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# Knowledge, Attitude and Skills of Oral Health Care Professionals towards Cancer Treatment-induced Oral Mucositis.

<sup>1</sup>Dr. Swapnil Mohod, <sup>2</sup>Dr. Komal Dadgal, <sup>3</sup>Dr. Tushar Sontakke, <sup>4</sup>Dr. Neha Rahul, <sup>5</sup>Dr. Shraddha Patel, <sup>6</sup>Dr. Aditya Patel

<sup>1</sup>(corresponding author), Department of Dentistry, Dr. Panjabrao alias Bhausaheb Deshmukh Memorial Medical College, Amravati, India

[dr.swapnilmohod@gmail.com](mailto:dr.swapnilmohod@gmail.com)

<sup>2</sup>Department of Oral Medicine and Radiology, Sharad Pawar Dental College, Datta Meghe Institute of Higher Education and Research, Sawangi (Meghe), Wardha, India

[dadgalkomal8@gmail.com](mailto:dadgalkomal8@gmail.com)

<sup>3</sup>Department of General Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Higher Education And Research, Sawangi (Meghe), Wardha, India

[tushar.ihmp@gmail.com](mailto:tushar.ihmp@gmail.com)

<sup>4</sup>Department of Radiation Oncology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Higher Education And Research, Sawangi (Meghe), Wardha, India

[nehavilasraahul92@gmail.com](mailto:nehavilasraahul92@gmail.com)

<sup>5</sup>Department of Oral Medicine and Radiology, Sharad Pawar Dental College, Datta Meghe Institute of Higher Education and Research, Sawangi (Meghe), Wardha, India

[shraddhaadityapatel@gmail.com](mailto:shraddhaadityapatel@gmail.com)

<sup>6</sup>Department of Conservative Dentistry and Endodontics, Sharad Pawar Dental College, Datta Meghe Institute of Higher Education and Research, Sawangi (Meghe), Wardha, India

[adityasinghsatel@gmail.com](mailto:adityasinghsatel@gmail.com)

## ABSTARCT:

**Background and objectives:** More than 90% of patients with head and neck malignancies develop cancer treatment-induced oral mucositis CT-IOM. It is commonly referred to stomatitis. It is a common, dose-limiting, and potentially life-threatening side effect of radiation or chemotherapy. The present study aimed to assess the knowledge, attitude, and skills of oral health care professionals working in different settings regarding the treatment and care of CT-IOM.

**Material and methods:** This study used a questionnaire with 20 questions that was circulated to oral health care providers using Google Forms. The questionnaire collected data regarding the knowledge, attitude, and skills of oral health care professionals of CT-IOM using multiple answers questions and a Likert scale. The obtained information from the responders was statistically analyzed. Statistical analysis was done using SPSS software.

**Results:** The study was conducted to compare the knowledge, attitude and skills among three groups of private practitioners, dental hospital and general hospitals. Among all the oral healthcare professionals, the responders working in the dental hospital setup are more aware than the private practitioners and the ones working in general hospitals of palliative care in CT-IOM

**Conclusion:** The study concluded by stating that oral healthcare professionals need to be sensitized regarding palliative care and knowledge of CT-IOM.

**Keywords:** radiation therapy, chemotherapy, oral mucositis, cancer treatment, dental professionals, oral health care professionals

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### **Introduction:**

Cancer treatment-induced mucositis describes mucosal injury brought on by cancer treatment in the mouth, pharynx, larynx, esophagus, and other parts of the gastrointestinal tract [1]. Erythema and/or ulceration of the oral mucosa are the symptoms of CT-IOM. It is the dose-limiting toxicity of radiotherapy techniques like hyperfractionated radiotherapy, rapid radiotherapy, and radiotherapy-chemotherapy interventions. Up to 100% of patients receiving high-dose chemotherapy with hematopoietic stem cell transplantation (HSCT) develop CT-IOM [2]. It has been discovered that for patients receiving this treatment, a 1-point rise in the score of oral mucositis. CT-IOM is significantly linked to persistent fever, a higher risk of infection, more days requiring total parenteral nutrition, more use of intravenous narcotic analgesics, total hospital expenses, and a higher risk of death within 100 days [3]. According to studies, between 29 and 66% of patients undergoing radiation treatment for head and neck cancer developed severe CT-IOM [4]. Oral mucositis was also shown to be common in patients with cancer in the oropharynx, or nasopharynx and oral cavity; receiving concomitant chemotherapy or a total dosage above 5,000 cGy; or modified fractionation radiation protocols [5].

