

Original Article

Does Comprehensive Nursing Intervention Improve Quality of Life after Oral Cancer Surgery?: An Interventional Study from India

Nath Sukanta

Department of Molecular Oncology, Atal Bihari Vajpayee Regional Cancer Centre, Agartala, Tripura, India

Falwaria Khemchand

Research Supervisor, Department of Nursing, Desh Bhagat University, Gobindgarh, Punjab, India

Debbarma Shiromani

Medical Superintendent, Atal Bihari Vajpayee Regional Cancer Centre, Agartala, Tripura, India

Pattnaik Matrujyoti, PhD

Research Scholar, Department of Microbiology & Public Health, ICMR-Regional Medical Research Centre, Bhubaneswar, Odisha, India

Debnath Ankita, PhD

Research Scholar, Department of Nursing, Desh Bhagat University, Gobindgarh, Punjab, India

Correspondence: Ankita Debnath, PhD Research Scholar, Department of Nursing, Desh Bhagat University, Gobindgarh, Punjab, India Email: ninja.ankita@gmail.com

Abstract

Background: A patient's life is profoundly impacted by both receiving a cancer diagnosis and undergoing treatment. Following surgical therapy for oral squamous cell carcinoma, a basic deterioration in quality of life occurs as a result of limited functions and overall well-being in the early postoperative stages.

Objective: The study aimed to evaluate whether comprehensive nursing interventions improve the quality of life after oral cancer surgery or not.

Methodology: In this study, 260 patients with oral cancer who were cognitively normal and had undergone surgery within 2022-2024 were enrolled. The study group was divided into experimental and control groups. Following the nursing intervention, each patient completed the Head and Neck Cancer Quality of Life Scale, a demographic questionnaire from the European Organization for Research and Treatment of Cancer (EORTC QLQ-C30).

Results: Among the sociodemographic variables, there was a statistically significant difference in terms of cancer stage ($p < 0.03$). The experimental group experienced a significant increase in their quality of life ($p < 0.01$) compared to the control group. There were significant improvements in the mean quality of life scores in nearly each domain compared to the control group.

Conclusions: In summary, the overall nursing intervention following oral cancer surgery is successful in reducing the patient's emotional burden, pain level, and risk of complications while also improving the patient's quality of life. It is recommended because it can enhance patients' appreciation of nursing care and serve as a great clinical nursing solution.

Keywords: Postoperative oral cancer, comprehensive nursing intervention, quality of life, EORTC QLQ-C30

Introduction

Oral cancer ranks in the top 10 causes of death worldwide and is one of the most prevalent cancers of the head and neck. Oral cancer is typically discovered at an advanced stage when treatment options are limited and the

prognosis is significantly poorer. Oral cancer is ten times more likely to be found in men than in women (Dzebo et al., 2017). Based on epidemiology and clinical pathology, oral cancer is categorized into three groups: oral cancer of the oral cavity proper, oral cancer of

the lip vermillion, and oral cancer originating in the mouth. Intraoral and oropharyngeal tumors are more common in men than in women, with a male-to-female ratio of more than 2:1.2. Anatomical changes brought on by oral cancer treatment and surgery frequently results in severe oral dysfunction, including trouble in speech, chewing, and swallowing. Furthermore, these treatments may affect a patient's appearance, pain, and suffering, all of which may impact the patient's quality of life (QOL) (Davudov et al., 2019).

Treatment options for oral cancer can include surgery, chemotherapy, radiation (RT), or a mix of these, based on the clinical diagnosis of the cancer's stage (Lavdaniti et al., 2022). According to multiple international guidelines about oral cancer, surgery remains the most effective treatment method (Goetz et al., 2020). The QOL, which is defined as the perceived difference between the patient's actual condition and ideal standards, is significantly impacted by surgical treatment for oral cancer. While dramatic situations like a permanent colostomy or vascular shunt for dialysis can be easily managed in public, body scars and alterations are typically hidden during social activities. However, head and neck cancer patients cannot hide post-treatment functional changes and must therefore deal with the ensuing negative impact on self-esteem and confidence in all domains (Villaret et al., 2008).

