

# Effectiveness of Comprehensive Nursing Intervention on Postoperative Fatigue, Anxiety and Quality of Life in Patients with Oral Cancer

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## ABSTRACT

**Background:** Oral cancer and its treatments are linked to several common psychosocial symptoms, such as cancer-related fatigue and anxiety, which affect quality of life.

**Aim:** The study sought to assess the effectiveness of comprehensive nursing intervention on postoperative fatigue, anxiety, and quality of life in patients with oral cancer.

**Methods:** We investigated the level of fatigue, anxiety, and quality of life of 180 postoperative oral cancer patients who were randomized into 90 experimental and 90 control groups. Following the nursing intervention, multidimensional fatigue inventory (MFI-20), Beck anxiety inventory (BAI) scale, and the European Organization for Research and Treatment of Cancer (EORTC QLQ-C30) tools were used to assess the level of fatigue, anxiety, and quality of life, respectively.

**Results:** The study included 180 participants, with 61.7% males and 38.3% females. Significant reductions in general, physical, and mental fatigue were observed in the experimental group ( $p < 0.01$ ), along with improvements in role function, cognitive function, emotional status, social functioning, and overall quality of life ( $p < 0.05$ ). The only significant differences observed in the control group were reduced activity and general symptoms. Post-intervention, the experimental group showed marked improvements in fatigue, anxiety, and quality of life.

**Conclusions:** This research highlights the significant impact of comprehensive nursing interventions in alleviating postoperative fatigue and anxiety while improving the quality of life in postoperative oral cancer patients. It is suggested that such interventions be implemented to help oral cancer patients deal with the temporary deterioration that occurs following surgery.

**Keywords:** Oral cancer, postoperative patients, fatigue, anxiety, quality of life.

## ARTICLE INFORMATION

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## INTRODUCTION

One common head and neck cancer (HNC) that starts in the oral mucosa is called oral cavity squamous cell carcinoma (OSCC). According to the Global Cancer Observatory (GCO), an estimated 377,713 new cases of OSCC were reported worldwide in 2020, with the largest proportion occurring in Asia.<sup>[1]</sup> Because of this, it is listed as one of the most aggressive malignant tumours because of its propensity to metastasize and high recidivism rate. While oral cavity tumours have a death rate of about 1.94 per 100,000 people, the global burden of OSCC is 3.90 per 100,000.<sup>[2]</sup> A variety of risk factors have been associated with HNSCC, with alcohol and tobacco consumption together contributing to roughly 70–80% of cases. Additionally, recent research identifies the human papillomavirus (HPV) as an independent risk factor for OSCC. Furthermore, chewing betel quid increases the risk of OSCC in numerous Southeast Asian nations, including India, Taiwan, and Sri Lanka.<sup>[3]</sup> GLOBOCAN 2020 data indicates that head and neck cancers represent 28% of all cancer cases among men and 7% among women in India. The north-eastern part of India had the greatest frequency of HNC in both males and females. In India, tongue and mouth cancer is a frequently occurring HNC that affects people of all genders.<sup>[4]</sup>

Surgery is still the first line of treatment for mouth cancer in many countries. Visible and significant functional deficits are frequently the result of oral cancer surgery. Surgical treatment for oral cancer often has a profound impact on patients' quality of life (QOL), affecting their physical appearance, along with essential functions such as speech, eating, and swallowing.<sup>[5]</sup> Clinically relevant fatigue was reported by one in four cancer patients receiving oral treatment; this is linked to lower QOL, increased anxiety, and depressive symptoms.<sup>[6]</sup> With the growing recognition of mental health's role in cancer recovery, addressing anxiety and depression has become an increasing challenge for healthcare providers. It is crucial to investigate the psychosocial factors that contribute to anxiety and depressive symptoms to provide crucial psychological support and a better QOL.<sup>[7]</sup> The rate of oral cancer has increased aggressively in recent years, and more sophisticated methods have emerged to help treat the disease while maintaining the patient's quality of life. Therefore, reliable assessments are essential to understanding the rationale behind selecting and customizing particular nursing interventions based on patient needs.

