Introduction:
Despite great achievements in oral health of populations globally, problems still remain in many communities all over the world - particularly among under-privileged groups in developed and developing countries. Dental caries and periodontal diseases have historically been considered the most important global oral health burdens. At present, the distribution and severity of oral diseases vary among different parts of the world and within the same country or region. The significant role of socio-behavioral and environmental factors in oral disease and health is evidenced in an extensive number of epidemiological surveys.

Apart from above diseases now a days in oral diseases different types of stomatitis (Mouth ulcer) is more prevalent. Stomatitis is not given much importance in treatment of oral diseases even though it is becoming a major oral problem. This may lead to serious complications like oral cancer etc.

Mouth ulcers are relatively common. These lesions cause pain and if left untreated can cause tooth rot and gum decay. Epidemiological studies show an average prevalence between 0.15% and 4.5%. Mouth ulcers tend to be more common in women. Mouth ulcers occur most frequently among 16-25 year olds, and they rarely occur in anyone over 55. The frequency of mouth ulcers varies from fewer than 4 episodes per year (85% of all cases) to more than one episode per month (10% of all cases) including people suffering from continuous recurrent aphthous stomatitis (RAS). People over 45 years of age are the most affected by continuous mouth ulcers.

Mouth Ulcers:
Mouth ulcers are sores or open lesions in the mouth with varied etiology. Symptoms vary and depend on the specific cause of the mouth ulcer.
In general, symptoms may include:

- Open sores in the mouth
- Pain or discomfort in the mouth

Causes
Trauma

Minor physical injuries
Trauma to the mouth is a common cause of bacterial introduction. A sharp edge of a tooth, accidental biting (this can be particularly common with sharp canine teeth, or Wisdom teeth), sharp, abrasive, or excessively salty food, hot drinks, poorly fitting dentures, dental braces or trauma from a toothbrush may injure the mucosal lining of the mouth resulting in an ulcer. These ulcers usually heal at a moderate speed if the source of the injury is removed (for example, if poorly fitting dentures are removed or replaced).

These ulcers also commonly occur after dental work, when incidental abrasions to the soft tissues of the mouth are common. A dentist can apply a protective layer of petroleum jelly before carrying out dental work to minimize the number of incidental injuries to the soft mucosa tissues.

Chemical injuries
Chemicals such as aspirin or alcohol that are held or that come in with the oral mucosa may cause tissues to become necrotic and slough off creating an ulcerated surface. There is limited evidence to suggest that Sodium lauryl sulfate (SLS), one of the main ingredients in most toothpastes, is associated with an increased incidence of oral ulcers.

Smoking cessation
It is fairly common for smokers to experience mouth ulcers within a week of cessation. The duration varies between individuals, and can range from a month to years. Oral nicotine supplements have shown some reduction in the occurrence. Cuts usually occur below the lining of teeth in the lower jaw.

Infection
Viral, fungal and bacterial processes can lead to oral ulceration. One way to contract pathogenic oral ulcerations is through the contact of chapped lips with unwashed hands. The reason for this is that bacteria sinks into the minuscule cuts caused by the chapped lips.

Viral
The most common is *Herpes simplex* virus which causes recurrent herpetiform ulcerations preceded by usually painful multiple vesicles which burst. *Varicella Zoster* (chicken pox, shingles), *Coxsackie A virus* and its associated subtype presentations, are some of the other viral processes that can lead to oral ulceration. HIV creates immunodeficiencies which allow opportunistic infections or neoplasm to proliferate.

Bacterial
Bacterial processes leading to ulceration can be caused by *Mycobacterium tuberculosis* (tuberculosis) and *Treponema pallidum* (syphilis). Opportunistic activity by combinations of otherwise normal bacterial flora, such as aerobic streptococi, *Neisseria*, *Actinomyces*, spirochetes, and *Bacteroides* species can prolong the ulcerative process.

