cognitive status. For the MMSE, the cut-off level was < 25 out of a maximum score of 30. A sub-analysis was done between those scoring 25 to 27 points and those scoring 28 to 30 points. For the clock test, the total score was 10 and the cut-off value was set at < 8.

RESULTS

Forty-three percent of the participants were in the young old cohort, 32% in the old cohort, and 25% in the old-old cohort. Level of education was equally distributed, with 51% having completed 9 years or less and 49% completing more than 9 years.

Bone loss was noted significantly more often in male patients at older ages than in the rest of the sample. In addition, having 1 to 19 teeth was associated with greater age and lower education. Persons who had many teeth also had many teeth with periodontal pockets $\geq$ 5 mm. Defining periodontal disease as having periodontal pockets $\geq$ 5 mm at $\geq$ 30% of the teeth, 64% of the participants had periodontal disease, with men particularly affected. Individuals who had between 1 and 19 teeth were older and had completed fewer years of education.

Sixty-four persons had a MMSE score under 25 and 167 had a score of 25 to 27. One hundred thirty-six scored less than 8 on the clock test.

Multivariate logistic regression analysis indicated that bone loss of $\geq$ 4 mm at $\geq$ 30% of readable sites was associated with a lower MMSE test outcome. The association persisted even when periodontal disease was defined as having bone loss of $\geq$ 5 mm at $\geq$ 30% of readable sites. However, fewer individuals fulfilled the criteria when the periodontal bone loss threshold was increased.

DISCUSSION

Both age and gender were associated with bone loss prevalence. In addition, older adults and those with less education had fewer teeth. The prevalence of bone loss, number of teeth, and MMSE score were also related. However, none of the periodontal variables were significantly associated with the clock test result.

Clinical Significance

Having periodontitis and missing teeth may be associated with cognitive function impairment among older adults. Based on these findings, dentists should be aware that dental diseases such as periodontitis that are associated with inflammation may predispose the patient to suffer MCI or more serious cognitive impairment.

Nilsson H, Berglund JS, Renvert S: Periodontitis, tooth loss and cognitive functions among older adults. *Clin Oral Invest* 22:2103-2109, 2018

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Erectile dysfunction and chronic periodontitis

BACKGROUND

Chronic periodontitis (CP) can cause endothelial dysfunction, which can lead to vascular pathology. Based on the pathogenic mechanisms seen in vascular disorders, CP has been shown to be a risk factor for cardiovascular disease (CVD) and acute myocardial infarct size. Erection is a neurovascular phenomenon that involves increased arterial flow in the hypogastric-penile bed coupled with activation of the veno-occlusive mechanisms of the corpora cavernosa in the presence of hormonal and psychological influences. Erectile dysfunction (ED) is the male's inability to attain and maintain erection of the penis sufficient to achieve satisfactory sexual intercourse. ED's prevalence is about 24% in the general male population. Various causes have been linked to ED, including organic, psychological, and combined entities. Fifteen articles have addressed the available evidence concerning CP and ED, with the conclusion being that larger and epidemiologically controlled studies of homogeneous populations are needed to reveal whether CP is a risk factor for ED and what the interaction between CP and ED entails. An observational study was undertaken to evaluate the CP−ED association by comparing associated clinical and biochemical variables.

METHODS

One hundred fifty-eight men participated, with 80 having ED and 78 serving as controls. For each individual, sociodemographic data were gathered. All participants underwent a periodontal examination, with measurement of various periodontal clinical variables. Other measures included testosterone level, lipid profile, C-reactive protein (CRP) level, and glycemic status as indicated by HbA1c levels. Multivariate logistic regression analyses were performed.

Clinical Significance

Because CP is a risk factor for ED, dentists should be asked to provide periodontal treatment to help to prevent and treat ED. Urologists should be made aware of the possible contribution CP can make to the risk profile for ED and seek help from dental professionals if the patient has CP.

RESULTS

Only diabetes and CVD were more prevalent in the ED group than in the controls. Triglycerides, CRP, and HbA1c levels were significantly higher in the ED group, with glycemic status close to reaching statistical significance.

When periodontal clinical variables were compared between the 2 groups, oral hygiene, bleeding on probing (BoP), and number of teeth present were similar. However, the ED group had more sites with periodontal probing depth (PPD) 4-6 mm and more sites with clinical attachment (CA) loss exceeding 3 mm. The percentage of ED patients diagnosed with CP was 74%, whereas that in the control group was 58%, A significant inverse relationship was noted between the number of sites with a PPD 4-6 mm, the number of sites with CA loss > 3 mm, the Periodontal Inflammatory Severity Index (PISIM) score, and periodontitis. CP was shown to be an independent risk factor for ED. Thus even with adjustment for other risk factors, patients with periodontitis are at higher risk for having ED.

DISCUSSION

CP and ED were related independently of other known comorbid conditions. Men having CP were 2.17 times more likely to have ED than men whose periodontal status was healthy.

Martin A, Bravo M, Arrabal M, et al: Chronic periodontitis is associated with erectile dysfunction. A case-control study in European population. *J Clin Periodontol* 45:791-798, 2018

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ORTHODONTICS

Patient satisfaction with clear orthodontic aligners

BACKGROUND

Clear orthodontic aligners were developed to offer orthodontic movement benefits through a more transparent and esthetic device than was available traditionally. The development of these alternative means of moving teeth can be related to the recent focus of concern on patient satisfaction in the health care environment. However, the concept of satisfaction may be difficult to define because it combines the patient's goals and values, the quality of service provided, and other variables. Surveys have been done to measure patients' goals and values as well as their well-being and quality of life, leading to the concept of oral health–related quality of life (OHR-QoL), which holds that good oral health is not limited to the absence of oral disease or dysfunction but includes how oral conditions affect self-confidence and social life. Orthodontic patients who were treated solely by the Invisalign system were surveyed to determine their level of satisfaction after treatment and any changes in their OHR-QoL as a result of their Invisalign experience.

METHODS

The 81 adult patients were recruited from private practices in Edmonton, Calgary, Vancouver, and Toronto, Canada. Each had completed treatment with Invisalign and was asked to complete 2 validated questionnaires, which were administered on a tablet or on paper. They consisted of 94 questions divided into 2 parts. The Dental Impacts on Daily Living (DIDL) index consisted of 36 questions and sought to measure 5 dimensions of life, specifically, appearance, pain, comfort, general performance, and eating restriction, from the patient's perspective. The Patient Satisfaction Questionnaire (PSQ) consisted of 58 questions and measured the nuances of patient satisfaction using a 6-point Likert scale. The factors were related to the doctor-patient relationship, situational aspects, psychosocial and dentofacial improvements, and dental function. The responses to the 2 survey instruments were evaluated using multivariate analysis of variance, regression analysis, and canonical correlation analysis.