Implementing structured postoperative education significantly aids in reducing fatigue, shortening hospital stays, and minimizing complications, ultimately enhancing the patient's recovery and overall quality of life. Therefore, it is necessary to provide a proper, comprehensive nursing intervention during treatment. By doing so, good nurse-patient relationships should be established. The utilization of comprehensive nursing in patients diagnosed with

OSCC is impressive. It has the potential to enhance the patients' appearance and disease prognosis, reduce surgical complications, and relieve their anxiety levels, all while increasing patient satisfaction rates.<sup>[8]</sup>

Although a great deal of research has been done on the quality of life of patients with HNC, there is a dearth of reports that describe the fatigue, anxiety, and QOL of postoperative patients with oral cancer in India. As far as we are aware, this is the first research of its sort that examines fatigue, anxiety, and QOL in postoperative oral cancer patients following nursing intervention. The study sought to assess the effectiveness of comprehensive nursing intervention on postoperative fatigue, anxiety and quality of life in patients with oral cancer.

## MATERIALS AND METHODS

### Study Design and Setting

Between September 2022 and February 2024, a total of 180 patients (111 males and 69 females) with oral cancer who had been diagnosed with stage I to IV OSCC and underwent surgery were enrolled in this prospective cohort study. The present study was conducted at Atal Bihari Vajpayee Regional Cancer Centre, Agartala, Tripura, India according to the Declaration of Helsinki, and this research was approved by the Institutional Review Board of Desh Bhagat University, Punjab, India (DBU/RC/2023/2338) (Figure 1). An interventional study was performed to assess the fatigue, anxiety, and quality of life among post-operative oral cancer patients. Figure 2 shows the flowchart that illustrates the selection process for patient enrollment.

### Participants and Procedures

All hospitalized patients were randomized to 1) 90 in the experimental group who received a comprehensive nursing intervention, and 2) 90 in the control group, who received routine nursing (standard care). A pathological investigation identified oral cancer in the eligible participants. Patients had to meet four requirements in order to be considered for inclusion: 1) they had to be older than eighteen, 2) they had to be scheduled for surgery, 3) they had to be able to understand Bengali, 4) they had to be eager to participate, and 5) they had to be able to give informed permission. Individuals were not eligible if they had any of the following conditions: (1) additional malignancies and distant metastases; (2) recurring cancers of the head and neck; (3) surgical refusal; and (4) complications from subsequent surgeries, such as vascular crises of free flaps. Questionnaires were used to collect self-reported medical and demographic information from all enrolled cancer patients.

### Demographics and clinical characteristics

Age, gender, religion, educational status, occupation, monthly income, marital status, types of surgery, cancer stage, tumor metastasis, and primary site were among the variables used to characterize the participants.

