



**ORIGINAL RESEARCH PAPER**

**Dentistry**

**ROLE OF STOMATOLOGIST IN SUPERSPECIALIST HEALTH CARE CENTRES**

**KEY WORDS:**

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**ABSTRACT**

**Background:** The management of cancer, neurosurgery, cardiac surgery, transplant services, severe burn treatments, plastic surgery, palliative care, and other intricate medical and surgical interventions are just a few of the crucial services that tertiary health care facilities offer for treating a variety of systemic diseases. A few of these services are connected to dental care. Providing diagnosis and treatment for oral and maxillofacial disorders as well as dental care for oral illness, oral medicine is a branch of dentistry that focuses on the oral health of patients. This review establishes multidisciplinary approach in modern healthcare systems that implements the oral medicine specialty. This review also focuses on oral medicine specialist in coordination with medical specialists for diagnosis and treatment planning of the systemic conditions. With dentist it as become an easier way to monitor the severity of the condition in patients with oral manifestations. This is to provide an in site to the role of dentist (stomatologist) in helping the medical doctors in all ways to treat the diseases. **Objective:** Asthma, COPD, CKD, HTN, STRESS, GIT, DM, Oral manifestation

**INTRODUCTION:**

The tertiary care level is for extremely specialized care over a short or extended period involving complex and advanced equipment, treatment or procedures, often for severe or life-threatening conditions. There are various systemic diseases having oral manifestations. Each system has different conditions with severity. In tertiary health care centres specialist for every system is important to treat patients in coordination. As in it is also necessary to have oral medicine doctors or dentists to help in diagnosing and treatment procedures to the patient. It's not necessary that all systemic conditions have oral manifestations, but most of the oral diseases are associated with systemic conditions.

The American Academy of Oral Medicine (AAOM) defines oral medicine as a subdiscipline of dentistry that is primarily concerned with oral health, as well as the diagnosis and treatment of disorders or diseases affecting the oral maxillofacial region. Management of orofacial pain problems, salivary gland diseases, localised neurological impairments, temporomandibular disorders, oral manifestations of systemic diseases, and possibly cancerous conditions of the mouth are all included in the field of oral medicine [1]. The oral tissues can be prone to alteration or injury due of sickness that mostly affects other body systems. Issues surrounding oral and maxillofacial health disorders include oral mucosal illnesses and pain in the orofacial region are not restricted to oral health specialists. These disorders are also related to other physicians as people with such ailments often seek their physicians for guidance and treatment alternatives. Primary care, otolaryngology, and dermatology consult with such patients on a frequent basis [1].

As lifespan increases and medical care becomes more complex and effective and numbers of individuals with oral manifestations of systemic disease will continue to rise [2]. In order to successfully improve each patient's healthcare outcomes and quality of life, healthcare systems need well-trained specialists who work inter professionally to provide comprehensive and continuous care. Despite of this, doctors are not yet trained in oral and maxillofacial diseases and do not know the correct treatment of patients suffering from these pathologies. To address this, medical and dental

professionals increasingly believe that greater integration between the two disciplines would greatly benefit any healthcare system [1].

The purpose of the current article is to give a brief overview of the systemic diseases that manifest orally in patients who are likely to use oral medicine services [2]. The significance and necessity of oral medicine specialists in tertiary healthcare facilities, as well as their function in patient care, focuses on all oral symptoms associated with different systemic disorders (Asthma, CKD, COPD, HTN, Stress, SYNDROMES etc).

**Oral Manifestations Of Systemic Diseases:**

**Pulmonary Diseases:**

Long-term use of 2 -mimetic substances is linked to an increased risk of dental cavities, as shown by a variety of these substances' effects, including decreased salivary production and secretion, elevated populations of Lactobacillus sp. And Streptococcus mutans in the oral cavity and reduced salivary production and secretion.

**Role Of Stomatologist:**

Regular dental visits and thorough oral cavity examinations are essential for the management of these diseases, from diagnosis to therapeutic treatments, favouring early recognition, lowering the rate of infectious exacerbations, and improving life quality. This is because chronic pulmonary patients are treated holistically. An active coordination among dentist and pulmonologist is necessary for patient's health benefits.