A malignant tumor of the head and neck, oral cancer can be further classified according to the primary lesion, such as tongue cancer, oropharyngeal cancer, gingival cancer, oral cancer, hard and soft palate cancer, and buccal carcinoma. Of these, squamous carcinoma is the predominant pathological type, and tongue cancer is the most prevalent type. Thus, one of the main focuses of clinical work is treating oral squamous carcinoma while providing nursing care (Lu et al., 2021).

These days, a range of well-validated health-related quality of life (HRQOL) measures which have been divided into generic and disease-specific categories are accessible for use in the oncological field. Compared to generic HRQOL measures, which are neither condition nor site-specific, disease-specific, and/or site-specific QOL, measures have the benefit of being more responsive and

therapeutically valuable (Ogino et al., 2021). To further improve clinical outcomes (patient survival), quality of life assessment is a crucial tool for assessing the effects of disease and treatment on an individual basis as well as for developing and updating patient education materials and rehabilitative services (Qamar et al., 2024).

Although there are an ample number of studies on the QOL of patients with oral cancer, there is a paucity of literature on the QOL of oral cancer patients in India following surgery. To the best of our knowledge, this is the first study of its kind which lightens up the importance of nursing intervention to evaluate the QOL in postoperative oral cancer patients. The study aimed to evaluate whether comprehensive nursing intervention improves the QOL after oral cancer surgery in Indian population.

Methodology

Patient selection

The study included 260 patients (158 males and 102 females) from the surgery ward of the Atal Bihari Vajpayee Regional Cancer Centre, Agartala, Tripura, India, who underwent oral surgery after being diagnosed with oral cancer between 2022 and 2024.

- ***Inclusion criteria*** – Patients above 18 years of age, newly diagnosed oral cancer (stage I to stage IV), no other malignant disease

- ***Exclusion criteria*** – Patients below 18 years of age, patients who refused to sign the written informed consent or participate in the study, mental and cognitive impairment or other severe cancers. Patients were divided into experimental and control groups. While the experimental group received a comprehensive nursing intervention, the control group received standard hospital care. The flowchart that depicts the patient enrollment selection procedure is displayed in **Figure 1**.

- ***Data collection:*** Following their inclusion in the study, the demographic and clinical details of each patient were documented. Data obtained from each patient included: Age, gender, religion, educational status, occupation, monthly income, marital status, types of surgery,

cancer stage, tumor metastasis, and primary site.

Comprehensive Nursing Intervention:

The comprehensive nursing intervention included counseling postoperative patients about the oral hygiene, relaxation techniques, and how to use thyme honey. Patients were also assisted in different exercises like stretching exercises, mouth opening exercises, active and passive range of motion, maintaining proper posture, chin tucks, shoulder blade squeezes, etc. A PowerPoint presentation and video were organized for the patients of the experimental group to demonstrate the above-mentioned tasks. The total intervention (educational and nursing) timing was for 30 minutes for each patient. It was followed for 9-10 times per day for 5 days in a row. Patients in the experimental group were advised to follow the instructions as per their convenience whereas the control group was instructed to follow the hospital routine care.

Quality of Life Questionnaires: Quality of life was measured using the following questionnaires.

The EORTC QLQ-C30: The EORTC QLQ-C30, a core questionnaire developed by the European Organization for Research and Treatment of Cancer, is used to assess the QOL in cancer patients. It has thirty items that draw from six functioning and several symptom subscales. Each subscale has a score between 0 and 100; higher scores for functional subscales denote better conditions and vice versa for symptoms. By summing the answers to each question within a domain,

scores were obtained from the QOL questionnaire.

Analysis: Using the SPSS statistical tool for social science for Windows versions 20.0, SPSS Inc. (Chicago IU, USA), the Chi-square test (at a significance level of $P < 0.05$) was performed, and the results were obtained.