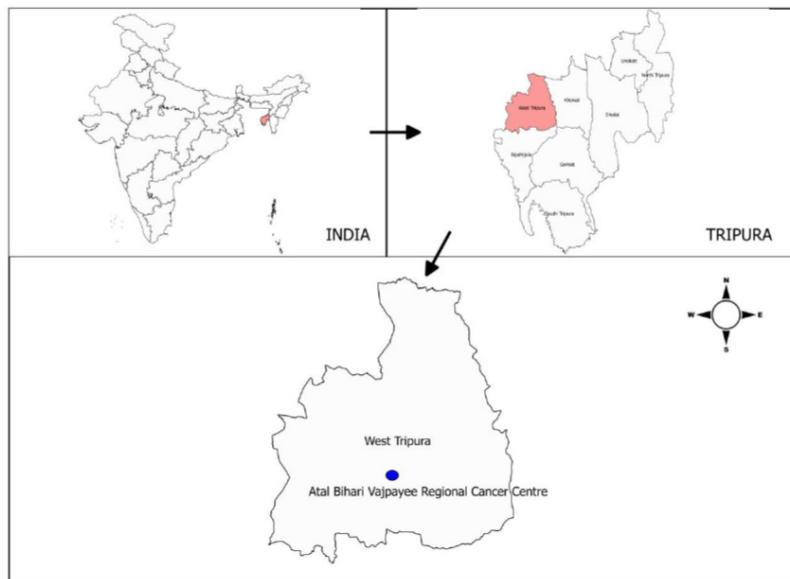


Figure 1. Study area site in Tripura, India

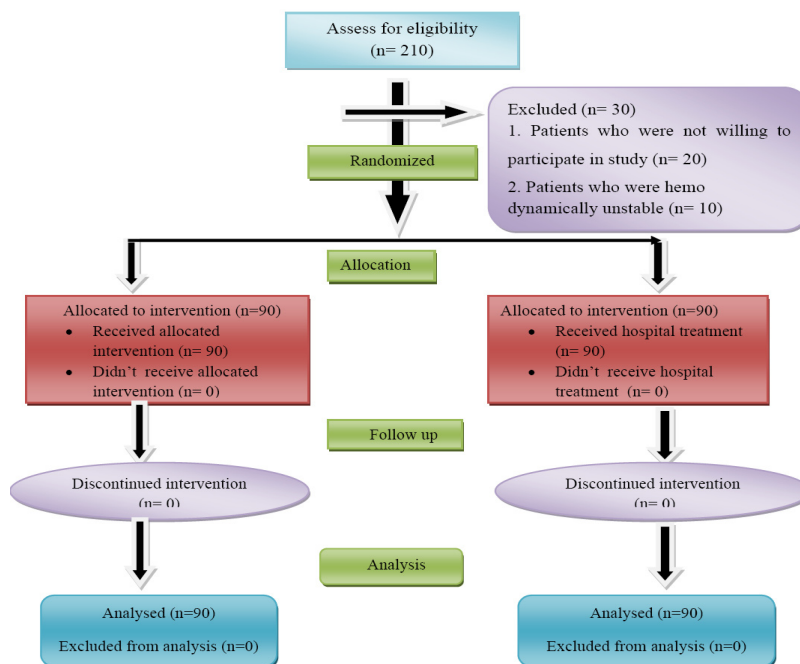


Figure 2. Flowchart showing the selection process of patient enrolment

### Comprehensive Nursing Intervention

In addition to providing educational support on the use of thyme honey, dental care, and counselling among postoperative patients with oral cancer, the comprehensive nursing intervention also involves helping with relaxation techniques, mouth opening exercises, active and passive range of motion, stretching exercises, maintaining good posture, chin tucks, and shoulder blade squeezes by research personnel. For the experimental group, a PowerPoint presentation and video were used to accomplish this. The control group was asked to follow the hospital's standard treatment, while the nursing intervention was given for 10–15 minutes and the educational intervention for 30 minutes. It was followed 9–10 times a day for 5 days in a row, and the patient practiced exercise when it was necessary.

### Assessment of fatigue

A 20-item self-report questionnaire called the Multidimensional Fatigue Inventory (MFI-20), was used as a study tool to measure the level of fatigue among the patients who were enrolled. It comprises five subscales: general fatigue, physical fatigue, reduced activity, reduced motivation, and mental fatigue. Each question has a 5-point Likert scale response. From 0 (no fatigue) to 100 (the maximum level of fatigue), all ratings were transformed linearly. When a response was received for at least half of the items, the scores for each subscale were calculated.

### Assessment of Anxiety

The Beck Anxiety Inventory (BAI) Scale was used to assess the degree of anxiety symptoms among the patients who were enrolled. The BAI is a self-report scale that typically

has 21 items with a score ranging from 0 to 3. Each patient’s overall score varies from 0 to 63 points. Here, a higher overall score indicates more severe symptoms of anxiety in the patients. According to our research, anxiety symptoms were classified as minimal if the score range was between 0 and 7, mild if it was between 8 and 15, moderate if it was between 16 and 25, and severe if it was between 26 and 63.

**Assessment of QOL**

Questionnaires developed by the European Organization for Research and Treatment of Cancer (EORTC QLQ-C30) Quality of Life Group were used in the current study to assess the QOL. It is composed of 30 questionnaires that include a global quality of life scale, eight symptom dimensions to measure fatigue, nausea and vomiting, pain, dyspnea, sleeplessness, appetite loss, constipation, and diarrhea, and five functional dimensions to assess physical, emotional, role, cognitive, and social functioning. The validated questionnaire is one of the most popular tools designed specifically for cancer research.

**Statistical Analyses**

Data analysis was conducted using version 25 of the Statistical Package for Social Sciences (SPSS). Calculations were made for the variables’ percentages and frequency distribution. Continuous variables were calculated as the mean with a standard deviation (SD). Using Fisher’s exact test or Chi-square analysis, descriptive data were analyzed. To examine the data, Wilcoxon’s test and an independent t-test were performed. For every analysis, a p-value of less than 0.05 was deemed statistically significant.