**Asthma:**

A chronic inflammatory condition of the airways known as asthma is characterised by bronchoconstriction attacks that include shortness of breath, coughing, chest tightness, and fast breathing [3]. Asthma drugs, such as B-adrenergic agonists and corticosteroids, increase the risk of dental caries by lowering saliva pH and salivary flow rate, resulting in dry mouth, which in turn causes dental erosion from fermentable carbohydrates found in asthma medications. Due to altered immune responses and dryness of the alveolar mucosa, gingivitis can develop in children with asthma. In the mandible with tooth loss in particular, inhaled corticosteroid

adverse effects on bone cause a reduction in bone mineral density [3]. Oropharyngeal candidiasis and corticosteroid nebulization are frequently related. Another factor in the emergence of candidiasis is the potential of corticosteroids to suppress the immune system [4]. Also, a factor of GERD progression. White papules and plaques inflamed or bleeding tissue beneath the lesions are some of the clinical features of these lesions. Moreover, gingivitis is now more common, as has been shown [5].

**Role Of Stomatologist:**

Paediatricians and general dentists should be knowledgeable about how these medications affect oral health and should inform their patients about potential solutions [5]. Dental consultation under the supervision of paediatricians is crucial to preserve oral health, particularly for individuals who do not keep routine dental check-ups [3]. In order to provide a safe and effective course of treatment, the dental practitioner must be familiar with all the disease's warning signs and symptoms. Asthmatic patients should also have their dental health given greater care as they are more likely to acquire candidiasis [6].

**COPD (Chronic Obstructive Pulmonary Disease):**

A common respiratory condition that can be prevented and treated, chronic obstructive pulmonary disease (COPD) is characterised by a persistent airflow restriction that is typically progressive and linked to an exacerbated chronic inflammatory response in the airways and lungs to noxious particles or gases [7]. Exacerbations of COPD can lead to irreversible loss of lung function, are a significant cause of morbidity, and significantly lower quality of life [4]. Smoking is the main cause of oral pathology, a periodontal disease, as well as COPD. Marginal bone loss, thrush, the most common mucosa disease, poor dental health, gingival bleeding and pocket depth, fewer teeth or even edentulous, and a higher prevalence of dental plaque are all connected with COPD [5].

**Role Of Stomatologist:**

Even though it provides a clue for clinical diagnosis and is crucial to fully treating the patient, a thorough and detailed examination of the oral cavity is frequently overlooked in respiratory medicine [5].

**Obstructive Sleep Apnoea Syndrome (OSAS):**

Nitric oxide (NO), a marker of airway inflammation, appears to be produced at higher levels in OSAS patients and is linked to the severity of hypoxemia and obstructive episodes. Oral inflammation plays a significant pathogenic role in OSAS patients. Inflammation of the pharynx, uvula, soft palate, and oral cavity is associated with increased NO production. Even though the bronchi and alveoli are the NO sources, asthma has the highest levels of nitric oxide [5].

**Role Of Stomatologist:**

Dental services are very helpful in the therapeutic treatment of these patients, preparing and fitting oral devices for mandible advancement (ODMA) [5]. Evaluation of the significance of routine follow-up and dental examinations for patients using this type of devices, considering the permanent occlusal alteration following long-term treatments.

**Inflammatory Bowel Disease**

Before the development of GI disease, during the disease, or even after the disease has resolved, mouth lesions may develop. Oral lesions can occasionally look like GI lesions. IBD oral symptoms might be particular or general, brought on by pharmaceutical therapies or intestinal malabsorption [8]. There are three types of oral lesions associated with IBD: (i) lesion extremely specific for the condition, (ii) lesions highly suggestive of the condition, and (iii) nonspecific lesions [9]. The posterior mandible is the most typical location for malignant neoplasms of the GI tract and liver to metastasis to

the oral region, and this usually happens via a hematogenous route. Maxilla or oral soft tissues may be affected by metastases [10]. Patients with chronic gastric ulcers may experience enamel erosion from stomach acids.

**Pyostomatitis Vegetans (PV)-**

In contrast to other oral lesions, it is the oral equivalent of Pyoderma gangrenosum and is strongly linked to Ulcerative colitis. The risk of developing defective enamel, specifically enamel hypoplasia, is higher in those with celiac disease [11]. The soft and hard palates, lips, tonsil Around 10% of UC patients will develop aphthous ulcers. According to a single report, 4.3% of UC patients experienced aphthous stomatitis when their intestinal disease flared up, suggesting that there may be a connection between the disease activity of UC and the occurrence of this nonspecific indication [9] molar pillars, buccal mucosa, tongue, and gingiva have all been shown to have lesions.