Ethics: The study was conducted according to rules of the Declaration of Helsinki and was approved by the Desh Bhagat University's Institutional Review Board of (Desh Bhagat University (DBU/RC/2023/2338). Informed written consent was obtained from each patient.

Results

Patient-Specific Data

Of the 260 patients included in this study, 158 were males (95% CI: 54.5 - 66.7) and 102 were females (95% CI: 33.3 - 45.4) for each group, respectively, resulting in a male-to-female ratio of 1.5:1. Table 1 provides a summary of the data for the demographic and clinical variables.

There was a statistically significant difference in terms of cancer stage ($p < 0.03$). Table 2 summarizes the descriptive characteristics of pre and post-test levels of quality of life (EORTC) in enrolled patients. Table 3 summarizes the mean and SD of pre and post-test levels of quality of life among postoperative patients with oral cancer. After the nursing intervention, the quality of life of the experimental group was significantly improved ($p < 0.01$) than that of the control group ($p < 0.08$) [Figure 2]. There were significant improvements in the mean quality of life scores in nearly each domain compared to the control group.

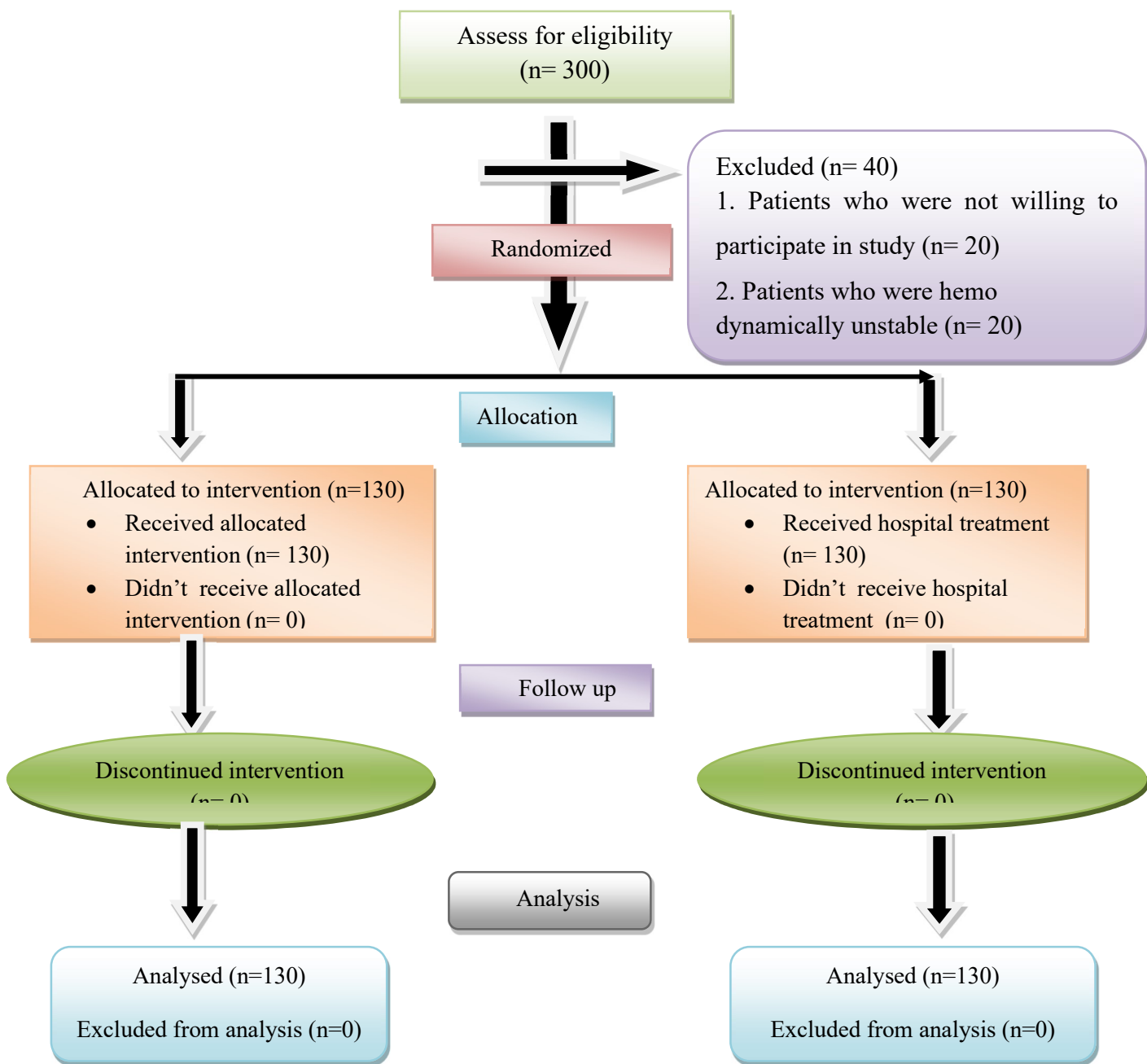


Figure 1: The flowchart for the patient enrolment selection procedure

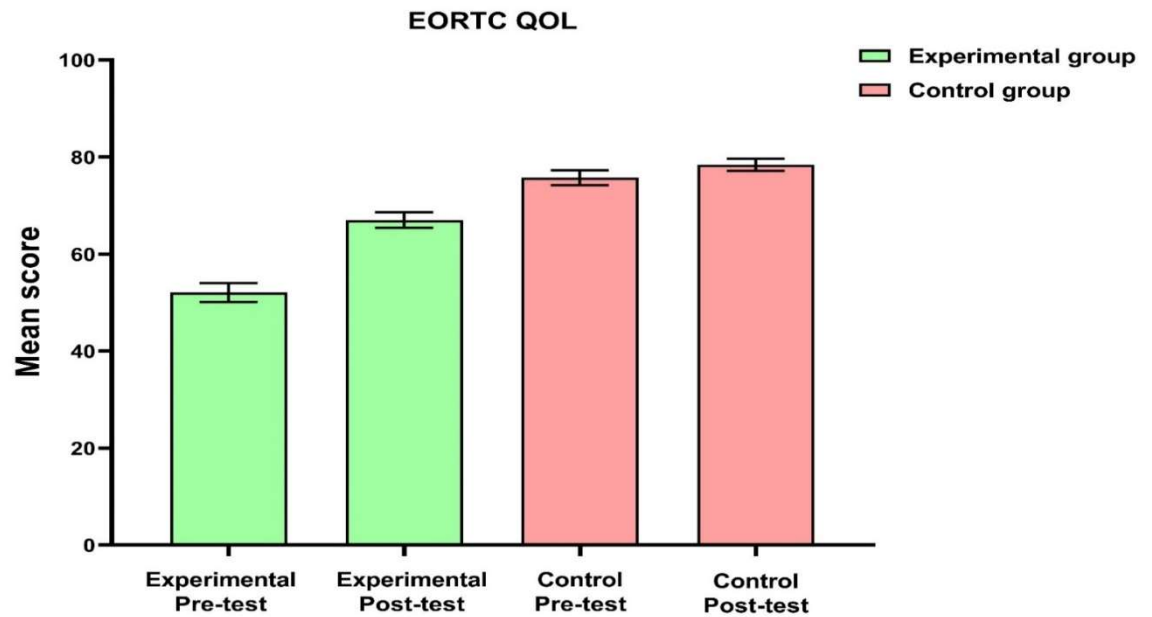


Figure 2: Mean and standard error of mean of EORTC QOL of experimental and control group

Table 1: Socio-demographic and clinical characteristics of the participants (n=260).

