

among adolescents and to further investigate the type of psychosocial stress that has the highest impact on this population.

**Methods:** This is a prospective study targeting patients aged 10-19 years old who visit the oral medicine clinics at the University of Pennsylvania Health System. The study was approved by the University of Pennsylvania Institutional Review Board. All patients with complaints of jaw pain, headache, and/or earache were assessed using the same TMD evaluation form, including a validated psychosocial questionnaire, the modified 4-item Patient Health Questionnaire for anxiety and depression (PHQ-4), in the electronic medical record system. The information in the initial TMD evaluation form and relevant demographic information, such as age and sex, were used in statistical analysis, including chi-square tests, to identify trends within populations.

**Results:** To date, 30 patients (18 females, 12 males) aged 10-19 years have enrolled and participated in the study. On the basis of preliminary data analysis, patients who had a formal diagnosis of depression or anxiety or who had a moderate or severe score on the PHQ-4 (categorized as normal, mild, moderate, or severe) had moderate or severe myofascial pain upon clinical examination (69.1%;  $P < .05$ ). Headache was found to be the most frequent coexisting pain condition with jaw pain (78.5%;  $P < .05$ ).

**Conclusions:** There is a statistically significant association between psychosocial stress and TMD symptoms in adolescents. Depression and anxiety had the highest impact on the severity of temporomandibular joint myofascial pain, with headache being the most frequent coexisting pain condition.

#### ROLE OF SALIVARY BIOMARKERS FOR DETECTION OF SYSTEMIC DISEASES

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**Objectives:** Analysis of inflammatory biomarkers in saliva could offer an attractive opportunity for the diagnosis of different systemic conditions specifically in epidemiologic surveys. The aim of this study was to investigate if certain salivary biomarkers could be used for detection of common systemic diseases.

**Methods:** A randomly selected sample of 1000 adults living in Belgaum, India, were invited to participate in a clinical study of oral health. A total of 451 individuals were enrolled in this investigation, and 50% were women. All participants were asked to fill out a questionnaire. Their histories were taken, clinical examinations were performed, and stimulated saliva samples were collected. Salivary concentrations of interleukin (IL)-1b, IL-6, IL-8, tumor necrosis factor- $\alpha$ , lysozyme, matrix metalloproteinase (MMP)-8, and tissue inhibitor of metalloproteinase (TIMP)-1 were determined using enzyme-linked immunosorbent assay.

**Results:** Salivary IL-8 concentration was found to be twice as high in patients who had tumor diseases. In addition, IL-8 levels were also elevated in patients with bowel disease. MMP-8 levels were elevated in saliva of patients after cardiac surgery or in those with diabetes and muscle and joint diseases. The levels of IL-1b, IL-8, and MMP-8, as well as the MMP-8/TIMP-1 ratio, were higher in patients with muscle and joint diseases.

**Conclusions:** Biomarkers in saliva have the potential to be used for screening purposes in epidemiologic studies. The relatively unspecific inflammatory markers used in this study

cannot be used for diagnosis of specific diseases but can be seen as markers of increased systemic inflammation.

#### POTENTIAL PROGNOSTIC IMPLICATION OF $\alpha$ -SMOOTH MUSCLE ACTIN (A-SMA) IN ORAL SQUAMOUS CELL CARCINOMA COMPARED WITH BASALOID SQUAMOUS CARCINOMA

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**Objectives:** Oral squamous cell carcinoma is the most common multistep malignant tumor affecting the oral cavity. One of the most aggressive variants of this neoplasm is the basaloid squamous carcinoma. The cancer-associated fibroblasts in the tumor microenvironment are now the focus of intense research and are believed to correlate with poor prognosis. They are characterized by  $\alpha$ -smooth muscle actin ( $\alpha$ -SMA) expression, which is a myofibroblast marker. The aims of the present study were as follows: (1) to evaluate the role of  $\alpha$ -SMA in the progression of both neoplasms, (2) to study the prevalence of this marker with different grades of this neoplasia, and (3) to determine the immunoreactive localization of  $\alpha$ -SMA in the lymph nodes of patients with these tumors.

**Methods:** Twenty-one cases of squamous cell carcinoma and 7 cases of basaloid squamous carcinoma were included in this study, among which were 5 cases with cervical lymph node metastasis. These were distributed as 9 well-differentiated, 7 moderately, and 5 poorly differentiated cases. Immunohistochemical analysis using labeled streptavidin, biotin, and monoclonal antibody for  $\alpha$ -SMA.

**Results:** Intense immunoreaction of  $\alpha$ -SMA was observed in the anaplastic neoplasms that also was correlated with lymph node involvement. In contrast, well-differentiated cancer revealed only a mild reaction.

**Conclusions:** According to these findings, one could conclude that  $\alpha$ -SMA can be used as a prognostic marker and potential target for cancer therapy.

#### A SERVICE EVALUATION OF PEDIATRIC ORAL MUCOSAL DISEASE EXPERIENCE IN A TERTIARY JOINT PEDIATRIC-ORAL MEDICINE CLINIC

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**Objectives:** The true global prevalence of pediatric oral mucosal disease has historically proved difficult to determine, based on heterogeneity and inherent limitations in study designs and a largely descriptive narrative. The 2019 World Workshop on Oral Medicine VII: Relative Frequency of Oral Mucosal Lesions in Children, a Scoping Review quantified pediatric oral mucosal disease experience globally based on pooled and region-specific data from clinical studies and biopsy reports. The aim of this investigation was to retrospectively review clinical data to compare pediatric disease experience in a tertiary joint pediatric-oral medicine clinic at the Royal National ENT and Eastman Dental Hospital, UCLH, London, UK, with published global data from the world workshop.

**Methods:** Quantitative analysis was retrospectively performed on recorded clinical data from 22 joint clinics attended between January and December 2018, with recording of patient demographic characteristics, diagnosis, investigations, and management.

**Results:** Two hundred sixty-six patients (143 males, 128 females; age range, 8 months to 18 years) were seen in 2018. Referring clinicians included general dental practitioners (n = 54; 49%), secondary care medical and dental specialties (n = 33; 30%), community dental services (n = 15; 14%), and general medical practitioners (n = 9; 8%). Medical comorbidities were noted in 62 patients (23%). Idiopathic recurrent aphthous stomatitis (n = 65; 24%), mucocele (n = 24; 9%), oral Crohn disease/orofacial granulomatosis (n = 18; 7%), and geographic tongue (n = 11; 4%) were the most commonly presenting conditions. Malignancy was the primary diagnosis in only 1 patient

(mucoepidermoid carcinoma). Investigations performed included imaging (n = 27; 11%), blood tests (n = 26; 10%), and biopsy procedures (n = 23; 9%). Management included the use of topical analgesics (n = 71; 27%), topical corticosteroids (n = 94; 35%), topical calcineurin inhibitors (n = 19; 7%), and systemic immunomodulation (n = 22; 8%).

**Conclusions:** Similarity to world workshop conclusions was noted, with a predominance of benign oral mucosal disease within this patient demographic. Roughly 1 in 10 patients required investigation by imaging, blood testing, or biopsy. Although the world workshop data represented mostly transient conditions with an infectious or traumatic etiology, within this cohort, there was a greater representation of the oral manifestations of systemic disease, which may well represent the tertiary nature of referral to this unit.