

Evaluation of Postoperative Psychological Distress and Its Driving Factors in Patients with Oral and Maxillofacial Malignant Tumors

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Abstract: *Objective:* To explore and analyze the evaluation and driving factors of postoperative psychological pain in patients with oral and maxillofacial malignant tumors. *Methods:* Relevant data were collected from 80 patients with oral and maxillofacial malignant tumors who attended the outpatient clinic for follow-up consultations between May 2021 to May 2023. The patients used the psychological distress thermometer (DT) to circle words that best described their experiences in the past week, assigning a numerical value (0–10) to indicate their pain level on each day. The scoring results were employed to assess the psychological pain in these patients. A self-developed patient basic information questionnaire was utilized to record demographic details. Logistic regression analysis was employed to evaluate patients two weeks after surgery, focusing on the assessment of psychological distress and the identification and location of driving factors. *Results:* Following evaluation, the results revealed that the average postoperative DT score for the 80 patients with oral and maxillofacial malignant tumors was 4.53 ± 1.98 points. Scores < 4 points indicated no psychological pain (Group N) in 48 cases, while scores ≥ 4 points indicated psychological pain (Group Y) in 32 cases. The differences in postoperative DT scores among patients with varying educational levels, fears and worries about disease progression, economic problems, sleep problems, level of hope, and oral pain were statistically significant ($P < 0.05$). Multiple linear regression analysis results indicated that education level, fear and worry about disease progression, economic problems, sleep problems, level of hope, and oral pain are driving factors of postoperative psychological pain in patients with oral and maxillofacial malignant tumors ($P < 0.05$). *Conclusion:* The postoperative psychological pain level in patients with oral and maxillofacial malignant tumors is at a moderate level. Educational level, fear and worry about disease progression, economic problems, sleep problems, level of hope, and oral pain were identified as driving factors for postoperative psychological pain in these patients.

Keywords: Oral and maxillofacial malignant tumors; Psychological pain; Driving factors; Regression analysis

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1. Introduction

Many patients with malignancies endure pain, significantly impacting their quality of life and the effectiveness

of malignancy treatment. Despite its controllability, pain in these patients is often overlooked and underreported. It can manifest at any stage of malignancy treatment, contributing to depression, anxiety, missed appointments, and unfavorable outcomes ^[1]. In 1999, the National Comprehensive Cancer Network (NCCN) recommended routine distress screening for all cancer patients. The Psychological Distress Thermometer (DT) is a simple yet effective tool for screening anxiety symptoms. Utilizing a self-report instrument on a 0 to 10 rating scale, it prompts patients to identify sources of distress through a list of questions. The DT has demonstrated reliability and has been translated into numerous languages. Its ease of administration empowers clinicians to facilitate appropriate psychosocial support and referrals.

Oral and maxillofacial tumors constitute a significant aspect of head and neck tumors, encompassing cysts, benign tumors, tumor-like lesions, and malignant tumors. Alongside evident local tumors, patients may experience pain, local skin bleeding, ulcers, and other symptoms, with common types including tongue cancer, gum cancer, buccal malignant tumors, palate cancer, and floor of mouth cancer. ^[1] Studies indicate that the primary treatment for oral and maxillofacial malignant tumors remains surgical resection, with radical surgical resection recommended for patients in early, middle, and advanced stages ^[2]. When combined with other treatments, this approach significantly increases the chances of curing the disease. However, due to the influence of certain driving factors, patients may experience postoperative psychological pain, subsequently affecting the postoperative recovery of those with oral and maxillofacial malignant tumors.

Postoperative oral pain represents the subjective experience of patients with neurological reactions. While it can alleviate mental stress and mitigate negative emotions such as depression, anxiety, and sadness, it also has the potential to induce psychological pain in patients ^[3]. This study collected relevant data from 80 patients with oral and maxillofacial malignant tumors who attended The First Affiliated Hospital of Sun Yat-sen University for follow-up consultation between May 2021 and May 2023. The aim was to explore the evaluation and driving factors of postoperative psychological pain in patients with oral and maxillofacial malignant tumors.

2. Materials and methods

2.1. General information

Data from 80 patients with oral and maxillofacial malignant tumors who attended the hospital for follow-up consultation between May 2021 and May 2023 were collected. The cohort comprised 47 male and 33 female patients, with an average age of 53.27 ± 4.06 years. All participants were well-informed about the study details and had a clear understanding of its key points. Ethical approval was obtained from the Ethics Committee of the hospital. Pathological types included gingival cancer, malignant tumors of the lower soft palate, tongue cancer, floor of mouth cancer, facial skin malignant tumors, maxillary and palate tumors, fibrosarcoma, buccal malignant tumors, etc.

