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Palliative care dentistry

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Abstract

Palliative care is an interdisciplinary specialized medical care for people with critical health conditions. It mainly focuses on providing relief from the symptoms and stress of the illness. The goal is to improve the quality of life of the patient and the family. However, oral care is often overlooked for these patients though the oral cavity is the first site of discomfort and loss of function. Why do we need dentists in the palliative team? This is the question always encountered by all dental professionals. The dentist can help the patient right from the initial diagnosis of the condition up to the relief of pain in the terminal stages of the disease. Thus, this narrative aims to highlight the oral problems faced by palliative patients and the role of dentists in the palliative team.

Keywords: Dentists, Mucositis, Oral care, Palliative care, Terminally ill patients, Xerostomia.

Introduction

Palliative care is an approach that aims to improve the quality of life of a patient with life-threatening diseases through medical, physical, spiritual, and psychological support. Health care professionals try to alleviate pain, and symptoms and maintain function as much as possible till the end of the life of the patient.[1]

As said, "Every tooth in a man's head is more valuable than a diamond" (Miguel de Cervantes). Hence oral health is vital to the general health and well-being of a patient at every stage of life. A healthy mouth not only enables nutrition to the physical body but also enhances social interactions and promotes self-esteem and a feeling of well-being.[1] But the awareness regarding maintaining good oral hygiene is often neglected in palliative care patients since the focus is mainly on managing the underlying disease conditions. Poor oral health may lead to oral ulcers, dental caries, halitosis, endodontic or periodontal abscess, xerostomia, mucositis, candidiasis, etc. which can affect the overall wellbeing of the patient.[2] Hence dentists play a crucial role in the multidisciplinary team of palliative care.

Palliative care dentistry is defined by Wiseman as the study and management of patients with active, progressive, far-advanced disease in whom the oral

cavity has been compromised either by the disease directly or by its treatment; the focus of care is quality of life.[3]

Dentists encounter patients who may be anxious and in pain. Hence dentists should be excellent communicators. Communication involves active listening skills, empathy, and open dialogues between friends, family, and colleagues. A healthy doctor-patient relationship helps to impart a positive attitude to patients' personalities and boosts confidence in oneself as well as the doctor.[4,5]

The causative factors of oral problems are medications, cancer treatment (radiotherapy and chemotherapy), general weakness of the patients, limited ability to food and water intake, surgery performed, various habits (smoking, tobacco chewing), and xerostomia.[6]

Poor oral health may also lead to other life-threatening conditions such as endocarditis, brain abscess, bacteraemia, and aspiration pneumonia. Most importantly, it affects a person's quality of life leading to an array of psychological and physiological problems.[7]

Even after having numerous oral problems patients under palliative care seldom get desired oral care services. This can be attributed to various reasons such as the seriousness of their medical conditions, high dental treatment costs, lack of knowledge of dental health importance, physicians primarily focusing on their general health and paying less heed to oral health, lack of specific dental preparation to treat these people, and an absence of admittance to the dental consideration administrations.[7]

This review aims to understand the oral health-related concerns and oral health needs of the patients under palliative care and the significance of dentists in multidisciplinary palliative care.

Materials And Methods

Relevant articles were searched from various databases such as Google Scholar, PubMed, Web of Science, Scopus, and ScienceDirect. The articles were searched using the terms palliative dental care, hospice, oral care in terminally ill patients, oral conditions, cancer, and end of life. Articles published between the years 2000 – 2022 were mainly focused on. Then they were combined, and duplicate articles were removed.[8] Accordingly, abundant research results were obtained but the articles included in the reference list were sufficient to fulfill the objectives of the review.[9] The current review article aims at highlighting oral health-related concerns in patients under palliative care and the role of the dentist in palliative care treatment.