Variables	Characteristics	Experimental group (n=130) n (%)	Control group (n=130) n (%)	p-value
Age (Years)	21-30	1 (0.8)	4 (3.1)	0.15
	31-40	12 (9.2)	10 (7.7)	
	41-50	41 (31.5)	26 (20.0)	
	51-60	43 (33.1)	47 (36.2)	
	61-70	33 (25.4)	43 (33.1)	
Gender	Male	75 (57.7)	83 (63.8)	0.30
	Female	55 (42.3)	47 (36.2)	
Religion	Hindu	102 (78.5)	111 (85.4)	0.12
	Muslim	12 (9.2)	4 (3.1)	
	Christian	9 (6.9)	15 (11.5)	
	Others	7 (5.4)	0 (0)	
Educational status	No formal education	20 (15.4)	35 (26.9)	0.10
	Primary	62 (47.7)	47 (36.2)	
	Secondary	46 (35.4)	33 (25.4)	
	Higher secondary	2 (1.5)	9 (6.9)	
	Graduate and above	0 (0)	6 (4.6)	

Occupation	Govt	3 (2.3)	0 (0)	0.06
	Private	17 (13.1)	12 (9.2)	
	Self employed	28 (21.5)	53 (40.8)	
	Daily wager	29 (22.3)	35 (26.9)	
	Unemployed	53 (40.8)	30 (23.1)	
Monthly income (Rs)	≤Rs.10, 000	53 (40.8)	28 (21.5)	0.37
	10, 001-15,000	59 (45.4)	73 (56.2)	
	15, 001-20,000	15 (11.5)	27 (20.8)	
	>20,000	3 (2.3)	2 (1.5)	
Marital status	Single	6 (4.6)	6 (4.6)	0.26
	Married	112 (86.2)	119 (91.5)	
	Widow	9 (6.9)	5 (3.8)	
	Divorced	3 (2.3)	0 (0)	
Types of surgery	Tumor Resection	10 (7.7)	4 (3.1)	0.30
	Micrographic surgery	4 (3.1)	2 (1.5)	
	Glossectomy surgery	28 (21.5)	34 (26.2)	
	Mandibulectomy surgery	66 (50.8)	68 (52.3)	
	Maxillectomy surgery	19 (14.6)	21 (16.2)	
	Neck Dissection	3 (2.3)	1 (0.8)	
Cancer Stage	I	43 (33.1)	58 (44.6)	0.03*
	II	39 (30.0)	42 (32.3)	
	III	33 (25.4)	17 (13.1)	
	IV	15 (11.5)	13 (10.0)	
Tumor metastasis	Yes	47 (36.2)	44 (33.8)	0.60
	No	83 (63.8)	86 (66.2)	
Primary site	Lip	8 (6.2)	10 (7.7)	0.37
	Buccal Mucosa	61 (46.9)	55 (42.3)	
	Hard Palate	4 (3.1)	11 (8.5)	
	Posterior molar Region	4 (3.1)	6 (4.6)	
	Tongue	24 (18.5)	28 (21.5)	
	Floor of mouth	3 (2.3)	3 (2.3)	
	Angle of mouth	5 (3.8)	3 (2.3)	
	Submandibular gland	4 (3.1)	3 (2.3)	
	Base of tongue	4 (3.1)	2 (1.5)	
	Maxilla	3 (2.3)	4 (3.1)	

	Cheek	3 (2.3)	1 (0.8)	
	Alveolus	7 (5.4)	4 (3.1)	

Table 2: Descriptive characteristics of pre and post-test level of quality of life (EORTC) in enrolled patients (n=260).