**RESULTS**

The socio-demographic and clinical characteristics of the experimental and control groups are described in Table 1. This study included a total of 180 participants, equally divided into the experimental and control group. Of these

participants, 61.7% (n = 111, 95% CI: 54.1 - 68.7) and 38.3% (n = 69, 95% CI: 31.2 – 45.8) were male and female for each group, respectively. In the experimental group, most participants were aged 41-50 years (36.7%), while the control group had the majority aged 31-40 years (57.8%). Most participants in both groups were Hindus in both the groups. About 48.9% of the experimental group had received primary education, compared to 36.7% in the control. The level of fatigue in the experimental group showed significant reductions in general fatigue (mean ± SD: 12.4 ± 4.5 to 11.1 ± 4.6, p<0.01), physical fatigue (13.2 ± 4.0 to 12.0 ± 4.4, p<0.01), and mental fatigue (13.2 ± 4.0 to 11.5 ± 4.7, p=0.01), with an overall fatigue decrease from 64.5 ± 15.0 to 59.7 ± 16.7 (p<0.01) (Table 2). In the control group, only reduced activity showed a significant decrease (14.9 ± 2.4 to 13.5 ± 3.1, p=0.03), with no significant changes in overall fatigue (70.5 ± 12.1 to 69.6 ± 13.2, p=0.06).

The degree of anxiety among the experimental group had the pre-test score (mean ± SD: 29.7 ± 7.5) showed no significant change post-test (29.2 ± 6.9, p=0.10). Similarly, in the control group, the pre-test score (31.4 ± 5.4) did not change significantly post-test (31.1 ± 6.2, p=0.31). Thus, no significant differences were observed in either group (Table 3). QOL assessments showed significant improvements in role function (mean ± SD: 5.8 ± 1.6 to 5.3 ± 1.4, p=0.01), cognitive function (5.7 ± 1.7 to 5.4 ± 1.9, p=0.05), emotional status (11.1 ± 3.3 to 10.3 ± 3.0, p=0.02), social functioning (7.6 ± 3.3 to 6.5 ± 3.4, p=0.01), and overall quality of life (69.7 ± 15.4 to 66.9 ± 14.1, p=0.03) in the experimental group (Table 4). However, in the control group, only general symptoms showed a significant reduction (25.3 ± 3.6 to 24.2 ± 4.8, p=0.03), without causing any significant changes to other categories. After the nursing intervention, the experimental group experienced a remarkable decrease in fatigue, anxiety and their quality of life than that of the control group.

**Table 1.** Socio-demographic and clinical characteristics of the participants (n=180).

Variables	Characteristics	Experimental group (n=90)	Control group (n=90)	p-value
		n (%)	n (%)	
Age (Years)	21-30	0	19 (21.1)	<0.01*
	31-40	7 (7.8)	52 (57.8)	
	41-50	33 (36.7)	17 (18.9)	
	51-60	27 (30.0)	2 (2.2)	
	61-70	23 (25.6)	0	
Gender	Male	53 (58.9)	58 (64.4)	0.44
	Female	37 (41.1)	32 (35.6)	
Religion	Hindu	72 (80.0)	76 (84.4)	0.14
	Muslim	9 (10.0)	6 (6.7)	
	Christian	5 (5.6)	8 (8.9)	
	Others	4 (4.4)	0	

