance during the preceding year [21,22]. Various underlying factors have been reported that deter patients with DM from seeking dental care, including financial factors, the fear of dental treatment and lack of knowledge of the need of dental check-up [20,23]. These findings indicate that it is necessary to improve the awareness of not only patients but also doctors for the bidirectional relationship between DM and periodontitis.

Beyond doubt, physicians and dentists play an important role in improving the patients' awareness of the importance of keeping oral health. Actually, the World Dental Federation and International Diabetes Federation have pointed out that the key of prevention of periodontitis for patients with DM lies in close collaboration between dentists and physicians [24]. However, few studies have been reported on the perception of health professionals regarding the relationship of DM and periodontitis, especially in China. Moreover, only physicians were involved in the previous studies, and the instrument was not evaluated by reliability and factor analysis to ensure its validity [25,26].

The present study was to survey the knowledge, awareness, and behaviors regarding DM and periodontitis among endocrinologists and dentists practicing in Guangdong Province, China. Notably, we tried to investigate whether there was a consensus regarding the relationship of DM and periodontitis among endocrinologists and dentists, and to determine the factors that could influence professionals' practice behaviors. The data would contribute to health care providers to better understand the needs of educational campaigns and intervention programs, and ideally lead to improved oral health and DM control among DM population.

2. Methods

2.1. Participants and data collection

A cross-sectional survey was carried out involving health care professionals with specialty in endocrinology or periodontology licensed and practicing in Guangdong Province, and all the participants were special endocrinologists or periodontists. Thus, a total of 401 endocrinologists and 170 dentists from a variety of primary health care centers, who attended Guangdong society of endocrinologist 2013 annual meeting or Guangdong society of periodontologist 2013 annual meeting, were eligible and invited to participate in the investigation. According to the registration of membership of Association of Endocrinology or Periodontology, to some extent, they represented the majority of endocrinologists or dentists working in Guangdong Province.

The study proposal was reviewed and approved by the Institutional Review Board at the Southern Medical University. Verbal informed consent was obtained from these participants following an explanation of the study purpose. At the beginning of the meeting, the questionnaires were distributed to all of the participants, and collected at the end of the meeting.

2.2. Items development

Two separated sixteen-item questionnaires were developed respectively for endocrinologists and dentists. Evidence from the literatures contributed to the development of the first version of the questionnaires, which were pilot tested by a group of 30 health professionals (10 endocrinologists and 20 dentists).Then answers and comments from this group were evaluated by a panel of professors, including a statistical expert with expertise in questionnaire design and an experienced team of health professionals who are familiar with studies pertaining to DM and periodontitis. Modifications were made to improve clarity and to reduce response burden.

Questions were either close-ended or Likert-scaled. Besides the demographic and job-related characteristics, the questionnaires consisted of 3 domains: (1) attitudes towards the relationship of DM and periodontitis; (2) willingness of interdisciplinary education and collaboration; (3) practice behaviors. The second part related to the attitudes for the