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Research Article

Assessment of Baseline Oral Health Knowledge and Practices among Adult Oral Cancer Patients Undergoing Chemotherapy

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ABSTRACT

Background: Oral issues of patients with oral cancer (OC) receiving chemotherapy include mucositis, xerostomia, dental caries, periodontal disease, oral infection and oral hygiene problems. An appropriate baseline knowledge and oral health practices could help to minimize such complications and enhance oral health-related quality of life related to treatment.
Objective: The aim was to assess the knowledge on oral health and oral hygiene practices among oral cancer patients before their commencement of chemotherapy.
Study Design: Descriptive cross-sectional study.
Place and Duration of Study: Conducted in the department of Community and Preventive Dentistry, Shahida Islam Dental College, Lodhran from December 2025 to June 2026.
Methodology: A total of 130 oral cancer patients who were undergoing chemotherapy were included using a non-probability consecutive sampling technique. The sample size was calculated using the WHO sample size formula. Data was collected through an interviewer-administered structured questionnaire covering sociodemographic characteristics, oral health knowledge, oral hygiene practices, dental visits, and chemotherapy-related oral care. The data collected were analyzed using SPSS.
Results: The study showed that many patients had inadequate knowledge about oral health and were not following sufficient preventive oral health practices.
Conclusion: Baseline oral health knowledge and practices can be used to determine patients who may need specific oral health education and preventive dental treatment prior to and during chemotherapy.

Keywords: Oral Cancer, Chemotherapy, Oral Health, Knowledge, Oral Hygiene.

INTRODUCTION

Oral cancer is one of the biggest health issues in the world and a significant component of head and neck cancers. It involves the oral cavity, such as the mouth floor, the intraoral structures, the floor of the mouth and the lips (Amin et al., 2024). High morbidity and mortality are associated with delayed diagnosis and treatment-related complications with delayed diagnosis and complications of aggressive course and treatment. Oral cancer is one of the most prevalent cancers and there are a few risk factors associated with oral cancer, such as tobacco smoking and chewing of betel nut, excessive alcohol consumption, poor oral hygiene and inadequate provision of healthcare services, particularly in developing countries (Huang et al., 2022). Oral cancer in Pakistan is a significant public health issue, and all these risk factors are prevalent among adults and are

responsible for the heavy burden of oral cancer in Pakistan.

Oral cancer treatment might involve surgery, radiotherapy and chemotherapy depending on the stage of oral cancer and the patient's condition. Chemotherapy is a major component in the treatment of cancer but can have several effects that can damage the mouth. Oral mucositis, dry mouth (xerostomia), change of taste, dental caries, periodontal disease, opportunistic infections and oral hygiene issues are all potential side effects of chemotherapy (Leuci et al., 2023). These complications can have a poor impact on nutrition, speech, comfort, psychological health and quality of life. Additionally, it will be more likely that existing oral difficulties will worsen during chemotherapy due to decreased immunity and a compromised ability to heal.

Oral hygiene and dental care prior to and during cancer treatment are important aspects of supportive care (Gandhi et al., 2026). Brushing, good oral hygiene, oral health assessment, managing existing oral disease and educating patients on their oral health are all preventive oral health care practices that can help reduce the impact of oral consequences of therapy. The success of these preventive measures, however, is dependent largely on what patients know, are aware of and how they maintain their oral health on a day-to-day basis (Amin et al., 2024).

There are likely many patients with oral cancer may be unaware of the importance of oral health during cancer treatment how vital oral health is during cancer treatment. Oral health care information provided to cancer patients prior to chemotherapy has been found to be inadequate in previous studies, thus leaving patients with potentially poor oral health care practices and increased risk of complications (Hassanein et al., 2025). Patients' lack of understanding about dental care, oral care, dietary advice, and treatment of oral complications associated with chemotherapy can further diminish their oral health status. It is important to evaluate the baseline oral health knowledge and behaviors prior to starting chemotherapy treatment to determine the educational needs and targeted prevention (Xiao et al., 2024).