Oral Considerations in Palliative Patients – Cause And Care

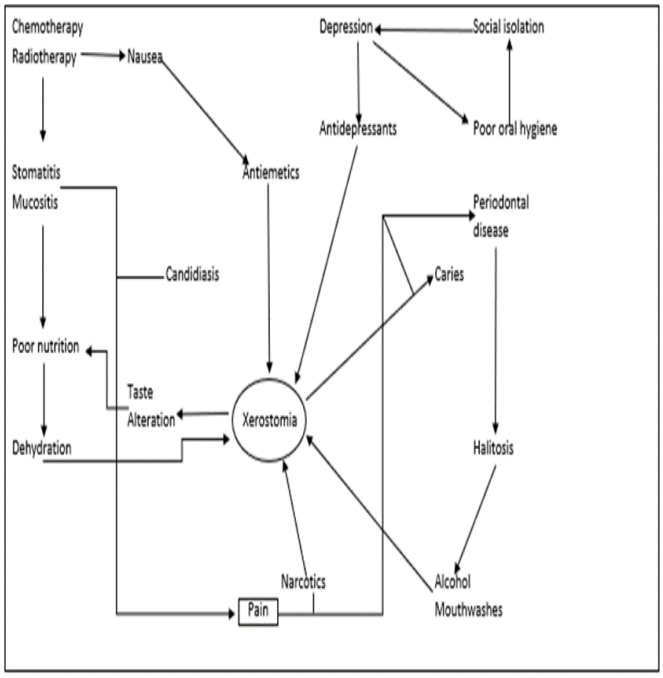

Figure 1: Oral Problems in Palliative Patients[4]

Problems faced by palliative patients and oral problems associated in palliative patients are illustrated **(Fig. 1)** and discussed briefly. The symptoms that indicate a terminal phase of life are categorized as:

1) Weight loss 2) Weakness 3) Loss of Appetite 4) Bed bound 5) Trouble Swallowing 6) Loss of Memory 7) Experiencing day-to-day deterioration which is not reversible.[10]

Pain is one of the most important criteria that one should consider in palliative care. The most common oral problems encountered in palliative patients are xerostomia, mucositis, dental caries, candidiasis, taste disorders, periodontal diseases, dysphagia, etc. Early clinical diagnosis of these conditions must be done in palliative patients to minimize pain and suffering.[10,11]

Mucositis And Stomatitis

Stomatitis generally refers to inflammation of oral tissues and Mucositis describes inflammation of mucosa resulting from chemotherapeutic agents or ionizing radiation. Mucositis generally manifests as erythema and ulcerations.[12] It mainly involves mucosal linings in the mouth, pharynx, and digestive tract. Initially red and white lesions are seen on the mucosa along with pseudomembrane formation and ulceration which further progresses to fibrosis of connective tissue and hypovascularity.[10]An estimated 40% of chemotherapy patients suffer from mucositis. Drugs such as 5-fluorouracil and methotrexate are potent mucositis agents. Oral mucositis can lead to great discomfort, pain, inability to eat, and sometimes secondary infections also.[10] Treatments for mucositis and stomatitis are primarily aimed at relieving pain **(Box 1)**.

In clinical practice and research various scales have been used to record the extent and severity of oral mucositis, e.g. The World Health Organization (WHO) scale combines both subjective and objective measures of oral mucositis and is suitable for daily use in clinical practice **[Table 1]**.[13] The Mucositis Study Group of the Multinational Association for Supportive Care in Cancer and the International Society of Oral Oncology (MASCC/ISOO) has developed clinical practice guidelines for the management of mucositis. According to this, management can be divided into nutritional support, pain control, oral decontamination, palliation of dry mouth, management of oral bleeding, and therapeutic interventions for oral mucositis.[13]

- Viscous xylocaine 2%
- Xylocaine spray 10%
- Diphenhydramine hydrochloride 5% and lopera-mide in equal parts (dyclonine 0.5% may be added to increase potency)
- Dyclonine hydrochloride 0.5% or 1%
- Magic mouthwash
- Sucralfate suspension, 10 mL 4 times a day, swished and swallowed or expectorated
- Benzydamine, 15 mL 3–4 times a day, rinsed and expectorated
- Morphine 2%
- Reduction of potential localized factors

Box 1: Treatment for stomatitis and mucositis[4]

