Stigma and related influencing factors in postoperative oral cancer patients in China: a cross-sectional study

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Received: 22 December 2021 / Accepted: 7 March 2022 / Published online: 19 March 2022 © The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2022, corrected publication 2022

Abstract

Purpose To examine the level of stigma and identify its influencing factors among postoperative oral cancer patients in China.

Methods In total, 274 postoperative oral cancer patients were recruited from a Grade A Tertiary Hospital in China using convenience sampling methods. Patients completed the Social Impact Scale (SIS), Medical Coping Mode Questionnaire (MCMQ), Social Support Rating Scale (SSRS), and General Self-efficacy Scale (GSE).

Results Stigma reported by postoperative oral cancer patients was moderate (50.17 ± 21.24). Stepped multiple linear regression showed that the related factors influencing their feelings of stigma were educational level (β = −0.110, P = 0.001), smoking (β = −0.152, P < 0.001), betel quid (β = −0.120, P = 0.001), tumor location (β = −0.390, P < 0.001), tumor stage (β = 0.219, P < 0.001), self-efficacy (β = −0.253, P < 0.001), and confrontation (β = −0.117, P = 0.001) and avoidance (β = 0.123, P < 0.001), which explained 74.2% of the total variation in stigma (F = 99.378, P < 0.001).

Conclusions Stigma was positively predicted by tumor stage and avoidance but negatively predicted by education level, smoking, betel quid, tumor location, confrontation, and self-efficacy. Further work should focus on developing interventions to reduce stigma by improving protective factors and decreasing risk factors.

Keywords Cancer · Stigma · Medical coping mode · Oral cancer · Self-efficacy · Social support

Background

Oral cancer has become a global health problem owing to its relatively high morbidity and mortality rates. Oral cancer is ranked the eighth most frequently diagnosed malignancy [1] and is extensively widespread in many developing countries compared with developed countries [2]. As reported by GLOBOCAN 2020 [3], there were about 377,713 new diagnosed cases of lip and oral cavity cancer and about 98,412 new cases of oropharyngeal cancer in 2020, which accounted for 2% and 0.5% of all malignant tumors, respectively. Globally, the number of oral cancer deaths in 2020...
was 177 and 757, and the age-standardized death rate was 1.8 per 100,000 [3].

Oral cancer treatment adopts different methods according to the tumor stage determined by clinical diagnosis. Surgical treatment is the mainstay of therapy for patients with oral cancer [4, 5]. Surgery has made great progress in the treatment of oral cancer, the 5-year survival rate of tumor stage I cancer, including the various subsites such as borders of the tongue, floor of the mouth, cheek, and gums, amounts approximately 80%, while the 5-year survival of patients with advanced disease (tumor stages III/IV) is approximately 20% [6]. Furthermore, surgical treatment for oral cancer consists of removing the tumor with or without removing lymph nodes in the neck [7]. This may impair the function and appearance of the patient’s face, neck, and/or mandible, which negatively affects their postoperative body image and ability to open their mouth, speak, chew, and swallow [8]. These physiological changes are visible to the public and may result in the disqualification of individuals from full social acceptance, which Goffman defined as stigma in 1963 [9].

Goffman reported that stigma causes a normal and socially integrated person to become degraded and defiled; as a result, the rest of society labels these people as undesirable [9]. On the one hand, some stigmatized patients avoid social interactions and even isolate themselves completely, which negatively impacts their treatment effectiveness, marriage, and other aspects of life [10–12]. On the other hand, stigmatized patients may blame and criticize themselves when faced with discrimination by others; as a result, these patients may feel ashamed and their mental state may deteriorate, thus strengthening the vicious cycle [13, 14]. More recently, many studies [15, 16] have reported the negative impact of stigma on quality of life among patients with cancer, such as lung cancer and breast cancer. However, little attention has been paid to stigma in postoperative oral cancer patients. Compared with patients with other types of cancer, postoperative oral cancer patients faced uniquely difficult challenges, including issues relating to the loss of basic oral functions, limited ability in daily activities, and altered facial appearance, which can significantly contribute to patient stigma [17, 18]. Therefore, patients with oral cancer may arguably experience more stigma that produces negative feelings and impaired social competence.