**Xerostomia:**

Instead of being a direct result of GERD, it seems to be an adverse side effect of the drug used to treat it. ulcers, a sour taste, and mouth burn are symptoms of RAS [9].

**Crohn's Disease (CD):**

It is a gastrointestinal (GI) tract immune-mediated condition and one of the two main subtypes of inflammatory bowel disease, along with ulcerative colitis (IBD). Vestibular [12] Mucosal oedema, whether there is fissuring Mucogingivitis affixing gingiva, Straight ulcerations Vestibule, polyps, or mucosal tags Vavular mucosa, the buccal mucosal hyperplasia. [12] Ongoing mucosal Lips and buccal mucosa swelling expansion of the labial cavity, stiff to the touch, usually painless Mucosa cobblestoned mouth mucosa [13].

**Ulcerative Colitis (UC):**

In 2/3<sup>rd</sup> of paediatric patients' Oral manifestations of UC may be seen and are usually nonspecific. Around 10% of UC patients will develop aphthous ulcers. According to a single report, 4.3% of UC patients experienced aphthous stomatitis when their intestinal disease flared up, suggesting that there may be a connection between the disease activity of UC and the occurrence of this nonspecific indication [14].

**Dental Symptoms In IBD:**

Dental symptoms include pain, discomfort, tooth caries, deterioration, and periodontal involvement infections. oral signs and symptoms like foul breath (halitosis), speech and/or swallowing difficulties, reduced salivation, dry mouth (sicca syndrome), and reduced salivation [9].

**Differential Diagnosis Of Oral Aphthous And Oral Granulomatous Lesions In Patients With Inflammatory Bowel Disease :**

S. aureus oral staphylococcus (S. aureus) Foreign body reaction with sarcoid-like mucositis (Oral cavity piercing, delayed cobalt hypersensitivity, silica granuloma brought on by toothpaste) (Oral cavity piercing, delayed cobalt hypersensitivity, silica granuloma brought on by toothpaste) lymphangioma, and lymphatic Sarcoidosis Neutropenias Desquamative gum disease Sjogren disease Granulomatous Wegener disease tumours that are precancerous (lichen planus). Oral lesions such as aphthous, ulcers, or granulomas Aphthous stomatitis that persists (OFG) Orofacial Granulomatosis (OFG). Examples of autoimmune rheumatic diseases include Reiter's syndrome, Adamantiadis syndrome, and Behcet's systemic lupus erythematosus. Melkersson-Rosenthal syndrome Epidermolysis bullosa acquisita, pemphigus vulgaris, cicatricial pemphigoid, and autoimmune bullous diseases Chronic granulomatous cheilitis (Miescher cheilitis) Infections (mucobacterial, systemic fungal infections, parasites, STDs, herpetic gingivostomatitis, CMV, Cocksackie, oral histoplasmosis) (mucobacterial, systemic fungal infections, parasites,

sexually transmitted infections, herpetic gingivostomatitis, CMV,oral histoplasmosis) [9].

**Role Of Stomatologist:**

IBD patients may experience a wide range of oral lesions. Because of the cosmetic effects on young patients, lesions affecting the orofacial regions can have devastating effects in addition to the incapacitating symptoms and eating difficulties. [9]. For patients with GI complaints, oral manifestations of GI diseases may aid the gastroenterologist in making a differential diagnosis, and oral tissues may provide a simple biopsy site for conditions like Crohn's disease [13] The presence of oral signs and symptoms in IBD, together with the higher risk of caries and periodontitis, must be taken into serious account. In some cases, the existence or number of oral symptoms might be used to monitor the disease's severity or prognosis, and the response of oral tissues may reveal the effectiveness of the management of GI diseases [10]. In order to achieve early diagnosis, better management of therapies, and improved patient quality of life, it is imperative that gastroenterologists and dentists work together. The search for novel therapies and their potential impact on oral health may also be part of advanced research developments [8].