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Educational status	No formal education	16 (17.8)	25 (27.8)	0.2
	Primary	44 (48.9)	33 (36.7)	
	Secondary	30 (33.3)	26 (28.9)	
	Higher secondary	0	6 (6.7)	
	Graduate and above	0	0	
Occupation	Govt	2 (2.2)	0	0.02*
	Private	12 (13.3)	8 (8.9)	
	Self employed	18 (20.0)	31 (34.4)	
	Daily wager	18 (20.0)	26 (28.9)	
	Unemployed	40 (44.4)	25 (27.8)	
Monthly income (Rs)	≤Rs.10, 000	42 (46.7)	19 (21.1)	<0.01*
	10, 001-15,000	42 (46.7)	52 (57.8)	
	15, 001-20,000	4 (4.4)	17 (18.9)	
	>20,000	2 (2.2)	2 (2.2)	
Marital status	Single	5 (5.6)	4 (4.4)	0.5
	Married	79 (87.8)	83 (92.2)	
	Widow	4 (4.4)	3 (3.3)	
	Divorced	2 (2.2)	0	
Types of surgery	Tumor Resection	5 (5.6)	3 (3.3)	0.88
	Micrographic surgery	3 (3.3)	1 (1.1)	
	Glossectomy surgery	17 (18.9)	19 (21.1)	
	Mandibulectomy surgery	47 (52.2)	50 (55.6)	
	Maxillectomy surgery	17 (18.9)	16 (17.8)	
	Neck Dissection	1 (1.1)	1 (1.1)	
Cancer Stage	I	20 (22.2)	51 (56.7)	<0.01*
	II	26 (28.9)	24 (26.7)	
	III	27 (30.0)	6 (6.7)	
	IV	17 (18.9)	9 (10.0)	
Tumor metastasis	Yes	37 (41.1)	24 (26.7)	0.04*
	No	53 (58.9)	66 (73.3)	
Primary site	Lip	8 (8.9)	5 (5.6)	0.3
	Buccal Side	57 (63.3)	47 (52.2)	
	Hard Palate	3 (3.3)	3 (3.3)	
	Posterior molar Region	2 (2.2)	3 (3.3)	
	Tongue	11 (12.2)	15 (16.7)	
	Floor of mouth	0	4 (4.4)	
	Angle of mouth	4 (4.4)	1 (1.1)	
	Submandibular gland	1 (1.1)	2 (2.2)	
	Base of tongue	3 (3.3)	4 (4.4)	
	Maxilla	0	1 (1.1)	
	Cheek	0	2 (2.2)	
	Alveolus	1 (1.1)	3 (3.3)	

**Table 2.** Mean and SD of pre test and post test level of fatigue among postoperative patients with oral cancer (n=180).

Groups	Domains Of Fatigue	Max score	Pre test	Post test	Wilcoxon's Test	
			Mean ± SD	Mean ± SD	Z value	p value
Experimental Group (n=90)	General Fatigue	20	12.4 ± 4.5	11.1 ± 4.6	-3.5	<0.01*
	Physical Fatigue	20	13.2 ± 4.0	12.0 ± 4.4	-4.2	<0.01*
	Reduced Activity	20	11.8 ± 3.7	11.6 ± 4.6	-1.3	0.29
	Reduced Motivation	20	12.7 ± 3.1	12.3 ± 4.7	-1.7	0.12
	Mental Fatigue	20	13.2 ± 4.0	11.5 ± 4.7	-2.5	0.01*
	Overall	100	64.5 ± 15.0	59.7 ± 16.7	-3.9	<0.01*
Control Group (n=90)	General Fatigue	20	14.9 ± 2.9	14.3 ± 2.7	-1.6	0.21
	Physical Fatigue	20	14.3 ± 2.7	14.0 ± 2.8	-1.7	0.17
	Reduced Activity	20	14.9 ± 2.4	13.5 ± 3.1	-2.7	0.03*
	Reduced Motivation	20	13.2 ± 2.8	12.7 ± 2.9	-1.9	0.09
	Mental Fatigue	20	13.2 ± 2.5	13.3 ± 3.0	-1.2	0.33
	Overall	100	70.5 ± 12.1	69.6 ± 13.2	-2.1	0.06

**Table 3.** Mean and SD of pre test and post test level of anxiety among postoperative patients with oral cancer (n=180)

Sl. no.	Groups	Max score	Pre test	Post test	Wilcoxon's Test	
			Mean ± SD	Mean ± SD	Z value	P value
1	Experimental Group (n=90)	63	29.7 ± 7.5	29.2 ± 6.9	-1.8	0.10
2	Control Group (n=90)	63	31.4 ± 5.4	31.1 ± 6.2	-1.2	0.31

**Table 4.** Mean and SD of pre and post-test level of quality of life among postoperative patients with oral cancer (n=180).