However, there is a lack of literature about the baseline oral health knowledge and oral health care practices of oral cancer patients in Pakistan, especially those receiving chemotherapy, even though oral health plays a crucial role in the management of oral cancer (Suhail et al., 2024). By knowing what patients know, how they behave and how they seek care, oral health educators can help healthcare providers design effective oral health education and incorporate dental care into oncology services (Wang et al., 2026).

The purpose of this study was to evaluate the oral health knowledge and practices of the adult oral cancer patients receiving chemotherapy in Nishtar Hospital, Multan before treatment (Norouzi et al., 2026). The aim of this study was to evaluate the oral health knowledge and practices of oral cancer patients before they receive chemotherapy at Nishtar Hospital, Multan. The results could be used to inform patient-centered oral care plans for reducing chemotherapy-induced oral health effects and enhancing oral health-related quality of life for those with oral cancer (Nurhidayah et al., 2024).

Objective

Study aimed to assess the knowledge and oral hygiene measures of the oral cancer patients prior to the treatment with chemotherapy and determine the need for oral health education and prevention.

METHODOLOGY

This descriptive cross-sectional study was Conducted in the department of Community and Preventive Dentistry, Shahida Islam Dental College, Lodhran from December 2025 to June 2026, a total of 130 adult patients with oral cancer treated with chemotherapy were selected. The subjects were selected using non-probability consecutive sampling techniques. Sample size was determined using WHO sample size formula. A structured interviewer-administered questionnaire was used to collect sociodemographic data, oral health knowledge, oral hygiene practices, dental visitation history, and awareness of chemotherapy-related oral complications. Patients with the inclusion criteria were enrolled after providing informed consent. The data collected were inputted into and analyzed by the IBM programmed called Statistical Package for Social Sciences (SPSS). Descriptive statistics (frequency, percentages, mean and standard deviation) were used to summarize the data as appropriate.

Inclusion and Exclusion Criteria

Inclusion Criteria

The study included adult patients aged 18 years and above who were diagnosed with oral

cancer and undergoing chemotherapy at Nishtar Hospital, Multan (age 18 years and above) diagnosed with oral cancer who were undergoing chemotherapy treatment at Nishtar Hospital, Multan. Informed consent and willing to participate patients were recruited.

Exclusion Criteria

Patients less than 18 years old who refused to participate or could not give informed consent were excluded. Severe medical issues that interfered with communication, cognitive function, and those treated for all cancers except oral cancer were excluded. Those with missing questionnaires and withdrawals from the data collection were also excluded.

Data Collection

Structured Questionnaires were used to collect the data and were administered to adult patients with oral cancer undergoing chemotherapy at Nishtar Hospital, Multan. The participants were told about the purpose of the study and informed consent was obtained in writing prior to data collection. The questionnaire consisted of four sections: sociodemographic characteristics, oral health knowledge, oral hygiene practices and awareness regarding chemotherapy-related oral care. Patient data comprised age, gender, education, oral care habits, number of visits to dentists, and oral cancer-related advice and knowledge that they received in the past. Individual interviews were conducted to make sure that each interviewee would answer accurately and to prevent misunderstandings. The data that were collected were checked for completeness, coded and then entered into SPSS for statistical analysis for statistical analysis. All the information obtained from the participants was confidential.

RESULTS

Overall, there were 130 oral cancer patients in chemotherapy. This study revealed that a significant number of patients were not aware of much about oral health care during chemotherapy. A high proportion of respondents lacked an understanding of the importance of regular dental visits and good oral hygiene, as well as how to avoid oral problems as a result of chemotherapy. The oral hygiene practice of the patients was also assessed, and it was observed that oral hygiene practice was not adequate as they did not regularly brush their teeth and did not frequently use preventive dental care. Patients with prior oral health education exhibited greater knowledge and practices than patients that were not provided with oral health education. Results showed there were large gaps in oral health awareness and the importance of organized oral health education and preventive dental care prior to and during chemotherapy.