Variables	Experimental group			Control group		
	Pre test Mean ± SD	Post test Mean ± SD	p- value	Pre test Mean ± SD	Post test Mean ± SD	p- value
Age						
<50 years	65.9 ± 7.9	62.6 ± 8.2	0.04*	67.4 ± 7.7	66.8 ± 7.1	0.10
>50 years	63.1± 8.5	61.1 ± 9.1		71.6 ± 8.2	70.7 ± 8.8	
Gender						
Male	61.5 ± 7.1	60.8 ± 8.3	0.21	70.2 ± 7.4	69.4 ± 8.7	0.15
Female	68.0 ± 7.3	67.7 ± 9.0		69.6 ± 7.8	68.7 ± 9.3	
Educational Status						
No formal education	69.3 ± 6.2	67.7 ± 7.3	0.18	70.7 ± 6.6	69.9 ± 6.9	0.30
Primary	63.2 ± 7.5	62.4 ± 7.1		72.4 ± 7.5	70.5 ± 8.3	
Secondary	63.5 ± 7.3	61.6 ± 7.9		68.6 ± 7.9	67.6 ± 8.4	
Higher secondary	64.0 ± 7.0	64.5 ± 6.3		75.3 ± 8.4	75.7 ± 8.2	
Graduate and above	0	0		54.2 ± 7.1	53.8 ± 7.9	
Occupation						
Govt	57.3 ± 7.6	56.3 ± 8.9	0.09	0	0	0.13
Private	63.0 ± 7.3	61.0 ± 7.7		70.1 ± 5.0	69.2 ± 6.4	
Self employed	64.2 ± 4.7	63.5 ± 5.1		68.3 ± 7.2	66.9 ± 8.7	
Daily wager	60.7 ± 5.4	58.5 ± 6.2		75.0 ± 7.6	74.1 ± 8.4	
Unemployed	67.0 ± 7.3	65.7 ± 8.5		68.1 ± 8.2	67.3 ± 9.2	
Monthly Income						
< Rs. 15000	64.2 ± 7.5	61.9 ± 7.8	0.02*	70.8 ± 8.6	69.4 ± 9.4	0.05*
>Rs. 15000	64.5 ± 8.2	63.8 ± 8.9		68.6 ± 7.5	67.9 ± 8.2	
Marital Status						
Single	64.6 ± 7.1	63.1 ± 8.5	0.11	71.0 ± 9.2	70.6 ± 10.7	0.23
Married	64.0 ± 8.3	62.7 ± 8.9		70.8 ± 7.0	68.7 ± 8.7	
Widow	64.2 ± 9.5	63.7 ± 10.4		68.4 ± 9.6	67.0 ± 11.2	
Divorced	71.0 ± 9.1	70.6 ± 11.2		0	0	

Table 3: Mean and SD of pre and post-test level of quality of life among postoperative patients with oral cancer (n=260).

	Dimension Of Quality of life	Max score	Pre test	Post test	p value
			Mean \pm SD	Mean \pm SD	
Experimental (n=130)	Physical Function	20	12.1 \pm 3.5	11.3 \pm 3.2	0.01*
	Role Function	8	5.7 \pm 1.7	5.5 \pm 1.6	0.19
	Cognitive Function	8	5.8 \pm 1.5	5.6 \pm 1.8	0.14
	Emotional Status	16	10.7 \pm 3.4	9.8 \pm 3.1	0.02*
	Social Functioning	12	7.4 \pm 3.1	6.7 \pm 2.9	0.04*
	General Symptoms (fatigue, nausea/vomiting and pain)	48	22.4 \pm 6.6	21.2 \pm 7.1	0.01*
	Over All	112	64.2 \pm 17.8	62.7 \pm 19.7	<0.01*
Control (n=130)	Physical Function	20	14.3 \pm 3.2	12.9 \pm 3.5	0.01*
	Role Function	8	6.5 \pm 1.6	6.4 \pm 1.7	0.26
	Cognitive Function	8	6.3 \pm 1.8	6.2 \pm 1.7	0.12
	Emotional Status	16	11.8 \pm 3.6	11.8 \pm 3.8	0.49
	Social Functioning	12	8.8 \pm 2.7	9.1 \pm 2.8	0.23
	General Symptoms (fatigue, nausea/vomiting and pain)	48	22.8 \pm 7.8	21.6 \pm 9.8	0.04*
	Over All	112	70.4 \pm 18.3	69.2 \pm 21.3	0.08

Discussion

The main challenge in cancer treatment is not only to eradicate the disease but also to strike a balance between survival and cure while restoring function, appearance, and QOL. In addition to considering a patient's self-perception, quality of health encompasses other aspects of their health (Mahalingam et al., 2021). In recent years, the QOL of patients has been directly associated with the effectiveness of therapeutic methods and therapy. As oral cancers cause more somatic and psychological suffering than other cancers, improving QOL should be

acknowledged as the ultimate goal of treatment. These cancers also negatively impact identity, confidence, self-esteem, and self-image more than less visible malignancies. The will of patients to live longer and have a higher QOL might be negatively impacted by untreated distress (Palitzika et al., 2022).