	Dimension Of Quality of life	Max score	Pre test	Post test	Wilcoxon's Test	
			Mean ± SD	Mean ± SD	Z value	P value
Experimental (n=90)	Functional Scale	20	13.4 ± 4.4	13.2 ± 4.1	-1.1	0.39
	Role Function	8	5.8 ± 1.6	5.3 ± 1.4	-2.5	0.01*
	General Symptoms	48	25.5 ± 7.3	25.4 ± 7.6	-1.3	0.23
	Cognitive Function	8	5.7 ± 1.7	5.4 ± 1.9	-1.9	0.05*
	Emotional Status	16	11.1 ± 3.3	10.3 ± 3.0	-2.5	0.02*
	Social Functioning	12	7.6 ± 3.3	6.5 ± 3.4	-2.8	0.01*
	Over All	112	69.7 ± 15.4	66.9 ± 14.1	-2.4	0.03*
	Over All Global Health Status	14	9.4 ± 1.4	9.2 ± 1.6	-1.4	0.09
Control (n=90)	Functional Scale	20	15.5 ± 2.4	15.1 ± 2.3	-1.2	0.26
	Role Function	8	5.9 ± 1.4	6.2 ± 1.5	-1.4	0.14
	General Symptoms	48	25.3 ± 3.6	24.2 ± 4.8	-2.2	0.03*
	Cognitive Function	8	6.3 ± 1.7	6.3 ± 1.5	-1.1	0.27
	Emotional Status	16	11.3 ± 2.9	11.2 ± 2.7	-1.2	0.34
	Social Functioning	12	9.0 ± 2.4	9.3 ± 1.9	-1.7	0.13
	Over All	112	74.5 ± 11.9	74.0 ± 12.5	-1.6	0.19
	Over All Global Health Status	14	7.6 ± 1.3	7.4 ± 1.6	-1.5	0.24

## DISCUSSION

Due to the arduous nature of the therapy and the uncertainty surrounding the prognosis, cancer causes profound psychological shock and anxiety. Patients may experience post-traumatic stress disorder (PTSD) like symptoms which interferes with patient functioning.<sup>[9]</sup> As per the guidelines established by the National Comprehensive Cancer Network, despite having numerous treatment options, surgery is considered the standard treatment

for oral cancer. Nevertheless, surgery results in severe bleeding is time-consuming, and impairs oral functioning.<sup>[10]</sup> The degree of tissue damage and the necessary reconstructions are determined by the cancer stage, which is typically correlated with the surgical site's expansion. Complicating surgical procedures makes patients more fatigued, which reduces their quality of life and raises the possibility of emotional issues like depression and anxiety. Surgical wounds, the stress of the disease, and the

interventions are the causes of these postoperative physical and psychological issues.<sup>[11]</sup>

Prior research has indicated a relationship between fatigue and psychological distress, including depression, somatization, anxiety, and poor sleep quality.<sup>[12]</sup> During this time, patients are particularly vulnerable since their new requirements are directly related to their changed circumstances. Psychological symptoms and syndromes, particularly anxiety, depression, and fatigue, are common, especially in HNC patients. The absence of appropriate assessment for psychological problems, including anxiety and fatigue, has been associated with increased mortality and a significantly worse QOL.<sup>[13]</sup>

As per the conventional perspective, bed rest following surgery is essential to minimize oxygen use, relieve pain, and facilitate the healing of wounds. Nevertheless, several studies have revealed that bed rest following surgery has numerous negative effects, including reduced insulin sensitivity, atelectasis, diminished capacity for activity, muscular atrophy, loss of bone, thrombotic disease, microvascular dysfunction, stress injury, and more.<sup>[14]</sup> Based on biological reactions, Moore has divided postoperative recovery into four phases: the injury phase, the turning point phase, the muscle strength phase, and the fat gain phase. The third day following surgery is included in the turning point phase. During the turning point phase, the patient's biological response returns to normal on a daily basis, and they become more interested and active in their environment. As a result, the patient's physical and mental state changes on the third postoperative day. Consequently, it is critical to assess mental as well as physiological indications throughout the turning point period.<sup>[15]</sup>