Fungal
Coccidioides immitis (valley fever), *Cryptococcus neoformans* (cryptococcosis), *Blastomyces dermatitidis* ("North American Blastomycosis") are some of the fungal processes causing oral ulceration.

Protozoans
Entamoeba histolytica, a parasitic protozoan, is sometimes known to cause mouth ulcers through formation of cysts.

Immune system
Many researchers view the causes of aphthous ulcers as a common end product of many different disease processes, each of which is mediated by the immune system. Aphthous ulcers are thought to form when the body becomes aware of and attacks chemicals which it does not recognize.

Immunodeficiency
Repeat episodes of mouth ulcers can be indicative of an immunodeficiency, signaling low levels of immunoglobulin in the oral mucous membranes. Chemotherapy, HIV, and mononucleosis are all causes of immunodeficiency with which oral ulcers become a common manifestation.

Autoimmunity
Autoimmunity is also a cause of oral ulceration. Mucous membrane pemphigoid, an autoimmune reaction to the epithelial basement membrane, causes desquamation/ulceration of the oral mucosa.

Allergy
Contact with allergens, such as amalgam, can lead to ulcerations of the mucosa. Alternative materials may well bring about other types of allergy.

Dietary
Vitamin C deficiencies may lead to scurvy which impairs wound healing, which can contribute to ulcer formation. Similarly deficiencies in iron, vitamin B12, zinc have been linked to oral ulceration. Acidic food such as citrus fruit may cause mouth ulcers. Spicy foods, junk foods, bakery foods, before day(old) foods, nonveg, egg, sour, pungent & salty food items.

Medications
Some medications have been linked to the development of oral sores, inflammation or discoloration of the soft tissues in the mouth. These medications include those prescribed for blood pressure control, immunosuppressive agents, oral contraceptives and some chemotherapeutic agents.
Occasionally, mouth ulcers are caused by a reaction to a medicine that you are taking. Some of the medicines that can cause mouth ulcers include:

- Non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and aspirin.
- **Nicorandil**, a medicine which is sometimes used to treat angina.
- **Beta-blockers**, which are used to treat a variety of conditions that affect the heart and blood flow, such as angina, heart failure, high blood pressure and abnormal heart rhythms.
- Immunosuppressive agents
- Oral contraceptives
- Some chemotherapeutic agents
- Some of the individuals start stomatitis when they consume certain antibiotics or if they increase the dose of the medicine. It is very difficult to find out which medicines do cause stomatitis as it is based on the individual.

Medical conditions

- Coeliac disease is caused by intolerance to a protein called gluten, which is found in wheat, rye and barley. The condition causes inflammation of small intestine. Mouth ulcers are also a common symptom of coeliac disease.
- Crohn’s disease is a condition that causes inflammation of the gut, leading to ulcers developing in both your stomach and mouth.
- Reactive arthritis is a reaction to another infection within your body. It can cause inflammation, which sometimes spreads to your mouth.

Hormonal changes
Some women develop mouth ulcers during their monthly period.

Family history
Around 40% of people who have recurrent mouth ulcers report that it runs in their family.

Mouth ulcer & Cancer patients

Incidence
Oral and gastrointestinal (GI) mucositis affects almost all patients undergoing high-dose chemotherapy and hematopoietic stem cell transplantation (HSCT), 80% of patients with malignancies of the head and neck receiving radiotherapy, and a wide range of patients receiving chemotherapy. For most cancer treatment, about 5-15% of patients get mucositis. 75-85% of bone marrow transplantation recipients experience mucositis, of which oral mucositis is the most common and most debilitating, especially when melphalan is used.