Mucosal damage results from a complex series of biological processes as radiation injury causes direct cell damage that results in breaks in the DNA strand. There are several routes that ultimately lead to the death of the epithelium's basal cells, despite the fact that they are the ultimate "end organ" responsible for tissue damage [6,7]. Individuals with CT-IOM, shows symptoms of pain, anorexia, debilitation, and depression [8,9]. But in addition to systemic symptoms, patients frequently have oral health problems such as candidiasis, gingivitis, ulcers, xerostomia, accumulation of plaque, dysphagia, and dysgeusia. These oral health issues are very likely to have a significant negative impact on quality of life, both psychologically in the form of anxiety, and sadness and functionally in the form of difficulty in speaking, and masticating food [10,11].

A World Health Organization statement describes palliative care as “an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering employing early identification and impeccable assessment and treatment of pain and other problems, physical, psychological and spiritual” [12]. Though, any treatment that reduces symptoms can be denoted as "palliative care," regardless of whether a terminally ill patient has hope for a cure through alternative means. Palliative care, which strives to intercept and alleviate morbidity by correct and early diagnosis and managing pain along with other spiritual, mental, and medical difficulties, is commonly provided to patients with advanced-stage oral malignancy through multidisciplinary teamwork [13].

The morbidity caused to the patient by oral mucositis can be better treated by oral health care professionals. It has been reported that oral physicians improve quality of life in addition to treating oral health problems by enhancing mastication and speech [14]. Dentists and dental hygienists should have a multidisciplinary collaborative approach to provide palliative for the proper management of oral hygiene and function [15]. However, palliative care teams and oral physicians seldom work together, and the teams are not informed about managing oral health in patients with oral mucositis. Consequently, oral physicians frequently have a low level of involvement in palliative care. For Indian patients and doctors, palliative cancer treatment is still a relatively new and unexplored area of medicine. Therefore, efforts should be made to raise oral physician's understanding of palliative care and knowledge regarding oral mucositis. The present study aimed to assess the knowledge, attitude and skills of oral health care professionals working in different setups regarding the management of CT-IOM.

### **Materials and methodology:**

Materials:

The Institutional Ethics Committee (IEC) of Datta Meghe Institute of Higher Education and Research (DMIHER), Sawangi (Meghe), Wardha, approved this study. The registration number for ethical clearance is DMIHER(DU)/IEC/2023/1202. The participants were selected as per the inclusions and exclusions given in the criteria.

The study was conducted at Sharad Pawar Dental College, Sawangi (Meghe), Wardha in the Department of Oral Medicine and Radiology. The study was performed under relevant guidelines and regulations. The study included all the oral health care professionals working with the institute and practicing. The oral health care professionals already working in the cancer institute were excluded from the study. Also, the oral health care professionals who did not consent to the study were excluded.

**Methodology:**

The present prospective cross-sectional survey research was conducted in the city of Maharashtra. The participants were divided into 3 groups of practitioners working in the dental hospital, general hospital, and private practitioners.

The questionnaire was formulated after an assessment by dental faculty members valuing the validity of the questionnaire. The questionnaire comprised 20 preformed closed-ended questions related to the skills and attitude of dentists regarding palliative care and knowledge of CT-IOM. The questionnaire was circulated through Google Forms. The participants were asked to mark the appropriate answer and were assured that all the participants fill out the Google forms in the presence of the investigator to eliminate bias. Consent was already mentioned in the Google forms and was taken from every participant. Among the 20 questions included, 11 questions had correct or incorrect responses. One point was given for the correct response and zero for the incorrect or unanswered questions. The remaining 8 questions from #12-20 used a likert scale to rate the responses of the participants. The participants were told about the correct answers and all the queries of the participants were discussed. [Table: 1]

