

Awareness of Prosthetic Rehabilitation Options for Head and Neck Cancer Patients

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Abstract

Background: Head and neck cancers (HNC) often lead to structural, functional, and aesthetic challenges, significantly impacting patients' quality of life. Maxillofacial prosthetic rehabilitation offers a valuable, non-surgical approach to address these deficits. Despite its benefits, awareness of such treatment options remains limited.

Objective: This study aimed to evaluate the level of awareness regarding maxillofacial prosthetic rehabilitation among HNC patients and to identify factors influencing this awareness, as well as potential obstacles to accepting treatment.

Methods: A cross-sectional observational study was conducted with 100 patients attending the Prosthodontics outpatient department at Tamil Nadu Government Dental College and Hospital, Chennai, between July 2024 and July 2025. Participants completed a structured, validated questionnaire capturing sociodemographic details, clinical history, awareness of prosthetic rehabilitation, and perceived barriers to treatment. Associations between awareness and demographic or clinical variables were assessed using Chi-square or Fisher's exact tests, with statistical significance set at $p < 0.05$.

Results: Among the participants, 38% reported awareness of maxillofacial prosthetic options, with doctors serving as the main source of information (63.2%). Only 30% believed that prosthetic rehabilitation could improve the quality of life. Awareness was significantly higher in individuals aged ≤ 45 years (52.9% vs. 30.3%, $p = 0.021$) and those with higher secondary education or above (54.5% vs. 25%, $p = 0.003$). No significant associations were observed between awareness and gender or treatment modality. Key barriers identified included financial limitations, lack of information, and restricted access to specialized care centers.

Conclusion: The findings reveal considerable gaps in patient knowledge regarding maxillofacial prosthetic treatments. These results emphasize the importance of targeted educational programs and proactive communication by healthcare providers. Enhancing patient understanding can support informed decision-making, promote acceptance of rehabilitation, and ultimately improve quality of life for individuals with HNC.

Keywords: Head and neck cancer, maxillofacial prosthetics, patient awareness, rehabilitation, health literacy, quality of life

Introduction

Head and neck cancers represent a significant global health concern, accounting for approximately 4–5% of all malignancies, with higher incidence rates reported in Asian countries, especially India [1,2]. Management of these cancers often involves extensive surgical removal, radiotherapy, chemotherapy, or a combination of these approaches. While such treatments have improved survival rates, they frequently lead to substantial anatomical, functional, and aesthetic deficits. Surgical procedures affecting the oral cavity, maxilla, mandible, or other craniofacial regions can disrupt essential functions, including chewing, swallowing, speech, and facial expression [3]. These functional limitations are often accompanied by psychological, emotional, and social challenges, collectively reducing the patient's quality of life [4].

Effective rehabilitation of head and neck cancer patients therefore, requires attention not only to disease control but also to the restoration of form, function, and psychosocial well-being. Maxillofacial prosthetics plays a critical role in this process by providing artificial replacements for missing oral and facial structures. Such prostheses help restore oral function, improve speech clarity, and enhance facial aesthetics, thereby supporting patient confidence and facilitating social reintegration [5,6]. Unlike surgical reconstruction, which may be constrained by the size of the defect, patient health status, or resource availability, prosthetic rehabilitation offers a practical, non-invasive, and cost-effective alternative [7].

Despite these benefits, awareness and utilization of maxillofacial prosthetic solutions remain low. Research indicates that many patients receive insufficient information regarding rehabilitation options, largely due to limited referral practices, inadequate counselling, socioeconomic barriers, and scarcity of specialized centres [8]. In several low- and middle-income countries, maxillofacial prosthodontics continues to be under-recognized as a vital component of comprehensive cancer care [9]. In India, head and neck cancers account for a disproportionately high fraction of all malignancies, with some regions reporting rates as high as 30–40% [10]. The coastal regions of Karnataka are considered high-risk zones due to lifestyle factors, including tobacco and betel quid use, alcohol consumption, and specific dietary patterns [11]. While access to surgical and oncological treatment has expanded, post-treatment rehabilitation services - particularly maxillofacial prosthetic care—remain underutilized. Limited patient awareness further exacerbates the gap between cancer survival and overall quality of life [12].

Materials & Methods

Study Design and Setting: This cross-sectional observational study was conducted in the Department of Prosthodontics at Tamil Nadu Government Dental College and Hospital, Chennai, over one year from July 2024 to July 2025.

Study Population: The study included patients with a confirmed diagnosis of head and neck cancer, either undergoing active treatment or in the post-treatment phase, who attended the outpatient department during the study period.

Sample Size: A total of 100 patients was enrolled to ensure adequate representation of the target population and to maintain statistical validity.

Inclusion Criteria

1. Patients aged 18 years and above.
2. Patients with a confirmed diagnosis of head and neck cancer, regardless of treatment stage.
3. Patients willing to provide informed consent and participate in the study.