Table 1: Sociodemographic Characteristics of Participants (n=130)

Variables	Categories	Frequency (n)	Percentage (%)
Age Group (years)	18–40	35	26.9
	41–60	65	50.0
	>60	30	23.1
Gender	Male	82	63.1
	Female	48	36.9
Educational Status	No formal education	55	42.3
	Primary/Secondary education	50	38.5
	Higher education	25	19.2
Residence	Urban	72	55.4
	Rural	58	44.6
Previous Dental Visit	Yes	28	21.5
	No	102	78.5

The sociodemographic characteristics of the 130 oral cancer patients included in the study are presented in Table 1. The age of most participants was in the range of 41-60 years, and the sex was mainly male. Many of them were unable to read and write properly. The majority of patients had never attended a dentist before and thus had low levels of use of preventative oral health care services.

Table 2: Oral Health Knowledge among Participants (n=130)

Oral Health Knowledge Items	Correct Response n (%)	Incorrect Response n (%)
Oral hygiene helps prevent oral complications	62 (47.7)	68 (52.3)
Chemotherapy can cause oral health problems	58 (44.6)	72 (55.4)
Regular dental check-ups are important during cancer treatment	54 (41.5)	76 (58.5)
Proper brushing technique improves oral health	85 (65.4)	45 (34.6)
Oral care should be maintained during chemotherapy	60 (46.2)	70 (53.8)

The participants' oral health knowledge is shown in Table 2. Dental awareness and knowledge of the need for dental visits during chemotherapy, were low for most patients. In conclusion, the results provided an insufficient knowledge of preventive oral health care, and therefore the need for structured oral health education for oral cancer patients.

Table 3: Oral Hygiene Practices among Participants (n=130)

Oral Hygiene Practice	Frequency (n)	Percentage (%)
Brushing once daily	70	53.8
Brushing twice daily	38	29.2
Irregular brushing	22	16.9
Use of mouthwash/mouth rinse	30	23.1
Use of dental floss	12	9.2
Regular dental visits	28	21.5
No previous dental visit	102	78.5

Table 3 shows the oral hygiene practices of oral cancer patients. More than half of patients did not brush their teeth as recommended (twice daily) and fewer once daily. Little use of mouthwash, dental floss and regular dental visits. The results of this study showed that there is a lack of preventive oral health care by patients with chemotherapy.

Table 4: Awareness Regarding Chemotherapy-Related Oral Complications (n=130)

Chemotherapy-Related Oral Complications	Aware n (%)	Not Aware n (%)
Oral mucositis/oral ulcers	60 (46.2)	70 (53.8)
Dry mouth (xerostomia)	45 (34.6)	85 (65.4)
Oral infections	50 (38.5)	80 (61.5)
Tooth decay/caries	55 (42.3)	75 (57.7)
Changes in taste sensation	42 (32.3)	88 (67.7)

Participants' knowledge about oral complications associated with chemotherapy is presented in Table 4. Oral mucositis, infection and dental caries were the most common problems of which less than half of the patients were aware. Specifically, xerostomia and taste changes were poorly known. The results highlight the need for better patient information prior to chemotherapy treatment.

Table 5: Association between Educational Status and Oral Health Knowledge (n=130)

Educational Status	Good Knowledge n (%)	Poor Knowledge n (%)	Total n (%)
No formal education	12 (21.8)	43 (78.2)	55 (100)
Primary/Secondary education	25 (50.0)	25 (50.0)	50 (100)
Higher education	20 (80.0)	5 (20.0)	25 (100)
Total	57 (43.8)	73 (56.2)	130 (100)

Table 5 shows that there was a correlation between the level of oral health knowledge and education level of the participants. The levels of knowledge were better among patients with

higher education than those with lower education. In general, patients with no formal education were poorly informed about oral health care. This study indicated that there may be a relationship between education level and awareness and preventive oral healthcare behaviors.

DISCUSSION

Oral health is a major aspect of supportive care in oral cancer patients, especially in the case of chemotherapy treatment that can cause oral complications (Skallsjö et al., 2023). The study aimed to evaluate baseline oral health knowledge, oral hygiene practices of adult oral cancer patients at Nishtar hospital, Multan before commencement of chemotherapy. The results showed a significant lack of knowledge, preventive actions and awareness concerning oral complications associated with chemotherapy among patients (Alkashaf and Mohammed, 2024).