**Table 1: Division of questions according to the area of assessment**

Area of assessment	Questions
Knowledge	<ul style="list-style-type: none"> <li>• What is the meaning of palliative care?</li> <li>• Who can benefit from palliative care?</li> <li>• What are the aspects of palliative care in patients?</li> <li>• Which is the most common grading system used for cancer treatment-induced oral mucositis?</li> <li>• Which of the following associations has given Clinical Practice Guidelines for cancer treatment-induced oral mucositis?</li> </ul>
Attitude	<ul style="list-style-type: none"> <li>• Do you think patients benefit from palliative care?</li> <li>• Do you think it is challenging to provide palliative care to patients with cancer treatment-induced oral mucositis</li> <li>• Do you feel you have sufficient knowledge concerning palliative care of cancer treatment-induced oral mucositis</li> <li>• In your opinion who plays a primary role in treating symptoms of cancer treatment-induced oral mucositis?</li> <li>• Where would you send a patient if you encounter a patient with cancer treatment-induced oral mucositis?</li> <li>• Do you use any educational material in your practice to make patients understand about the condition?</li> <li>• Would you like more information or training regarding palliative care of cancer treatment-induced oral mucositis?</li> </ul>
Skills	<ul style="list-style-type: none"> <li>• What is the minimal dose of radiation therapy to induce cancer treatment-induced oral mucositis?</li> <li>• What is the period after initiating radiation therapy when the patient starts showing symptoms of oral mucositis?</li> <li>• What is the choice of drug for providing palliative care for dry mouth?</li> <li>• Which is the scientifically proven growth factor used to treat cancer treatment-induced oral mucositis?</li> </ul>

	<ul style="list-style-type: none"> <li>• Which is the common interventions used in palliative care for cancer treatment-induced oral mucositis?</li> <li>• What is the choice of antioxidant given to patients with cancer treatment-induced oral mucositis?</li> <li>• Do you think you are self-sufficient in providing palliative care for cancer treatment-induced oral mucositis?</li> <li>• As regarding the clinical appearance of the oral cancer treatment-induced oral mucositis how knowledgeable do you feel?</li> </ul>
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The data was collected in a tabulated format using a Microsoft Excel sheet after which the analysis and comparison of the data was done. Parametric inferential statistical analysis was used for the data analysis in the present study. Statistical analysis was done using SPSS software version 20.0. Statistical significance was attained when the p-value was less than 0.05.

**Results:**

Among the 100 responses collected 62% of the participants worked at the dental hospital, and the remaining 17% and 21% of the participants were working at general hospitals and private practitioners respectively. The results were determined in percentage.

Among the three groups, private practitioners were well aware of the meaning of palliative care. 85% of the private practitioners were aware that palliative care is given to anyone with a serious illness, regardless of age or diagnosis. 82% of the dental hospital group knew about the aspects of palliative care in patients. All three groups had average knowledge regarding the common grading system used for CT-IOM. When enquired about Clinical Practice Guidelines for CT-IOM, 58% of the general practitioners' group knew about it. 52% of general practitioners were aware of the minimal dose of radiation therapy to cause CT-IOM. When asked about the period after initiating radiation therapy does the patient starts showing symptoms of oral mucositis, private practitioners were more aware than the other two groups. All three groups had average knowledge regarding the choice of drugs for providing palliative care for xerostomia and scientifically proven growth factor used to treat CT-IOM. 80% of the private practitioners knew the common interventions used in palliative care for CT-IOM. Only 17% of general practitioners knew about the choice of antioxidant given for CT-IOM. 37% of participants in the dental hospital group strongly agree that patients benefit from palliative care. 63%, 50% and 42% of the participants of private practitioners, dental hospital and general practitioners respectively think that it is challenging to provide palliative care to patients with CT-IOM. 35% of the private practitioners think that they are very well informed about palliative care of CT-IOM. On average, all three groups think that oral physicians play a primary role in treating symptoms of CT-IOM. The participants of the three groups are well informed regarding the clinical appearance of the CT-IOM. When asked regarding the use of any educational material in clinical practice to make patients understand the condition, very few participants use educational materials like videos and brochures. 58% of private practitioners think that they are self-sufficient in providing palliative care for CT-IOM. Among the three groups, 70%, 77%, and 42% of the participants working in dental hospitals, private practitioners, and general practitioners respectively would want more information or training regarding palliative care of CT-IOM.

For the comparison of the knowledge and attitude of oral health care professionals regarding the knowledge and awareness of CT-IOM, one-way ANNOVA test was applied. Moreover, to understand which group differed significantly in knowledge and attitude scores, an unpaired “t” test was applied. The results obtained reveal that the comparison between the group of dental practitioners, private practitioners and dental hospital was significant. [Table 2]

**Table 2: Comparison of knowledge about cancer-treatment induced oral mucositis between the groups**

Variables	Mean	Std. Deviation	Std. Error Mean	T value	P value	Remark
Dental Hospital	0.8226	0.38514	0.04891	1.564	0.011	NS
General hospital	0.6471	0.49259	0.11947			

Dental Hospital	0.7419	0.44114	0.05603	2.070	0.002	S
Private practitioner	0.8235	0.39295	0.09531			
General hospital	0.4355	0.49987	0.06348	1.513	0.007	NS
Private practitioner	0.5882	0.50730	0.12304			

(NS: not significant, S: significant)

### Discussion:

All treated individuals with head and neck malignancies have some degree of oral mucositis. The incidence of CT-IOM according to the World Health Organisation (WHO) has increased to 85% in patients receiving high-dose head and neck radiation (e.g., 6000–7000 Gy) [7]. Statistics show severe grades of oral mucositis for all tumor sites caused by chemotherapy with 5-fluorouracil (5-FU) [7]. A study conducted in 2019 by Pereira et al. on the Brazilian population found that 41.9% of the participants had radiation-induced Oral mucositis [16].