Exclusion Criteria

1. Patients with recurrent or metastatic disease who were critically ill and unable to participate.
2. Patients with cognitive impairments or communication difficulties that could hinder effective participation.
3. Patients unwilling to provide informed consent.

Data Collection: Data were collected using a structured, pre-tested, and validated questionnaire designed to evaluate awareness of maxillofacial prosthetic rehabilitation. The questionnaire included sections on sociodemographic characteristics, clinical history, treatment details, knowledge of prosthetic options, and perceived barriers to accessing rehabilitation services.

Ethical Considerations: Ethical approval was obtained from the Institutional Ethics Committee of Tamil Nadu Government Dental College and Hospital, Chennai. Written informed consent was obtained from all participants before enrollment, and patient confidentiality was strictly maintained throughout the study.

Statistical Analysis

Collected data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics - including frequencies, percentages, means, and standard deviations - were used to summarize demographic information and awareness levels. Associations between awareness and demographic or clinical variables were evaluated using the Chi-square test or Fisher's exact test, as appropriate. A p-value of <0.05 was considered statistically significant.

Results

Table 1. Sociodemographic characteristics of study participants (N = 100)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	18–30	12	12.0
	31–45	22	22.0
	46–60	38	38.0
	>60	28	28.0
Gender	Male	66	66.0
	Female	34	34.0
Educational status	No formal education	20	20.0
	Primary/secondary	36	36.0
	Higher secondary	28	28.0
	Graduate & above	16	16.0
Occupation	Unemployed	18	18.0
	Unskilled labor	42	42.0
	Skilled/professional	40	40.0
Residence	Urban	44	44.0
	Rural	56	56.0

The study included 100 patients, with the majority belonging to the 46–60 years age group (38%), followed by those above 60 years (28%), reflecting the higher risk of head and neck cancers in middle-aged and elderly individuals. Males (66%) outnumbered females (34%), consistent with the greater prevalence of risk behaviors such as tobacco and alcohol use among men. Educational status showed that over half (56%) had only up to primary/secondary education or no formal education, which may influence awareness levels. Occupationally, most were unskilled laborers (42%), followed by skilled/professionals (40%), indicating a predominantly working-class background. A larger proportion of participants belonged to rural areas (56%), highlighting the regional demographic distribution and potential barriers to accessing specialized prosthetic rehabilitation services.

Table 2. Clinical profile of patients with head and neck cancer (N = 100)

Clinical Variable	Category	Frequency (n)	Percentage (%)
Cancer site	Oral cavity	48	48.0
	Oropharynx	18	18.0
	Hypopharynx	12	12.0
	Larynx	14	14.0
	Others	8	8.0
Treatment modality	Surgery only	26	26.0

	Radiotherapy only	12	12.0
	Chemotherapy only	6	6.0
	Multimodal therapy	56	56.0
Duration since diagnosis	<6 months	34	34.0
	6–12 months	28	28.0
	>12 months	38	38.0

The oral cavity (48%) was the most common cancer site, followed by the oropharynx (18%) and larynx (14%), which aligns with regional patterns of head and neck cancer linked to tobacco and betel quid habits. Regarding treatment, the majority underwent multimodal therapy (56%), reflecting the current practice of combining surgery, radiotherapy, and chemotherapy for better outcomes. A smaller proportion received surgery alone (26%), radiotherapy (12%), or chemotherapy (6%). In terms of disease duration, 38% had been diagnosed for more than 12 months, while 34% were within 6 months and 28% between 6–12 months, showing a mix of newly diagnosed and longer-term survivors within the study population.

Table 3. Awareness regarding maxillofacial prosthetic rehabilitation (N = 100)

Awareness Question	Response Category	Frequency (n)	Percentage (%)
Have you heard of prosthetic rehabilitation?	Yes	38	38.0
	No	62	62.0
Source of information (if yes, n=38)	Doctor	24	63.2
	Family/friends	8	21.1
	Media	6	15.7
Do you believe a prosthesis improves the quality of life?	Yes	30	30.0
	No/Not sure	70	70.0

Less than half of the participants knew prosthetic rehabilitation, with only 38% reporting awareness, while a majority (62%) had never heard of it. Among those who were aware, the main source of information was doctors (63.2%), followed by family/friends (21.1%) and media (15.7%), indicating limited community or media-level awareness. When asked about the role of prostheses in improving quality of life, only 30% believed they could be beneficial, whereas 70% were either unsure or did not perceive any benefit, reflecting a substantial gap in patient understanding and highlighting the need for better education and counseling.