Inclusion criteria included patients who were pathologically diagnosed with oral and maxillofacial malignant tumors post-surgery, met surgical indications, possessed normal communication and communication skills, and demonstrated good compliance with complete information. Exclusion criteria included patients with other severe malignant tumors, recent severe internal trauma, or mental disorders.

2.2. Method

The psychological distress level of patients was assessed using the DT, recommended by NCCN as a screening tool for investigating patients' psychological status ^[4]. The scale covered psychological, social, spiritual, and other essentially unpleasant emotional experiences, including practical problems, communication problems, emotional problems, physical problems, and faith/religious problems. The DT is a visual analog scale ranging

from 0 to 10 points, where 0 indicates no pain and 10 indicates extreme pain. Higher scores indicate more severe psychological pain, with a score of ≥ 4 points generally considered indicative of psychological pain.

The patient's basic information questionnaire included details on gender, age, education level, fears and worries about disease progression, financial problems, sleep problems, level of hope, and severity of oral pain.

2.3. Statistical analysis

Data analysis was conducted using SPSS 26.0 software. Count data were expressed as rates using the χ^2 test. Measurement data were represented as mean \pm standard deviation (SD), and the *t*-test was employed. Driving factors of postoperative psychological distress in patients with oral and maxillofacial malignant tumors were examined through multiple linear regression analysis. A significance level of $P < 0.05$ was considered statistically significant.

3. Results

3.1. Assessment of the current status of postoperative psychological distress in patients with oral and maxillofacial malignant tumors

Upon evaluation, the average postoperative DT score of 80 patients with oral and maxillofacial malignant tumors was 4.53 ± 1.98 points. A score < 4 points indicated no psychological pain (N group), with 48 cases (60%), while a score ≥ 4 points indicated psychological pain (Group Y), with 32 cases (40%), and the difference between the two groups was statistically significant ($P < 0.05$; **Table 1**).

Table 1. Postoperative psychological distress level of patients with oral and maxillofacial malignant tumors (mean \pm SD, points)

Group	<i>n</i>	DT score
Group N	48	2.85 ± 0.96
Group Y	32	6.07 ± 1.34
<i>t</i> value		8.953
<i>P</i> value		0.002

3.2. Assessment of postoperative psychological distress in patients with oral and maxillofacial malignant tumors with different characteristics

DT scores among patients with oral and maxillofacial malignant tumors varied based on different characteristics, including educational levels, fears and worries about disease progression, economic problems, sleep problems, level of hope, and oral pain. Specifically, patients with high school education and below exhibited higher DT scores than college graduates and above. Those with fear and worry about disease progression, financial problems, and sleep problems had higher DT scores than those without such concerns. Patients with lower levels of hope demonstrated higher DT scores than those with optimistic hope levels. Furthermore, individuals experiencing moderate to severe oral pain had higher DT scores than those with mild pain. The differences were statistically significant ($P < 0.05$; **Table 2**).

3.3. Regression analysis of driving factors of postoperative psychological pain in patients with oral and maxillofacial malignant tumors

Using the status of postoperative psychological pain as the dependent variable, further multiple linear regression analysis revealed that education level, fear and worry about disease progression, economic problems, sleep

problems, level of hope, and oral pain were significant factors influencing postoperative psychological pains in patients with oral and maxillofacial malignant tumors ($P < 0.05$; **Table 3**).

Table 2. Evaluation of postoperative psychological distress in patients with oral and maxillofacial malignant tumors with different characteristics (mean \pm SD, points)

Index	<i>n</i>	DT score	<i>t</i> value	<i>P</i> value
Gender			1.162	0.783
Male	47	4.56 \pm 1.92		
Female	33	4.51 \pm 1.93		
Age			1.953	0.476
\geq 60 years old	29	4.46 \pm 2.01		
< 60 years old	51	4.58 \pm 1.97		
Education level			7.382	0.004
High school and below	41	5.04 \pm 2.07		
College degree and above	39	4.12 \pm 1.76		
Fear and worry about disease progression			9.475	0.000
Have	34	5.89 \pm 1.95		
None	46	4.26 \pm 1.83		
Economic issues			7.813	0.003
Have	38	5.12 \pm 2.09		
None	42	4.06 \pm 1.91		
Sleep problems			9.085	0.001
Have	40	5.38 \pm 1.96		
None	40	3.97 \pm 1.72		
Hope level			10.154	0.000
Low	39	5.59 \pm 2.05		
Good	41	3.75 \pm 1.82		
Mouth pain			15.926	0.000
Moderate to severe	35	6.06 \pm 1.67		
Mild	45	3.68 \pm 1.85		