Various studies have shown that many factors influence stigma among patients. Demographic and clinical characteristics, such as gender, age, marital status, and employment, have been connected to stigma [19–21]. Stigma was even stronger among young men [20, 21]. Deng and colleagues reported that being unmarried and absent from work were associated with significantly higher stigma scores [19]. According to Yuan et al. [22], body image loss was also related to stigma, which affected patients’ interpersonal communication and mental health. Body image loss also caused embarrassment for both the patients and the people around them, especially during formal social occasions [22, 23]. Moreover, unhealthy lifestyle habits such as smoking, alcohol consumption, and betel quid may be associated with patient stigma; patients with a history of smoking tend to have higher stigma scores [21].

Furthermore, the effects of social exclusion, discrimination, and other negative reactions to identity threats vary among individuals. Coping refers to an individual’s adjustment behavior to changes, which can regulate their physical and mental responses related to stressful events [24]. Negative coping strategies may decrease social participation, change the patient’s attitude toward daily life, and increase the degree of stigma they experience [19]. Social support is an important protective factor in external environments and refers to support for individuals that helps them integrate into social groups [25]. Many studies have found that social support may help patients regulate their emotions and solve problems, thereby increasing their resilience to stigma and thus relieving their stress [19, 26]. Self-efficacy refers to an individual’s confidence in their ability to perform a specific behavior and achieve the expected results [27]. Studies have shown that patients with higher self-efficacy have more optimistic beliefs and flexible coping strategies to deal with the negative effects of stigma on physical and mental health. Self-efficacy also plays an important intermediary role in regulating stigma [22, 28].

As researchers have increasingly recognized the value of cancer patients’ mental health, reducing stigma has become an important research focus. In view of this, a growing body of research is exploring psychosocial factors related to stigma to provide necessary psychological support for stigmatized patients. While factors affecting the stigma associated with many diseases have been explored, it remains unknown whether those factors are also related to stigma experienced by postoperative oral cancer patients. Therefore, the aim of this cross-sectional study was to assess the prevalence and influencing factors of stigma among oral cancer patients in China. Further work should focus on developing psychological intervention strategies to decrease the amount of stigma and promote quality of life, as well as psychosocial rehabilitation, among postoperative oral cancer patients.

Methods

Study design and setting

This cross-sectional study was conducted using convenience sampling method in a Grade A Tertiary Hospital in Hunan, China. Data were collected from inpatients in the oral and
maxillofacial surgery ward between May 2020 and October 2021.

Participants

The inclusion criteria were patients who were (1) aged 18 or older; (2) diagnosed with primary oral cancer; (3) only surgery was performed without radiotherapy and chemotherapy; (4) aware of their own diagnosis; and (5) able to accurately and fluently answer questions. The exclusion criteria were patients who had (1) any history of mental or cognitive disorders and (2) comorbidity with other oral diseases or other cancers. Each participant was allowed to complete the survey only once. A total of 311 questionnaires were distributed and 274 valid questionnaires were returned (valid response rate: 88.1%).

Procedures

The whole study process was anonymized and voluntary for respondents. Before filling out the questionnaire, two well-trained research nurses explained the content according to a unified guide to ensure that the participants correctly understood it, and then they were required to complete the questionnaire independently within 30 min. The researcher conducted quality control on the spot and then collected the questionnaires. SPSS 20.0 was used for data entry.

Ethical considerations

This study was approved by the Ethics Review Committee of the School of Nursing, Central South University (No. E202060). According to the Declaration of Helsinki, all patients have provided written informed consent before participating in this study.

Measurements

Self-report questionnaire to assess demographic and clinical characteristics

Demographic characteristics consisted of age, gender, marital status, education level, monthly income, occupation, religion, smoking status, alcohol consumption, and betel quid. Clinical variables comprised family history, tumor location, histopathological type, and tumor stage.

Measurement of stigma

The Social Impact Scale (SIS) was designed by Fife [29] in 2000 to examine individuals’ perceptions of stigma; it was introduced to China by Pan and colleagues in 2007 [30] and was originally used to examine stigma among patients with HIV/AIDS and cancer. The version of the SIS used in the present study was revised by Guan et al. [31] in 2012. It comprises an 18-item scale with three domains: social rejection, internalized shame, and social isolation. The sum of the values of all three dimensions represents the total score, which ranges from 18 to 72. Higher scores indicate greater stigma. Cronbach’s α was 0.948 [31].

Measurement of coping style

Medical Coping Modes Questionnaire (MCMQ) was designed by Feifel, Strack, and Nagy [32] to evaluate patients cognitive-behavioral and illness-related coping strategies. The Chinese version, introduced by Shen and Jiang [33] and used in the present study, added an extra item. It contains 19 items divided among three subscales: confrontation (8 items), avoidance (7), and acceptance-resignation (4). The scale is ranked on a 4-point Likert scale ranging from 1 (never) to 4 (very frequently). Cronbach’s α was between 0.60 and 0.70 [33].