Table 4. Association Between prosthetic rehabilitation and sociodemographic/clinical variables

Variable	Category	Aware n (%)	Not aware n (%)	p-value
Age group	≤45 years (n=34)	18 (52.9)	16 (47.1)	0.021*
	>45 years (n=66)	20 (30.3)	46 (69.7)	
Gender	Male (n=66)	26 (39.4)	40 (60.6)	0.512
	Female (n=34)	12 (35.3)	22 (64.7)	
Education	Up to secondary (n=56)	14 (25.0)	42 (75.0)	0.003*
	Higher secondary+ (n=44)	24 (54.5)	20 (45.5)	
Treatment modality	Surgery only (n=26)	8 (30.8)	18 (69.2)	0.417
	Multimodal (n=56)	22 (39.3)	34 (60.7)	

Participants aged ≤45 years demonstrated significantly higher awareness (52.9%) compared to those aged >45 years (30.3%), with a statistically significant difference ($p = 0.021$), indicating that younger individuals had better awareness. Awareness levels were slightly higher among males (39.4%) than females (35.3%), though this difference was not statistically significant ($p = 0.512$). Participants with higher secondary

education or above showed markedly better awareness (54.5%) compared to those with education up to secondary level (25.0%), and this difference was statistically significant ($p = 0.003$). Awareness was also slightly higher among participants receiving multimodal treatment (39.3%) compared to those who underwent surgery only (30.8%), although the difference did not reach statistical significance ($p = 0.417$).

Discussion

This study provides a novel exploration of awareness regarding maxillofacial prosthetic treatment among patients with head and neck cancer (HNC). To our knowledge, it is the first investigation specifically targeting this underserved and understudied population, highlighting the pressing need for region-specific research, as emphasized by Senchak et al. [13]. Understanding patient perspectives differs fundamentally from understanding those of healthcare providers, as patients often have limited exposure to the full spectrum of treatment options and face unique challenges in accessing and utilizing these services. In contrast, practitioners are typically well-informed about clinical guidelines and recent technological advancements, as noted by Elbashti et al. [14]. Therefore, obtaining data directly from patients is critical for accurately assessing awareness levels and the factors influencing treatment decisions, a concept further supported by Kondeti et al. [15]. A patient-centered approach provides valuable insight into current awareness levels and underscores the importance of addressing knowledge gaps to improve outcomes and quality of life. Awareness can also vary significantly among healthcare providers themselves. For example, Shreya and Ramesh reported that 97.6% of undergraduate dental students were aware of maxillofacial defects and that 89.5% had knowledge of available treatment modalities. In contrast, the present study demonstrates that patients' understanding of maxillofacial prosthetic options is considerably lower and less comprehensive, highlighting a substantial gap in knowledge transfer from providers to patients. While healthcare professionals acquire information through structured education and clinical exposure, patients often lack access to comparable resources, which may limit informed decision-making and reduce utilization of prosthetic rehabilitation services, as discussed by Kondeti et al. [15].

Recognizing these communication gaps is essential for developing targeted educational strategies to bridge the divide and enable patients to participate actively in treatment planning. This observation aligns with findings from other healthcare contexts; for instance, Bhat et al. reported that socioeconomic factors significantly influence cancer-related health decisions in Indian populations [11]. Similarly, Senchak et al. emphasized that psychosocial and informational interventions play a crucial role in improving quality of life among HNC patients [13]. Our findings further indicate that awareness and acceptance of maxillofacial prosthetic rehabilitation are closely linked to patients' understanding of potential benefits, limitations, and long-term outcomes. Health literacy principles stress the importance of providing clear, accessible, and patient-appropriate information to empower individuals in making informed healthcare decisions. In the context of maxillofacial prosthetics, patients must understand the available treatment options, their advantages and limitations, and their impact on function and quality of life. Addressing barriers such as cost, access, and follow-up care is equally important, as highlighted by Shenoy et al., who identified financial and logistical challenges as major deterrents to prosthetic rehabilitation among oral cancer patients [12].

Applying health literacy strategies to maxillofacial prosthetic care requires the development of tailored educational interventions that bridge the knowledge gap between providers and patients. Such initiatives can empower patients, promote shared decision-making, and enhance collaboration with healthcare professionals. These approaches are consistent with the recommendations outlined by Elbashti et al. regarding patient education and digital integration in maxillofacial prosthetic services [14], ultimately contributing to improved quality of care and patient satisfaction.

Conclusion

The findings highlight significant deficiencies in patient awareness, particularly regarding the availability and potential advantages of specialized maxillofacial prosthetic rehabilitation. Major obstacles to treatment uptake included financial constraints, limited knowledge, and restricted access to specialized care centers. Introducing targeted educational initiatives and strengthening communication between healthcare providers and patients can empower individuals to make informed decisions, thereby improving treatment adherence and overall quality of life. Future studies should focus on designing and evaluating effective educational interventions aimed at closing these knowledge gaps and ensuring equitable access to maxillofacial prosthetic services across diverse socioeconomic groups.

Conflict of Interest: Nil

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