**CKD (Chronic Kidney Disease)**

It is defined as structural or functional abnormalities of the kidney, whether there is a reduction in GFR, that are evidenced by pathological abnormalities or markers of renal damage, such as abnormalities in the composition of the blood or urine or abnormalities in imaging tests. Renal diseases are divided into acute and chronic kidney diseases based on how they manifest. Dentists are most likely to encounter patients with CKD, with nephrotic syndrome and renal transplants occurring sporadically. Numerous conditions, such as glomerular nephritis, diabetes, interstitial nephritis, pyelonephritis, and others, can lead to CKD [15]. For adults with CKD, oral health issues are extremely serious. In CKD patients, destructive periodontitis is linked to poor prognostic factors like inflammation, protein energy wasting syndrome, and malnutrition. Dry mouth, or xerostomia patients [16]. The incidence of dry mouth can be attributed to several factors. Whether the patient has diabetes or not, the decreased salivary flow may be caused by direct uremic involvement of the salivary glands, chemical inflammation, dehydration, mouth breathing, and from the restricted liquid intake. Changes in taste - According to reports, urea in the saliva and bacterial urease's subsequent breakdown of the urea into ammonia and carbon dioxide are the causes of the metallic taste experienced by uremic patients [17]. Patients with CKD 5 who are being treated frequently experience dental caries, oral candidiasis, edentulous teeth, and burning mouths [18]. Treatment-related mucosal lesions including hairy leukoplakia, lichenoid responses, ulcerations, angular cheilitis, candidiasis, and others include parotitis, enamel hypoplasia, delayed eruption, and others. a greater propensity for cancer and epithelial dysplasia and lip cancer brought on by the therapy used after a kidney transplant [16].

**Role Of Stomatologist:**

The dental professional should be aware of the systemic symptoms of renal failure and uraemia, including hematologic changes, changes in bone metabolism, and immune system changes [9]. When doing oral surgical operations, careful haemostasis must be made. The day following dialysis is the optimal time to receive dental care because this is when the benefits of the procedure have been felt to their fullest and the effects of the heparin have worn off [7]. In order to diagnose multi-system disease at an early stage in patients with CKD, a thorough examination of the oral cavity is essential. These patients should routinely have their mouths examined for lesions and receive the appropriate care. The systemic effects of renal failure, including anaemia, cardiovascular, bleeding tendency, or endocrine illnesses,

affect dental therapy of individuals with renal disease. However, the dental management of these individuals can be efficient and secure when using the right treatment strategies [16].

**Congenital Nephrotic Syndrome (CNS)** is a rare, heterogeneous group of disorders. CNS, which first manifests in utero or within the first three months of life and is characterised by severe proteinuria and oedema, affects the glomerular filtration barrier (GFB) of the kidneys. Chronological enamel hypoplasia, or CEH, is a developmental flaw that shows up as a distinct, recognisable banding around the crowns of teeth. Although the underlying causes are unclear, disturbances in calcium homeostasis and vitamin D deficiency that can occur in NS (NEPHROTIC SYNDROME) during dental development have been related to the development of EH (ENAMEL HYPOPLASIA) [15].

**Role Of Stomatologist:**

Oro-dental issues in children with CNS can be both functionally and aesthetically problematic. It has negative psychosocial effects on the child and family and necessitates extensive dental treatment throughout childhood and adolescence. In children with CNS, routine dental care can be provided during the remission period without precautions. Due to the elevated risk of infection, long-term medication-induced immunosuppression in children with CNS after KIDNEY TRANSPLANTATION (KTx) may necessitate temporary life-saving antibiotic prophylaxis [15].

**Hypertension**

As blood flowing through your arteries pushes too hard against the arterial walls, it results in high blood pressure, often known as hypertension. Angioedema, or lip swelling, is a significant adverse effect of various drugs for high blood pressure. Taste alterations, such as loss of flavour or a metallic aftertaste Gum thickening, lichenoid responses, gingival overgrowth, or dry mouth [19].

**Role Of Stomatologist:**

Regularly visit the dentist and have cleaned more than twice a year. Long-term savings will be greatly increased by making greater investments in problem prevention and maintaining oral health. Any issues with your mouth should be reported as soon as possible to your dentist.

**Oxidative Stress**

Diabetes, different cancers, liver disorders, stroke, rheumatoid arthritis, chronic inflammation, and other degenerative diseases of the nervous system all involve oxidative stress. The body's organs are negatively impacted by free radicals. Lipid peroxidation and irreversible protein alteration, which cause cellular apoptosis or programmed cell death, are to blame for this. Oral diseases that affect oral health and hygiene include periodontitis (progression of chronic inflammatory disease of the periodontal tissue), dental caries, mouth cancer, HIV/AIDS, illnesses of the mucosa and salivary glands, orofacial discomfort, and clefts. Nitric oxide-mediated DNA damage was also discovered in patients with oral leukoplakia in addition to these findings. It results from an imbalance in the host's inflammatory response to bacterial infection. Smoking affects alveola and tooth and increase oxidative stress. It is a modifiable cause for periodontitis [20].