Measurement of social support

The Social Support Rating Scale (SSRS): The SSRS was developed by Xiao and is one of the most commonly used instruments for measuring social support in China [34]. It consists of 10 items measuring three dimensions: subjective support (4 items), objective support (3), and support-seeking behavior (3). Item scores are simply added up, generating a total support score ranging from 12 to 66. Higher scores indicate higher levels of perceived social support. The Cronbach’s α was 0.89–0.90 [35].

Measurement of self-efficacy

The General Self-efficacy Scale (GSE) was used to assess respondents’ self-reported self-efficacy [35]. It is a 10-item scale rated on a 4-point Likert-type scale, with a total score ranging from 10 to 40. Higher scores indicate a higher level of self-efficacy. The scale has been widely used among Chinese populations [36]. Cronbach’s α was 0.906 [35].

Statistical analysis

Dealing with bias

Researchers were trained uniformly to ensure consistency in survey methods. The research process followed ethical principles, and it was strictly confidential. Double data entry and logical error correction to ensure the accuracy of data entry.
Statistical procedures

Statistical Package for Social Sciences (SPSS 20.0 for Windows) was used to conduct data analyses. Descriptive statistics such as means, standard deviations (SD), and frequencies were used to examine the main characteristics. We evaluated each characteristic for its contribution to stigma by performing a univariate analysis (t-test or ANOVA). Pearson correlation analysis was used to analyze the correlations between variables. Each characteristic showing significant correlation with stigma was deemed as a potential predictor of stigma in the subsequent multiple linear regression models. Multiple linear regression was performed on significant variables identified by the univariate analysis \( (P < 0.05) \) to determine which variables were independently associated with higher stigma scores. These models were created using a stepwise method. Significance for all statistical tests was set at 0.05 (2-tailed).

Results

Demographic characteristics and their effects on stigma

As Table 1 shows, the mean stigma score among postoperative oral cancer patients was \( (50.17 \pm 20.24) \) and ranged from 18 to 72. The scores on each dimension were as follows: social rejection \( (19.56 \pm 8.48) \); internalized shame \( (8.42 \pm 3.61) \); and social isolation \( (22.19 \pm 9.42) \). The results presented in Table 2 show that there was a significant difference in stigma scores according to gender \( (t = 3.032, P = 0.004) \), educational level \( (F = 8.844, P < 0.001) \), income \( (F = 3.685, P = 0.013) \), religion \( (t = -3.459, P = 0.012) \), smoking \( (t = 6.664, P < 0.001) \), alcohol consumption \( (t = 6.170, P < 0.001) \), betel quid \( (t = 7.689, P < 0.001) \), tumor location \( (F = 97.951, P < 0.001) \), histopathological type \( (t = 3.655, P < 0.001) \), and tumor stage \( (F = 21.073, P < 0.001) \).

Relationships among stigma, coping style, social support, and self-efficacy

The Pearson’s correlations in Table 3 show that stigma was significantly and positively associated with the coping styles of avoidance \( (r = 0.360, P < 0.001) \) and yielding \( (r = 0.403, P < 0.001) \) and that stigma was negatively associated with the coping styles of confrontation \( (r = -0.448, P < 0.001) \), objective support \( (r = -0.197, P < 0.001) \), and self-efficacy \( (r = -0.560, P < 0.001) \).

Factors influencing stigma among postoperative oral cancer patients

Using stigma as the dependent variable, the variables that were statistically significant in the analysis of variance and t-test analyses (Tables 2 and 3) were included as independent variables in the multiple linear regression analysis (Table 4). The factors that influenced stigma among postoperative oral cancer patients were: educational level \( (\beta = -0.110, P = 0.001) \), smoking \( (\beta = -0.152, P < 0.001) \), betel quid \( (\beta = -0.120, P = 0.001) \), tumor location \( (\beta = -0.390, P < 0.001) \), tumor stage \( (\beta = 0.219, P < 0.001) \), self-efficacy \( (\beta = -0.253, P < 0.001) \), and the coping strategies of confrontation \( (\beta = -0.117, P = 0.001) \) and avoidance \( (\beta = 0.123, P < 0.001) \). All variables in the regression equation explained 74.2% of the variance in stigma scores \( (F = 99.378, P < 0.001) \).