Table 1: World Health Organization (WHO) assessment scale for oral mucositis[13]

Scale	0	1	2	3	
WHO Oral Toxicity Scale	N	Soreness and erythema	Erythema, ulcer, patient can swallow solid diet	Ulcers, extensive erythema, patient cannot swallow solid diet	Mucositis to extent that alimentation is not possible

XEROSTOMIA

Xerostomia (Dry Mouth) is dryness in the mouth that may be associated with medications, change in the composition of saliva, or reduced salivary flow. Dry mouth is the most common symptom in terminally ill patients and in patients with ongoing radiotherapy in the head and neck region.[14]

Causes of xerostomia are included in **[Table 2]**. Dryness in the mouth can lead to several other oral pathologies such as Candidiasis. Many of the drugs used in palliative medicine—for example, opioids, phenothiazines, and antidepressants—reduce salivary flow.[4]

Table 2: The principal causes of xerostomia[10]

Developmental	Salivary gland aplasia
Iatrogenic origin	Medications, Radiotherapy to head and neck region, Chemotherapy
Water/ Metabolic loss	Impaired fluid intake, vomiting/diarrhea, hemorrhage
Systemic diseases	Sjogren's syndrome, Diabetes mellitus, HIV, Mumps, Sarcoidosis, Hepatitis C disorders, psychogenic disorders, calculi
Local factors	Smoking, Mouth breathing, Decreased mastication

Management included preventive, symptomatic, and curative modalities. Preventive measures include good oral hygiene, supplemental fluoride, frequent dental visits, a non-cariogenic diet, and remineralizing agents.[10] Symptomatic therapy like frequent sips of water, alcohol-free mouthwashes, topical salivary stimulants like sugar-free chewing gums, humidifiers, artificial salivary substitutes like pilocarpine Hcl, bromhexine, cevimeline Hcl, electrical stimulation of salivary gland in case of salivary gland hypofunction.[10] Curative treatment needs proper diagnosis of underlying pathology for hyposalivation of salivary gland and based on investigation and diagnosis further treatment modalities are decided.[10,15]

Candidiasis

Candidiasis is the most common fungal infection seen in palliative care patients.[16] Poor oral hygiene, diabetes mellitus, dry mouth, wearing of dentures, use of immunosuppressive agents and corticosteroids, smoking, poor nutrition, long-term use of antibiotics, and anemia are some of the predisposing factors of candidiasis.[10] The frequently encountered organism in candidiasis is Candida albicans. Other species such as C. glabrata, C. krusei, and C. tropicalis are also found.[15]

Various forms of oropharyngeal candidiasis are pseudomembranous candidiasis, erythematous, hyperplastic, atrophic candidiasis, and candida-associated infections (angular cheilitis, denture stomatitis). Pseudomembranous form (thrust) is most seen in terminally ill patients and appears as yellowish white papules and plaques on the buccal mucosa, palate, and tongue that can be easily wiped off, leaving a bleeding base.[4,10] Erythematous candidiasis, as the word refers to, appears as red lesions seen on the hard palate and tongue. Hyperplastic candidiasis is non-scrapable, indicative of Leukoplakia. Atrophic form (denture stomatitis) is commonly seen in denture wearers, usually found under upper dentures. Angular cheilitis occurs at the labial commissures of lips.[4,10,15]

Candidiasis is treated with antifungal agents (topical and systemic) **[Table 3]**. Antifungal agents include nystatin, fluconazole, clotrimazole, amphotericin B, etc. Along with medications proper oral hygiene must be maintained, an alcohol-free mouthwash should be used, and soft bristles, toothbrushes and fluoridated toothpaste are recommended. Denture wearers must remove their dentures every night before going to bed, clean them thoroughly, and should store them in a water-filled container.[4,10,17]