A high percentage of the subjects in this study were knowledgeable about poor oral health (Jeddy et al., 2023). Patients had an awareness of the importance of tooth brushing, however, awareness of chemotherapy induced oral problems, regular dental visits and preventive oral care was low. This means that patients may have an awareness of good oral health; however, they may not have information focused on oral changes associated with cancer treatment (Abou-Bakr et al., 2025). This study corroborates earlier research that found that cancer patients not only lacked awareness of oral complications of chemotherapy but also did not understand the need for a dental evaluation before treating them for cancer.

Sociodemographic results revealed that majority of the participants were middle-aged adults and males made up the bulk of the study population. Poor knowledge of oral health practices could be due to the high percentage of patients with low educational levels. Education is a key component of health literacy, affecting individuals' access, understanding, and use of health care information (Altamura et al., 2025). There was a significant difference between levels of education and oral health knowledge, with higher levels of education associated with more knowledge of preventive oral health.This study found that there is a relationship between level of education and oral health knowledge, as those with higher levels of education had higher levels of knowledge in oral health.

Additionally, the study results revealed lack of oral hygiene among the participants. Over half of the patients reported brushing their teeth only once a day, and regular dental visits, the use of mouthwash and dental flossing were uncommon (Zhang et al., 2025). Without preventive dental care prior to chemotherapy, there is a risk of oral infections, mucositis and other complications during chemotherapy. Often, cancer patients may be mainly concerned about cancer management and neglect to put any thought into oral health unless they are given proper guidance.

Oral complications associated with chemotherapy may have a significant impact on patients' quality of life and include pain, inability to eat, swallow, or be able to consume enough food (Agheli et al., 2024). The present study revealed, however, that the participants were not well informed about the issues of xerostomia, taste changes and oral infections. This is due to lack of knowledge and can hinder patients seeking timely management and taking preventive measures. Thus, it is important to include oral health education as a part of the routine care of oncology patients prior to the initiation of chemotherapy (Ihara et al., 2022).

Results highlight the need for an interprofessional approach between oncologists, dentists, nurses and other healthcare providers. Regular dental evaluation and counseling from the outset of the treatment and ongoing monitoring of the oral health status will minimize oral health-related complications associated with treatment (Moore et al., 2023). Educational materials and resources that are culturally and linguistically appropriate and simple to understand can help patients understand and promote oral hygiene. There are some limitations to this study. It was within a single hospital and had a small sample size, which potentially limits the generalizability of results to other populations. Also, the oral health practices were self-reported, thereby possibly having a reporting bias (Bawankar and Ankar, 2022). Overall, this study provides insight into oral health awareness among oral cancer patients receiving chemotherapy and highlights the significance of the need to provide preventive oral health care strategies. The results indicate overall that there is a need for OHC and preventive measures for OCP patients receiving chemotherapy. The goal of improving oral health outcomes for these patients, minimizing complications and improving quality of life may be aided by

addressing the gaps in knowledge prior to and during chemotherapy (Morsy et al., 2023).

CONCLUSION

The results of this study indicated that oral cancer patients in the adult population who were undergoing chemotherapy had poor knowledge of oral health and had poor oral hygiene practices. While some participants had some knowledge of basic oral health, major deficiencies existed about chemotherapy-related oral problems, preventive dentistry and the need for periodic dental evaluation. A lower educational level was linked to low levels of awareness and practices regarding oral health. The results highlight the vital role of incorporating oral health counselling and preventive oral health care into the standard cancer treatment services. Receiving early diagnosis of oral health care needs prior to chemotherapy treatment can minimize mucositis, xerostomia, infections, and dental issues. A multi-disciplinary approach with involvement from oncologists, dentists and health care providers is recommended to optimise the care of oral cancer patients during chemotherapy and to enhance their quality of life.

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