

DIABETES - SYSTEMIC INVOLVEMENT IN ORAL HEALTH LITERACY AT PATIENTS WITH PERIODONTITIS. REVIEW

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Abstract

Understanding of association between oral health literacy and periodontal disease is an important objective for the health of patients. Any factor that involves periodontal changes may influence the patient's oral health status. The condition of the periodontium is of major importance for oral health because it is the essential condition for good and long-lasting dentistry on dental arches.

Keywords: *health literacy, oral health literacy, periodontal status, periodontal disease, diabetes*

Health literacy has received much international attention in the last 10 years and is now widely understood as playing a crucial role in efforts to improve the public's health.

Recognizing the growing body of evidence on the relationship between health literacy, health outcomes and related cost, the ADA's strategic action plan 2010-2015 was developed to support cross-cutting efforts to improve health literacy in dentistry.

Oral health literacy is a subset of health literacy. As defined in Healthy People 2010, oral health literacy is "the degree to which individuals have the capacities to obtain, process, and understand basic oral health information and services needed to make appropriate health decisions."

The definition of oral health literacy is consistent with the definition of general

health literacy. Hammond et al. 2005, defined it "The ability to access, understand, appraise, and communicate information to engage with the demands of health information contexts to promote health access the life course". Healthy People 2010 defined it "The degree to which individuals have the capacity to obtain, process and understand basic oral health information and services needed to make appropriate health decisions".

The review was based on approximately 90 scientific articles published 2002-2018. The analysis process was inspired by the methods of narrative literature review.

Health literacy should include understanding, motivation and ability to apply and evaluate health. Every day should also be taken into account in terms of health

care, prevention of disease and health promotion to maintain or improve the quality of life [1]. However, health literacy has been found to be a strong predictor of an individuals' health, health behavior and health outcomes. Lower literacy has been linked to problems with the use of preventive services, delayed diagnoses of medical conditions, poor adherence to medical instructions, poor self-management skills, increased mortality risks, poor health outcomes, and higher health care costs [2].

The relationship between health literacy and health has been well documented in a systematic review. Over time, the low level of health literacy has been more associated with greater use of urgent healthcare (eg hospitalization, emergency care) and less of health promotion and prevention services, reduced use of drug treatments and increased morbidity and mortality in the elderly [3].

Oral health literacy was defined as "the degree to which individuals have the capacity to obtain, process, and understand basic oral and craniofacial information and services needed to make appropriate health decisions" (National Institute of Dental and Craniofacial Research et al. 2005). The current understanding of oral health literacy also includes cultural factors and conceptual knowledge necessary to make appropriate oral health decisions (Institute of Medicine [IOM] 2013). Firstly, account is taken of the complexity of the factors that will affect a person's ability to make decisions and decisions about his or her oral health [4]. Oral health education is based on the complexity of factors that will influence a person's ability to make decisions and

decisions about oral health [5]. To understand the association of several factors such as smoking, oral health literacy, diabetes mellitus and periodontal disease needs a broader research base. A systematic review of epidemiological evidence that evaluates the association between diabetes and periodontal disease associated with a smoker's patient has certainly demonstrated that periodontal disease is a significant risk factor for diabetes [6].

Periodontal disease is a chronic inflammatory dental disease with potential for systemic health implications. Patients may present a reversible condition as gingivitis, or an irreversible condition as periodontitis. Periodontitis is a primarily infectious and inflammatory disease caused by anaerobic bacteria (*Porphyromonas gingivalis*, *Treponema denticola*, *Prevotella intermedia*, *Prevotella nigrescens*, *Eikenella corrodens*, *Aggregatibacter actinomycetemcomitans*) in association or not with other periodontal pathogens, in dental biofilm. It affects teeth's protection and support tissues as gingiva and alveolar bone and can lead to dental mutilation [7]. Considering that periodontal diseases are chronic diseases and that the importance of an effective maintenance program is essential, the patient needs to understand the risk factors and etiological factors that are associated with periodontal disease. The patient should be well informed to adequately control these factors in order to maintain a stable level of periodontal health [8].

Systemic diseases, such as diabetes, can also interfere with the periodontal

condition, turning the prognosis of the associated diseases unfavorable [9].

Many studies have promoted the importance of oral health literacy, taking into account the patient's oral health without focusing on periodontal health. Over time, it has been shown that there is a correlation between health literacy and chronic disease control [10]. Complete tooth loss has been associated with systemic diseases, such as cardiovascular disease [11], increased blood pressure [12] and diabetes [13]. The extraction of compromised periodontal teeth was associated with a significant reduction in inflammatory and glyceic systemic markers, according to some studies. It has been suggested that among type 2 diabetics, healthy periodontal patients have better glyceic control than those with periodontal disease. From a hypothetical point of view, in patients with complete edentation but also with diabetes, glucose levels should improve because they can not develop a form of periodontal disease [14].

According to a study, diabetic patients with inadequate health literacy are 2.03 times more likely to have poor glyceic control ($HbA1c \geq 9.5$) and 2.33 times as likely to have retinopathy [15].

In a separate study, 22 of adults with diabetes mellitus type 1 or type 2, showed that although health literacy had no significant direct association with glyceic control but health literacy did have a direct association with diabetes mellitus self-efficacy. Through diabetes mellitus self-efficacy, health literacy had a significant indirect association with glyceic control [16].

Oral health literacy and periodontal condition analyzed in a study showed that a better outcome of oral health literacy was significantly related to better health of periodontal condition even after smoking control and other factors were taken into account. Although diabetes mellitus and education were recorded in patients, they were not included in the multivariate analysis presented in this study [17]. Insufficient research has been conducted to understand the role of diabetes mellitus and smoking with health literacy and oral health outcomes. In a study, diabetes mellitus was a significant mediator when assessing clinical oral health measures of number of teeth, sites of bleeding, and plaque score when using the REALMD-20 (Rapid Estimate of Adult Literacy in Medicine and Dentistry), CMOHK (Comprehensive Measure of Oral Health Knowledge), and short TOFHLA (the short Test of Functional Health Literacy in Adults). There were significant associations between some epidemiologic clinical measures and health literacy measures (Newest Vital Sign - tests numeracy and locate-the-information skills [18], short TOFHLA) and oral health literacy measures (REALMD-20 and CMOHK) [19].

Recommendations for overcoming low literacy barriers in nursing and medicine include assessing readability of informed consent, patient education, and other documents, including literacy issues in patient documentation, creating simple graphic descriptions of information, and using instruments or methods to identify patients with low literacy.

It is important, in order to better understand the relationship between oral health literacy, periodontal disease and its risk factors, to effectively adapt the

approach to educating patients on how to prevent and manage chronic periodontal disease [20].

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