Cancer-related mouth sores
Sores or ulcers that form on the inside lining of mouth or on lips. The mouth sores appear burn-like and can be painful, making it difficult to eat, talk, swallow and breathe. Sores can appear on any of the soft tissues of lips or mouth, including gums, tongue, or the roof and floor of mouth. Sores can also extend into the tube (esophagus) that carries food to stomach.
The mucositis is classified into 4 grades in which cancer patients mainly suffer from grade 3 & 4 mucositis. In grade 3 oral mucositis, the patient is unable to eat solid food, and in grade 4, the patient is unable to consume liquids as well.

Mouth cancer
India has the highest prevalence of oral cancer in the world (19/100,000 population). It is the most common cancer in men and the fourth most common cancer in women, and constitutes 13%–16% of all cancers. Of all the oral cancers, 95% are related to the use of tobacco.

Oral cancer has a high morbidity and mortality. The 5 year survival rate is 75% for local lesions but only 17% for those with distant metastasis. Therefore, early diagnosis of oral cancer is important. Since the oral cavity is easily accessible for examination and the cancer is always preceded by some pre-cancerous lesion or condition such as a white or red patch, an ulcer or restricted mouth opening, it is preventable to a great extent. Unfortunately, in India, most cancers are diagnosed at a very late stage, when treatment not only becomes more expensive, but the morbidity and mortality also increase.

Mechanism of development of mouth sores in cancer patients

Chemotherapy and radiation — alone or combined — can cause mouth sores. That's because these cancer treatments are intended to kill rapidly growing cells — such as cancer cells. Some healthy cells in the body also divide and grow rapidly, including the cells that line the inside of mouth. Unfortunately these healthy cells are also damaged by chemotherapy and radiation. Damage to the cells in mouth makes it difficult for mouth to heal itself and to fend off germs, leading to sores and infections.

Chemotherapy and radiation both can impair body's germ-fighting system (immune system). With an impaired immune system, viruses, bacteria and fungi can more easily infect mouth, causing mouth sores or making mouth sores worse.

Chemotherapy
Whether patients experience mouth sores while undergoing chemotherapy depends on the type and dose of medication they receive, as well as how often they receive the treatment. The chemotherapy drugs most likely to cause mouth sores include:

- Capecitabine
- Cisplatin
- Cytarabine
- Doxorubicin
- Etoposide
- Fluorouracil
- Methotrexate

Mouth sores caused by chemotherapy treatment usually develop a few days after treatment begins and go away within two or three weeks after stopping chemotherapy. The mouth sores usually reach their peak around the seventh day after chemotherapy treatment ends.

Head or neck radiation therapy
Radiation aimed at patients head or neck causes mouth sores. Radiation treatment will cause mouth sores depending on radiation received and whether patient also receiving chemotherapy at the same time. Patient may begin to experience mouth pain two to three weeks after beginning of radiation treatment. More-intense doses of radiation will cause mouth sores to develop more quickly. Mouth sores from radiation may last four to six weeks after patient's last radiation treatment.

Bone marrow or stem cell transplant
Bone marrow or stem cell transplants also can lead to mouth sores if the development of graft-versus-host disease (GVHD). In GVHD the transplanted cells or stem cells try to reject body's normal cells. The transplanted cells view body's cells as foreign and attack them. Mouth sores are just one sign of GVHD.

Can you prevent mouth ulcers?

There is no sure-fire way to prevent mouth ulcers, but the following can help if you get them a lot.

- Keep stress levels as low as possible.
- Avoid any foods that seem to trigger mouth ulcers like sour, salty and pungent food articles, junk foods, fried foods, old foods, bakery foods, nonveg, egg, citrus fruits etc.
- Make sure you have regular dental check-ups.
- Avoid the medication which cause ulcers or have to consume alternatives.