Drug	Form	Dosage
Amphotericin B	1. Lozenge 10mg 2. Oral suspension 100mg/ml	Dissolve in mouth slowly 3-4 per day or 2 weeks
Nystatin	1. Cream 2. Oral suspension 100,000 U	1. Apply to affected areas 3-4 times per day 2. Apply after meals 4 times per day for 7days
Clotrimazole	1. Cream 2. Solution	1. Apply to affected areas 2-3 times daily for 3-4 weeks 2. 2.5ml 3-4times daily for 2 weeks.
Ketoconazole	Tablets	200-400mg tablets twice daily with food for 2weeks.
Fluconazole	Capsules	50-100mg once daily for 2-3 weeks.
Itraconazole	Capsules	100mg capsules daily taken immediately after meals for 2 weeks
Miconazole	1. Oral gel 2. Cream	1. Apply to the affected area 3-4times daily 2. Apply twice per day and continue for 10 to 14 days after the lesion heals.

Table 3: Treatment of Candidiasis[10]

Nutrition And Taste Disorders

An oral cavity in palliative care patients is usually compromised due to various treatments, medications, and immune system suppression. As a result, patients are unable to consume food or fluids adequately, and of which their nutritional status gets affected.[4]

Compromised nutritional status can lead to severe mental, muscular, bony, and hematological disorders affecting the general health and well-being of the patient. Diarrhea, swallowing difficulties, and vomiting may cause dehydration, which in turn can lead to xerostomia.[4] Terminally ill patients should be encouraged to keep themselves hydrated as much as possible. Radiotherapy (head and neck region) and chemotherapy lead to dysgeusia in many patients hence along with other medications, zinc supplements are also prescribed for these patients. The reasons for loss of taste are typically due to nervous system disorders, chronic renal and liver diseases, endocrine disorders, medication, and the multitude of disorders affecting the oropharyngeal region. Early intervention, proper diet instructions, and regular monitoring of the patient's health may minimize nutrition risk.[4,10]

Osteoradionecrosis of The Jaw

Osteoradionecrosis (ORN) of jaws is a pernicious complication of radiation therapy for head and neck tumors. It is described as exposed irradiated bone that fails to heal over 3 months without evidence of persisting or recurrent tumor.[13] ORN starts as a small area of mucosal breakdown, exposing the underlying bone and leading to trismus, neuropathic pain, and chronic drainage as it progresses. Contamination of that area with various aerobic and anaerobic organisms can lead to infection, which causes hypoxia and further worsens to necrosis.[10] Effects of radiation are described in **[Table 4]**.

Radiation dose < 3000 cGy	Mucositis, Candidiasis, Xerostomia & Dysgeusia begins
Radiation dose > 3000 cGy	Xerostomia (permanent) and Dysgeusia, saliva is thick, more acidic, altered flora
Radiation dose > 5000 cGy	Trismus,Concerns for Osteo radionecrosis
Radiation dose > 6000-6500 cGy	Significant concerns for Osteoradionecrosis

Table 4: Effects of radiation pertaining to dosage[10]

Hyperbaric oxygen (HBO) therapy is mostly considered in ORN treatment protocol, it increases the oxygenation of tissues through angiogenesis, controls infection, predominantly through enhanced bacterial killing fungi macrophages and the production of bactericidal free radicals and by stimulating fibroblast replication and development of a collagen matrix (healing).[13] Marx suggested that HBO alone is not sufficient to treat ORN, hence he introduced a protocol for the treatment of ORN that combines HBO therapy (HBO) and surgery as its primary treatment modalities. Guidelines for management of Osteoradionecrosis **[Box 2]**. The use of fibroblast growth factor (FGF) before bone grafting, has also shown improved vascularity in the irradiated soft tissue bed which further reduces the risk of bone graft failure.[13,18]

- Elimination of trauma
- Avoidance of removable dental prosthesis if the denture bearing area is within the ORN field
- Adequate nutritional intake
- Discontinue tobacco and alcohol use
- Topical antibiotics (e.g. tetracycline) or antiseptics (e.g. chlorhexidine) may Contribute to wound resolution.
- Hyperbaric oxygen therapy (HBO).
- Surgical debridement of necrotic bone, as required.
- Partial mandibulectomy for severe cases of ORN