Table 3. Regression analysis of driving factors of postoperative psychological distress in patients with oral and maxillofacial malignant tumors

Variable	β value	SE value	Wald χ^2 value	<i>P</i> value	OR value	95% CI value
Education level	-1.116	0.534	5.159	0.004	0.291	0.106–0.485
Fear and worry about disease progression	0.114	0.053	4.708	0.000	0.831	0.432–0.986
Economic issues	0.197	0.482	8.224	0.003	0.359	0.118–0.625
Sleep problems	0.131	0.067	4.025	0.001	0.302	0.109–0.496
Hope level	0.185	0.574	5.769	0.000	0.325	0.112–0.607
Mouth pain	0.128	0.227	6.509	0.000	0.583	0.271–0.789

4. Discussions

The postoperative pain experienced by patients with oral and maxillofacial malignant tumors transcends the physical realm, encompassing psychological and spiritual dimensions. This multifaceted pain profoundly influences the patient's life and post-surgery rehabilitation outcomes. Hence, early assessment and intervention regarding postoperative psychological pain and its driving factors in these patients are imperative.

Among the 80 patients in this study, 48 cases (60%) exhibited no psychological pain, while 32 cases (40%) reported its presence. In analyzing specific driving factors, educational level, fear and worry about disease progression, economic problems, sleep problems, level of hope, and oral pain emerged as key contributors to postoperative psychological pain in patients with oral and maxillofacial malignant tumors. Research indicated that individuals with a high school education or below tend to have higher DT scores than their counterparts with a college education or above. Patients experiencing fear and worry about disease progression, economic problems, and sleep problems exhibited higher DT scores compared to those without such concerns. Additionally, individuals with lower levels of hope or experiencing moderate to severe oral pain demonstrated higher DT scores than those with good hope levels or mild pain. These differences were statistically significant.

Understanding the preoperative discussions, patients with oral and maxillofacial tumors anticipate the upcoming surgery's trauma and stimulation, leading to physical pain and discomfort. Concerns about changes in facial appearance, recovery of basic functions, prognosis, and economic issues contribute to preoperative tension and panic. Severe cases may lead to psychological changes such as anxiety and fear ^[5,6]. Oral and maxillofacial malignant tumor surgeries often involve a larger scope and greater trauma, resulting in more severe postoperative pain compared to benign tumor surgeries. Persistent postoperative pain can have physical and mental repercussions, interfering with organ functions and inducing symptoms such as hallucinations, delusions, anxiety, and sleep disorders ^[7]. Perioperative fear and worry about disease progression are crucial risk factors for postoperative psychological pain. Economic concerns directly impact patients' psychological pain, leading to worry and anxiety about medical expenses and the ability to afford treatment ^[8]. Sleep problems further affect postoperative mood, causing psychological pain. A low level of hope contributes to psychological fluctuations, loss of motivation for treatment, and inner conflict ^[9]. Postoperative oral pain exacerbates psychological pain, manifesting in unpleasant thoughts, low mood, irritability, insomnia, nightmares, and heightened sensitivity. Severe cases may display external manifestations such as numbness, confusion, speech difficulties, and fear. Psychological counseling, including cognitive-behavioral therapy and psychodynamic therapy, can help alleviate negative emotions in patients experiencing severe psychological pain ^[10].

This study indicates that the psychological pain level of postoperative patients with oral and maxillofacial malignant tumors is at a moderate level. Educational level, fear and worry about disease progression, economic problems, sleep problems, level of hope, and oral pain are identified as driving factors for postoperative psychological distress. Therefore, personalized preoperative counseling, informed by patients' personality types and assessments, is crucial. Providing comprehensive information about their condition, potential complications, and unpredictable outcomes enhances patients' understanding, facilitates appropriate psychological counseling, and adjusts their preoperative mental state. This approach proves beneficial for postoperative recovery and pain reduction ^[11].

Disclosure statement

The authors declare no conflict of interest.

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