**Role Of Stomatologist:**

Oral health is an important aspect of overall well-being of an organism. Numerous systemic conditions and diseases have oral origins. Oral conditions may be a part of oxidative stress. Its necessary to seek oral medicine specialists to diagnosis the cause and treat the condition at earlier stages.

**Diabetes Mellitus (DM):**

A metabolic disorder called diabetes mellitus (DM) is

characterised by chronic hyperglycemia and, to varying degrees, changes in the metabolisms of carbohydrates, proteins, and lipids [21]. It also includes oral symptoms such as xerostomia, dental caries, gingivitis, periodontal disease, a higher risk of oral infections, a burning mouth sensation, taste disturbances, and slow wound healing. In addition to the oral cavity, this condition can cause several other issues in various body regions. Despite having an inherited structure, taste perception is susceptible to neuropathies. When this sensory impairment manifests, it may be difficult to keep up a healthy diet and it may impair glycaemic control. Changes in taste have been linked to both the onset of diabetes and the growth of fat [21]. Diabetes can cause oral mucosal problems such as oral candidiasis, fissured tongue, irritant fibroma, traumatic ulcers, and lichen Oral problems in diabetic patients are major complications that might affect patients' quality of life [17]. Both type 1 and type 2 diabetics' glycaemic control may be impacted by periodontal disease treatment [22]. Type 2 diabetics with poor control had a decreased stimulated parotid gland flow rate compared to those with good control and those without the disease. Most diabetic patients lament xerostomia and the need to drink a lot (polydipsia and polyuria). The oral soft tissues would get irritated from the mouth's continual dryness, which would result in swelling and discomfort. Periodontal disease and tooth decay are more likely to occur in diabetics with xerostomia.

**Role Of Stomatologist:**

Diabetes Mellitus causes several complications, which worsen when the patient's glycaemic control is insufficient and requires prevention and management. Diabetes has been shown to have a two-way relationship with periodontal disease and can cause additional oral pathologies. So that they can make an early diagnosis, medical professionals and dentists must be vigilant about the various oral signs and symptoms of diabetes [21]. Knowing the pathophysiology, symptoms, and treatment options for the various types of diabetes- Optimizing the treatment of diabetic patients requires close coordination between the endocrinologist and the dentist regarding related orofacial infection. The requirement that both dentists and doctors regularly follow up with patients who have diabetes mellitus. Recognizing the signs and symptoms of diabetes and their oral illnesses is crucial. It is crucial for both dentists and doctors to counsel and help people with diabetes who want to stop smoking. These patients should receive counselling from the dentist, who should also make referrals to organisations with expertise in helping people quit smoking [22].

**Role Of Oral Medicine/ Dentist:**

Based on these oral complications, dentists should work to improve their patients' oral health and quality of life because oral health is closely related to overall health and because illnesses in general, including oral diseases, cause biological impairments and systemic disseminated infections because enamel erosion is directly correlated to the amount of time that patients are in contact with gastric acid. The amount of enamel loss might provide the gastroenterologist a general notion of the frequency and duration of the reflux issue. Depending on whether dental records are available, the patient's dentist may be useful in making this determination. All professionals who care for patients should start performing dental examinations of the oral cavity. The presence or degree of the other side, severity, or prognosis of the condition can be monitored. Oral manifestations, and the success of the management of diseases may be reflected in the response of oral tissues. Certain dental protocols should be established together with medical to take care and aware the patients about the importance of the oral hygiene and regular visit and treatment for oral conditions.

**CONCLUSION**

Each diseases have different oral manifestations; they vary on the severity of the systemic conditions. The changes in oral

health directly or indirectly reflects the stages of severity and treatment procedures undergoing. Based on these changes, the medical doctors can further manage the condition in different ways to prevent or cure the disease. Some systemic conditions are hereditary which involve both dental and medical doctors to work in coordination to diagnosis and provide medications. The role of oral medicine specialist has become an important in tertiary health care centres to treat different systemic diseases to reduce the risk and hospitalization.

**Key Messages:**

The lack of oral medicine specialists is a serious problem since the clinical services and medical education they bring to healthcare systems can significantly improve patient outcomes and quality of life. They can also raise the bar for physician training standards.

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