Box 2: Guidelines for management of Osteoradionecrosis[13]

Dental Caries and Periodontitis

Palliative care patients usually are undergoing various treatments and are prescribed lots of medication for the treatment. Side effects of these treatments and medications often lead to decreased salivary flow,

reduced pH, halitosis, increased incidence of dental caries, periodontal problems, tooth mobility, debris accumulation, etc, these problems are mostly seen in patients undergoing radiotherapy.[10] Precautions taken to reduce such oral problems are: - Topical application of fluoride, restorative procedures of carious teeth and extractions of mobile and grossly carious teeth should be done before undergoing radiotherapy, good oral hygiene must be maintained, dietary sucrose intake should be reduced, localized scaling to remove obvious calculus, use of mouthwashes (chlorhexidine) and antimicrobial therapy.[10] To improve patients' masticatory efficiency during food intake, replacement of missing teeth should be done as soon as possible.[19]

Oral Hygiene

Maintenance of good oral hygiene is very important in terminally ill patients. Guidelines to practice good oral hygiene **[Table 5]**. Regular dental check-ups must be done, patients should be advised to use fluoridated toothpaste, and patients with reduced salivary flow must be prescribed sugar-free chewing gums or salivary substitutes. Denture wearers should be educated on the importance of cleaning dentures.[4,20]

1.	Patient Education	• All the patients should be educated on the importance of oral care at the commencement of chemotherapy, radiotherapy to head and neck region, immunosuppressant drugs, or any disease which causes immunosuppression. • Use appropriate materials to supplement verbal education on all aspects of this care plan. • Encourage family participation whenever possible.
2.	Brushing	• Brush teeth 4 times daily, within 30 minutes after eating, and before going to bed. • Use an ultra-soft toothbrush • Brush the surface of the tongue gently from back to front. • Use fluoride containing non-abrasive toothpaste. • If flossing, floss before brushing. • Change the toothbrush often. Head and neck cancer patients: Brushing may not be advised because of tumor involvement and location.
3.	Flossing	• If a patient is using floss regularly, then encourage them to continue it. • If a patient has not flossed routinely to date, do not initiate just before treatment begins. Head and neck cancer patients: Flossing may not be advised because of tumor involvement and location.
4.	Rinsing	• After flossing and brushing, the mouth should be rinsed with a mouth rinse to remove remaining debris and toothpaste. • Rinse before applying any therapeutic agent since they penetrate oral tissues

		effectively when the mouth is free of saliva and debris. • Rinse mouth without dentures in place. • Solutions that can be used to rinse oral cavity: • Tap water • Normal Saline • Sodium Bicarbonate Solution • Soda water (Club Soda) Do Not Use: commercial mouthwash products, glycerine products or hydrogen peroxide.
5.	Lip Care	• Coat lips with an oil-based or water-based lubricant to keep them moist. • Apply lubricant after each cleaning, at bedtime or as needed. • Advise patients to refrain from touching their lip lesions.
6.	Eating	• Eat soft food. • Avoid abrasive, hot, spicy, hard, cold, and acidic food. Irritants like alcohol and tobacco should be avoided. • Avoid food containing a lot of sugar. • Encourage them to eat high-density and high-fibre food to clean teeth and massage gums. • Encourage fluid intake of at least 2 litres per day.
7.	Denture or Bridges	• Brush and rinse dentures after meals and at bedtime. • Remove dentures from the mouth while sleeping. • Soak them in a denture cleaning solution, mouth rinse solution or water.