Discussion

In this study, we found that the majority of postoperative oral cancer patients reported moderate levels of stigma, which is consistent with the stigma levels experienced by HIV/AIDS patients in Fife and Wright’s [29] study. Studies have shown that many patients are prone to stigma owing to body image loss, reduced self-esteem, and a sense of shame, and postoperative oral cancer patients are especially susceptible because of the facial deformity and dysfunction they experience [37, 38]. Furthermore, Chinese social culture imposes specific influence that tends to cause patients to worry about the potential consequences of cancer, such as loss of body image, becoming dependent on others, being a burden, and not being able to socialize. Additionally, oral cancer patients may be at further risk of being stigmatized because this

Table 1 Descriptive statistic of the study variables \( (N = 274) \)

| Variables       | Mean    | SD      | Range |
|-----------------|---------|---------|-------|
| Stigma          | 50.17   | 21.24   | 4–72  |
| Social rejection| 19.56   | 8.48    | 7–28  |
| Internalized shame| 8.42  | 3.61    | 3–12  |
| Social isolation| 22.19   | 9.42    | 8–32  |
| Chen            |         |         |       |
| Confrontation   | 18.38   | 5.73    | 8–32  |
| Avoidance       | 17.72   | 5.32    | 7–28  |
| Acceptance-resignation | 10.84 | 4.88   | 5–20  |
| Social support  | 40.58   | 7.94    |       |
| Objective support| 7.72  | 1.96    |       |
| Subjective support| 25.55 | 6.02    |       |
| Utilization of support| 7.32  | 2.45    |       |
| Self-efficacy   | 22.80   | 9.50    | 10–40 |

This table shows the scores of each variable used in this study

Abbreviation: SD standard deviation
Table 2 Univariate analyses examining candidate predictors of stigma in postoperative oral cancer patients (N = 274)