HRQOL has become an important outcome measure for postoperative oral cancer patients. These days, patients want to be more involved in their healthcare decisions and need to be more informed before giving their consent. The majority of surgeons rarely base

their recommendations on the potential effects of surgery on the patient's quality of life; instead, they often base them on the surgeon's prior clinical experiences (Adeyemo et al., 2012). One of the most important components of the therapeutic approach is evaluating the patient's quality of life following treatment. Immediately following surgery, QOL reduces, mostly as a result of issues with speaking, deglutition, oral secretions, and mastication. As patients come to accept the treatment plan, their quality of life gradually improves. Nonetheless, QOL is not observed to be restored in patients who experienced large volume deficiencies following surgery. However, some research indicates that even in situations when large-volume abnormalities arise, patients' quality of life tends to improve following surgery (Bakshi et al., 2022).

The present study indicated that compared to the control group, the experimental group's quality of life increased significantly following the nursing intervention. For patients with postoperative oral cancer, comprehensive nursing intervention is a successful therapy option that yields noticeable increases in the patients' quality of life, mood, satisfaction, and treatment outcomes. In contrast to conventional nursing, comprehensive nursing systematizes the nursing approach, puts the patient first, delineates the nursing philosophy and duties, provides patients with high-quality, scientifically-based nursing care, and adjusts the "customized" nursing plan to the patient's evolving needs to provide a comfortable nursing service that facilitates the patient's recovery.

The lower the mean scores for the five functional scales (physical, role, emotional, cognitive, and social) and three symptom scales (pain, fatigue, nausea/vomiting), the better the quality of life is. On the other hand, an improved global health status is associated with a higher mean score. Independent t-tests were calculated in our study to look into potential differences in the mean scores on the EORTC QLQ-C30 scale between the two groups. The results demonstrated that almost all QOL subscales, including physical function, role function, cognitive function, emotional status, social functioning, and general symptoms (pain, fatigue,

nausea/vomiting, and so on), had an overall mean score that was significantly lower after the post-test compared to the pre-test and control group, indicating a better quality of life. The mean score for the state of global health, however, was noticeably higher. The complete nursing intervention was found to have a substantial favorable influence on the QOL of postoperative oral cancer patients as compared to both the pre-test and control groups. Previous study also revealed similar findings (Khantwal et al., 2021).

To investigate the relationship between comprehensive nursing interventions and quality of life for various ethnic groups and diseases, more study is necessary. Moreover, given the results of this study, similar interventional studies might be conducted to see whether information on patients' care needs and QOL could be utilized to enhance patients' relationships with family and the community as they receive treatment for oral cancer and recover.

Our study has both strengths and limitations. One of the main strengths was the high percentage of participation. However, there were a few limitations such as the study being confined to a single centre. Furthermore, the researchers were unable to find any comparable studies conducted in India, hence it is advised to replicate the current study in other regions of the country.

Conclusion: In conclusion, a great deal of research has been done on the quality of life of patients with postoperative oral cancer; however, there is a dearth of studies of this type from India that highlight the importance of nursing interventions that have a beneficial effect on these patients. Our study indicates comprehensive nursing intervention increases the quality of life in postoperative oral cancer patients compared to postoperative oral cancer patients with standard hospital treatment. The quality of life for postoperative oral cancer patients who have undergone surgery can be improved by implementing a comprehensive nursing intervention as part of routine practice to reduce functional impairments.

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