Studies have also revealed that patients' quality of life deteriorated when evaluated immediately following surgery but improved over time when evaluated at longer intervals, such as six months or more.<sup>[16]</sup> Anxiety may exacerbate cancer-related fatigue (CRF) by disrupting the hypothalamic-pituitary-adrenal (HPA) axis, which elevates cytokine production and subsequent fatigue. Even though certain interventions have been demonstrated to be successful in reducing fatigue, more focused, refined, and effective interventions are required to address postoperative symptoms. Knowing when substantial fatigue occurs, which symptom domains are most affected, and who is most at risk for fatigue can assist in identifying underlying physiologic mechanisms and devising effective interventions at the right times.<sup>[17]</sup> One important intervention model that emphasizes the need of providing cancer patients with clinical nursing care is clinical nursing. The reduction of anxiety and fatigue and the monitoring of potential problems are enhanced by the appropriate care that nurses provide. Comprehensive nursing is a preferable technique to improve clinical symptoms, thereby optimizing the QOL of cancer patients.<sup>[18]</sup>

Self-esteem is a major factor in determining the quality of life following surgical operations that result in physical abnormalities related to cancer therapy. Patients suffering from head and neck cancer may encounter difficulties with their self-perception and experience a loss of self-confidence; these patients may also have a lower quality of life due to the morphologic changes to their heads and necks that result from surgery and are more prone to experiencing psychological and physical distress.<sup>[15]</sup>

A key factor in determining whether patients can successfully experience positive outcomes is the standardization of nursing advice and intervention following surgery. In our study, the results indicated that following the comprehensive nursing intervention, the overall fatigue and anxiety significantly reduced compared to the control group, whereas the QOL significantly increased. Several studies have revealed the significance of nursing interventions to reduce fatigue<sup>[19]</sup> and anxiety.<sup>[20]</sup> Nevertheless, few research have been conducted reporting the impact of nursing interventions on postoperative oral cancer patients. Our study indicated the significance of comprehensive nursing intervention to alleviate fatigue and anxiety following surgery in patients with oral cancer. Earlier studies reported the importance of nursing intervention to increase QOL in postoperative oral cancer patients.<sup>[21]</sup> However, there is a dearth of studies from India reporting the same. Our study revealed that when comparing postoperative oral cancer patients' QOL to both the pre-test and control groups, the comprehensive nursing intervention was found to have a significant positive impact.

It's critical to evaluate the degree of fatigue, anxiety, and overall quality of life in patients with oral cancer following surgery. A thorough nursing intervention following surgery for patients with oral cancer can be more effective in reducing patients' fatigue and anxiety levels, in addition to raising patients' contentment with nursing care and quality of life. In addition to developing a standard protocol or clinical practice guidelines for oral care, we recommend that nurses receive professional development to equip them with the knowledge and skills necessary for caring for postoperative patients with oral cancer. More research is needed to investigate the association between immediate postoperative fatigue, anxiety, and QOL and the progression of fatigue, anxiety, and QOL during the period after the oral surgery.

A few of the study's strengths are its large sample size, high participation rate, and non-competitive recruiting process. A further strength was the application of validated questionnaires to measure fatigue, anxiety, and QOL.

### Limitations

However, the study has some limitations. The research was limited to one single centre. The duration of follow-up was five days, which could have an impact on the

outcomes. Treatment groups might not be representative of all cancer patients, particularly those whose disease is more advanced. Furthermore, since the researchers were unable to find any similar studies conducted in India for comparison, it is advised that the current study be repeated in other regions of the country because patient QOL and psychological distress may differ depending on lifestyle and support options.

## CONCLUSION

The nursing intervention indicated a significant decrease in postoperative fatigue and anxiety levels, while quality of life was significantly increased in the experimental group. Relaxation techniques were reported to have improved patients' jaw activities significantly, which in turn was said to have greatly contributed to an enhanced quality of life in the experimental group. Therefore, it is crucial to incorporate these nursing interventions into clinical practice to reduce fatigue and anxiety levels and enhance patients' quality of life and knowledge while also mitigating a range of symptoms and adverse consequences associated with cancer and its treatment. More research is required to explore the impacts of this relationship on postoperative oral cancer patients.

The implications that the researcher has identified are critical to the domains of nursing education, nursing practice, nursing administration, and nursing research. Nurses and other healthcare professionals can participate in evidence-based, practice-based staff development programs to assess their needs. Educational institutions can organize workshops, symposiums, and skill labs to address fatigue, anxiety, and quality of life management. Funds should be made available by nurse administrators to maintain appropriate workspaces and a positive workplace atmosphere, as well as to strengthen hospital policies. Replication of the study allows for the generalization of the research findings. The efficient application of research findings will be facilitated by the publication of findings through professional journals and the internet.

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