Table 5: Guidelines for maintenance of oral health[13]

Psychological Changes in Palliative Patients

Psychological changes are not uncommon in terminally ill patients. The most common psychological problems include depression, anxiety, confusion, and stress. Depression is one of the most common psychiatric problems seen in palliative patients, especially in patients undergoing radiotherapy and chemotherapy.[4]

The palliative care dentist must take time to listen to his/her patient. The dentist must demonstrate empathy through eye contact, communication, and gently patting the patient's head or by holding the patient's hands.[4,13] Reassurance that the feelings are normal and that they will improve in time should be balanced with gentle but firm encouragement to continue the mouth care practices even when the patient seems to have no energy. The involvement of the family to perform oral health practices during this period is important.[21] Anxiety and depression are often present in family caregivers of the patient; hence it is important to acknowledge family and significant others present with the patient. They require as much emotional support as the patient.[22]

Patients who are depressed are prescribed antidepressants, but many of these medications cause xerostomia which in the long term would affect the oral health of the patients. To avoid this the dentist should guide the physician in choosing a saliva-sparing antidepressant like, for example amitriptyline is more xerogenic than citalopram.[10]

Oral hygiene activities are often neglected by these patients, which may increase the severity of dental caries, periodontitis, candidiasis, and halitosis. As a result, some friends and family members may shorten their visits to the patients, which can further deteriorate the condition of the patient. Therefore, the palliative care dentist must promote good oral hygiene practices.[4,10,13]

Role of Dentist In Palliative Care Patients

Awareness regarding dental care in palliative care patients is increasing day by day. The dentist provides symptomatic relief to the terminally end-stage patient. Various treatment modalities are imbibed by the dentist to manage the oral complications occurring due to the progressive nature of the disease or by treatment used to cure that disease.[10]

Treatment modalities include: comprehensive clinical examination of the extra and intra-oral soft tissues, periodontium and dentition, high patient awareness and motivation, and implementation of standardized oral hygiene protocol.[10] Diet modification also plays an important role in palliative care. Reduction of sugar intake and replacement of refined carbohydrates with sugar substitutes reduces the incidence of dental caries. Alcohol, smoking, and dry spicy and acidic foods should be avoided.[10]

Oral hygiene protocol: advice use of a soft-bristled toothbrush to remove plaque and stimulate the mucosa, as well as restore tissue tone and stimulate salivation. Sodium bicarbonate toothpaste with fluoride should be used, which can neutralize the oral cavity, and remove debris from tissue and teeth. Floss should be used whenever possible to remove plaque from between the teeth.[12] Mouthwash with low alcohol content (less than 6%) is good for rinsing the mouth. If the alcohol content is greater than 6%, the mouthwash should be diluted with water. The use of lemon glycerine swabs should be avoided as they can cause drying of the oral mucosa. A water-soluble moisturizer should be applied liberally to the lips and the oral mucosa to maintain hydration.[10,12] Dentures and removable partials should be removed, rinsed, and brushed with denture cleaner at night to allow the mouth the breath and placed in a disinfecting denture solution. Oral problems can lead to needless pain and suffering, difficulty speaking, chewing, and swallowing with loss of self-esteem and higher health care costs. The awareness of the relationship between good oral care and the general health and well-being of terminally ill patients is a mutual goal that all members of the team share.[23]

Conclusion

This review summarizes the diverse oral conditions that challenge the quality of life of palliative patients and the importance of oral healthcare professionals in the multidisciplinary team for palliative patients. Palliative care's focus is to improve the quality of life for those with chronic illnesses, while doing so importance is given to the disease and its treatment and hence oral cavity is often neglected.[24]

The oral cavity is often affected by the side effects of various diseases and their treatments, adding a lot of discomfort and disturbance in their routine diet affecting the nutrition and general well-being of the patient. These patients also suffer from psychological effects like depression, anxiety, and social stigma.[10]

The oral cavity is one of the most important organs in the body. It houses the structure necessary for mastication and speech, which include teeth, tongue, and associated structures such as the salivary glands. Hence definitive diagnosis and management of various oral conditions in terminally ill patients are necessary which can be done only by oral healthcare professionals (dentists).[25] Therefore, it is essential to include dentists

in the multidisciplinary team for palliative care. Dental students and residents should also be introduced to the long-term care facility during training so that they become familiar with the demands of dental practice and the rewards of working with older patients.[26,27,28,29] In India there are palliative care organizations such as NNPC (Neighbourhood Networking in Palliative Care) and Pallium India who take care in helping terminally ill patients.[30]

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