The best course of treatment for oral cancer is surgery, which has a significantly better prognosis and lower morbidity due to treatment [17]. However, a small percentage of patients continue to object to receiving normal oncological care, primarily because they want to evade the unpleasant adverse consequences that come with oral cancer treatments [18,19]. Therefore, it is crucial to educate the patient and their relatives /caregivers about a variety of topics, such as (i) the nature of the disease, (ii) available treatments, (iii) potential consequences, (iv) minimizing pain and incapacitating signs, (v) strategies for lowering the burden of the disease, (vi) enhancing quality of life, (vii) ending life with dignity, (viii) if final management should take place in a hospital or at home, and (ix) if artificial respiration is necessary. The best treatments or preventative measures for CT-IOM include professional oral hygiene, zinc supplements, cryotherapy, antibacterial agents, benzydamine, and laser therapy, according to a comprehensive review by Plevova P et al. [8]. A palliative care team can still be very helpful in many areas, even though most treatment-related issues may be handled by a regular oncological care team. As a result, a multidisciplinary palliative care team with experience in managing these cases should preferably make all clinical decisions about the management of early OSCC [20]. For comprehensive patient treatment with positive results, a collaboration between palliative care experts, speech therapists, radiation oncologists, surgeons, dentists, and nurses is essential [21-24]. Studies have stated outcomes of radical radiotherapy and palliative care in patients with oral cancer [19]. There are no studies performed to assess the knowledge and awareness of palliative care of CT-IOM.

The present study evaluated the knowledge, attitude, and skills of oral healthcare practitioners regarding the palliative care provided to CT-IOM. Among the group of participants working in dental hospital, it has been observed that they have overall good knowledge and attitude, but lacked the skills in the management of CT-IOM. Similarly, while observing the group of private practitioners, they too lack the skills in managing CT-IOM but have good knowledge and attitude regarding the topic. In the group of general practitioners, the participants lack both knowledge and skills in the management of CT-IOM when compared with the other two groups. It has been observed that among the three groups of oral healthcare professionals, participants working in dental hospitals are most aware of the knowledge and palliative care of CT-IOM as compared to the oral healthcare professionals of general hospitals and private practitioners. As per the study, oral physicians and oral maxillofacial surgeons play a significant role when it comes to treating patients with CT-IOM. Also, it was quite significant that there was satisfactory knowledge and awareness regarding the treatment and grading system followed for CT-IOM in oral health care professionals. Hence, more awareness needs to be spread among oral health care professionals regarding the multidisciplinary approach and knowledge of CT-IOM. Also, efforts should be made to upgrade the skills of oral healthcare professionals in the management of patients with CT-IOM.

The main limitation of the study is the short sample size. As the study included participants from different setups, the work exposure of the participants regarding cancer treatment-induced oral mucositis is not the same. There was unequal distribution of sample size among the three groups of the study. The future recommendations for research are considering a larger sample size for the study. Sensitization of oral health care professionals is also of great value regarding cancer treatment-induced oral mucositis.

## Conclusion:

CT-IOM is a debilitating condition that causes significant morbidity to patients and the quality of life gets severely hampered. As it is an oral condition, the oral physician plays a significant role in its diagnosis and treatment. Importantly, if we can prevent it at early stages that will be the best management modality. Moreover, prevention of further progression is necessary.

In the current study, there was an effort to analyze the knowledge of dentists regarding the diagnosis, management, and prevention of CT-IOM. More studies and awareness is required considering the large quantum of patients facing this problem and the management of CT-IOM in all dental practitioners, surgeons, or various healthcare setups.

## Conflict of interest:

In my role as the corresponding author, I confirm that the manuscript is original, that neither the text nor the data have been previously reported or published, and that the article does not violate any copyright or other property rights of any third party. The authors have read the authorship statement published in the journal and none of them have a conflict of interest.

## Data availability statement:

The data that support the findings of this study are available from the corresponding author but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of the corresponding author.

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