Existing treatments

Antiseptic

a. Chlorhexidine
Mouthwash helps to kill bacteria, viruses or fungi that may cause a mouth infection. Chlorhexidine gluconate is the most commonly prescribed mouthwash. Chorhexidine gluconate mouthwash should not be used to treat infants under two years old. The most conspicuous side effects are the development of yellow-brown stains on the teeth, tongue and at the margins of anterior restorations and an alteration in taste sensation.

b. Povidone iodine
Povidone iodine is an antiseptic. It is a complex of iodine, which kills micro-organisms such as bacteria, fungi, viruses, protozoa and bacterial spores. Povidone iodine gargle and mouthwash is used to treat infections of the mouth and throat, such as gingivitis (inflammation of the gums) and mouth ulcers. It is also used for oral hygiene, to kill micro-organisms before, during and after dental and oral surgery and hence prevent infections. The long term use of gargle should be avoided by (1) people with high risk of developing thyroid dysfunction due to the excessive intake of iodine, (2) pregnant women, (3) breast feeding mothers.

c. Dequalinium
An antiseptic and disinfectant. It is a topical bacteriostat. It is used in wound dressings and mouth infections and may also have antifungal action.

Anesthetics

Benzocaine
A local anesthetic commonly used as a topical pain reliever or in cough drops. It is the active ingredient in many over-the-counter anesthetic ointments such as products for oral ulcers.
Over-application of oral anesthetics such as benzocaine can increase the risk of pulmonary aspiration by relaxing the gag-reflex and allowing regurgitated stomach contents or oral secretions to enter the airway.

Corticosteroids

A corticosteroid is a type of medicine that reduces inflammation. Mouth ulcer medications contain a low dose of corticosteroid to make the ulcer less painful. It's best to start using corticosteroid medication as soon as a mouth ulcer develops. Hydrocortisone is the most commonly prescribed corticosteroid. It comes as a lozenge, which slowly dissolves in mouth. Children under 12 years old should see a GP before starting this treatment.

NSAID

a. Benzydamine
Is available as the hydrochloride is a locally-acting NSAID with local anesthetic and analgesic properties for pain relief and anti-inflammatory treatment of inflammatory conditions of the mouth

and throat. Usually benzydamine is used, which either can be taken as a mouthwash or a spray. Benzydamine is well tolerated. Occasionally oral tissue numbness or stinging sensations may occur.

b. Choline salicylate
It is used to relieve pain and discomfort associated with common mouth ulcers. It also helps to relieve pain and inflammation in the mouth caused by dentures and braces.
Side effects like serious allergic reaction including rash, itching/swelling (especially of the face/tongue/throat), dizziness, trouble breathing.

STOMATAB GEL available in gel form, a product of **"Sagar Pharmaceuticals"** - Herbal healthcare division of **BPRL**, contains herbal ingredients which are strong Astringents, possessing analgesic, anti-inflammatory, Wound healing, Styptic, and antibacterial properties, which is helpful in controlling various forms of mouth ulcer effectively.

STOMATAB GEL

Ingredients:

Khadira	Acacia catechu	6.90%
Jeeraka	Cuminum cyminum	7.00%
Bakula	Mimusops elengi	7.00%
Kumari	Aloe vera Gel	2.10%

Acacia catechu –
Wound healing due to astringent property[1], Anti-inflammatory[1], Styptic

As per Kaiyadeva nighantu, Oshadi varga, 823-824, it has been told that kramihara, heals the ulcer & styptic. Due to its kashaya rasa it stops the bleeding, heal the ulcer quickly and soothes the inflamed mucosa.

Cuminum cyminum –
Anti fungal[2]

As per Raj Nighantu, Pippalyadi varga, 59 it is a best kramihara.

Mimusops elengi –
Antimicrobial[3], Anti-inflammatory[3] & Analgesic[4]

As per Bhavaprakasha nighantu, it acts as kramihara. It is having kashaya ras which cures the ulcer quickly and stops the pain.

Aloe vera –
Heals the wound quickly and soothes the inflamed mucosa due to the astringent property.

Kumari mix with jeeraka and apply over the ulcers. It reduces the burning sensation, inflammation quickly.

So STOMATAB GEL is the first and unique product which heals ulcer quickly.

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