| Characteristic                  | n (%) | Social rejection | Internalized shame | Social isolation | Stigma |
|--------------------------------|-------|------------------|--------------------|------------------|--------|
| Gender                         |       |                  |                    |                  |        |
| Men                            | 229(83.6) | 20.25 ± 8.19 | 8.72 ± 3.53       | 23.00 ± 9.12     | 51.97 ± 20.58 |
| Women                          | 45(16.4)  | 16.07 ± 9.15 | 6.84 ± 3.65       | 18.11 ± 9.96     | 41.02 ± 22.43 |
| t                              | 2.848  | 3.245            | 3.046              | 3.032            |        |
| P                              | 0.006  | 0.001            | 0.003              | 0.004            |        |
| Age (years)                    |       |                  |                    |                  |        |
| ≤40                            | 32 (11.7) | 19.41 ± 8.98 | 8.44 ± 3.92       | 21.88 ± 10.05    | 49.72 ± 22.80 |
| 41—59                          | 197 (71.9) | 20.08 ± 8.26 | 8.61 ± 3.53       | 22.76 ± 9.11     | 51.45 ± 20.60 |
| ≥60                            | 45 (16.4)  | 17.42 ± 8.92 | 7.56 ± 3.68       | 19.93 ± 10.12    | 44.91 ± 22.55 |
| F                              | 1.809  | 1.562            | 1.679              | 1.751            |        |
| P                              | 0.166  | 0.212            | 0.188              | 0.176            |        |
| Marital status                 |       |                  |                    |                  |        |
| Married                        | 250 (91.2) | 19.59 ± 8.47 | 8.47 ± 3.60       | 22.28 ± 9.39     | 50.34 ± 21.21 |
| Divorced or widowed            | 24 (8.8)   | 19.25 ± 8.81 | 7.88 ± 3.73       | 21.33 ± 9.89     | 48.46 ± 21.97 |
| t                              | 0.188  | 0.767            | 0.467              | 0.413            |        |
| P                              | 0.851  | 0.444            | 0.641              | 0.680            |        |
| Educational level              |       |                  |                    |                  |        |
| Primary school                 | 36 (13.1) | 22.44 ± 6.49 | 9.89 ± 2.72       | 25.61 ± 7.46     | 57.94 ± 6.28 |
| Junior high school             | 110 (40.1) | 21.51 ± 7.63 | 9.24 ± 3.17       | 24.35 ± 8.22     | 55.11 ± 8.65 |
| High/technical secondary school| 76 (127.7) | 17.97 ± 9.08 | 7.59 ± 3.93       | 20.38 ± 10.12    | 45.95 ± 22.92 |
| College or beyond              | 52 (19.1)  | 15.77 ± 8.84 | 6.87 ± 3.76       | 17.90 ± 9.99     | 40.54 ± 22.40 |
| F                              | 8.281  | 9.132            | 8.719              | 8.844            |        |
| P                              | <0.001 | <0.001           | <0.001             | <0.001           |        |
| Professional                   |       |                  |                    |                  |        |
| Farmer                         | 102 (37.2) | 20.29 ± 8.14 | 8.84 ± 3.45       | 23.30 ± 8.87     | 52.44 ± 20.08 |
| Employee                       | 109 (39.8) | 18.18 ± 8.83 | 7.89 ± 3.82       | 20.54 ± 9.86     | 46.61 ± 22.30 |
| Retired                        | 21 (7.7)   | 20.38 ± 8.21 | 8.38 ± 3.36       | 22.95 ± 9.25     | 51.71 ± 20.69 |
| Unemployed                     | 42 (15.3)  | 20.95 ± 8.29 | 8.76 ± 3.50       | 23.40 ± 9.32     | 53.12 ± 20.91 |
| F                              | 1.665  | 1.378            | 1.884              | 1.726            |        |
| P                              | 0.175  | 0.250            | 0.132              | 0.162            |        |
| Income (RMB per person per month)|       |                  |                    |                  |        |
| <1000                          | 51 (18.6) | 22.14 ± 7.34 | 9.20 ± 3.08       | 24.96 ± 8.03     | 56.29 ± 17.85 |
| 1000–5000                      | 102 (37.2) | 19.97 ± 8.57 | 8.67 ± 3.68       | 22.41 ± 9.35     | 51.05 ± 21.37 |
| 3000–5000                      | 83 (30.3)  | 19.00 ± 8.03 | 8.27 ± 3.56       | 21.99 ± 9.27     | 49.25 ± 20.67 |
| >5000                          | 38 (13.9)  | 16.24 ± 9.62 | 7.03 ± 3.92       | 18.34 ± 10.59    | 41.61 ± 23.97 |
| F                              | 3.827  | 2.936            | 3.722              | 3.685            |        |
| P                              | 0.010  | 0.034            | 0.012              | 0.013            |        |
| Religion                       |       |                  |                    |                  |        |
| Yes                            | 7(2.6)   | 10.14 ± 7.08 | 4.43 ± 3.35       | 11.57 ± 8.16     | 26.14 ± 18.55 |
| No                             | 267(97.4) | 19.81 ± 8.38 | 8.52 ± 3.56       | 22.47 ± 9.30     | 50.80 ± 20.97 |
| t                              | −3.547 | −2.999           | −3.475             | −3.459           |        |
| P                              | 0.011  | 0.003            | 0.012              | 0.012            |        |
| Smoking                        |       |                  |                    |                  |        |
| Yes                            | 190 (69.3) | 21.75 ± 7.36 | 9.33 ± 3.22       | 24.71 ± 8.12     | 55.78 ± 18.34 |
| No                             | 84 (30.7)  | 14.62 ± 8.81 | 6.36 ± 3.63       | 16.51 ± 9.72     | 37.49 ± 21.99 |
| t                              | 6.481  | 6.454            | 6.748              | 6.664            |        |
| P                              | <0.001 | <0.001           | <0.001             | <0.001           |        |
| Alcohol consumption            |       |                  |                    |                  |        |
| Yes                            | 170 (62.0) | 21.84 ± 7.25 | 9.42 ± 3.17       | 24.97 ± 8.09     | 56.23 ± 18.20 |
| No                             | 104 (38.0) | 15.84 ± 9.04 | 6.78 ± 3.70       | 17.65 ± 9.71     | 40.27 ± 22.20 |
ANOVA analysis was used to compare the mean score for stigma among different groups of postoperative oral cancer patients.

### Table 2 (continued)

| Characteristic         | n (%) | Social rejection | Internalized shame | Social isolation | Stigma  |
|------------------------|-------|------------------|---------------------|------------------|---------|
|                         |       |                  |                     |                  |         |
| **t**                  | 5.734 | 6.034            | 6.436               | 6.170            |         |
| **P**                  | <0.001| <0.001           | <0.001              | <0.001           |         |
| **Betel quid**         |       |                  |                     |                  |         |
| Yes                    | 175 (63.9) | 22.36 ± 6.83   | 9.57 ± 3.02         | 25.38 ± 7.57     | 57.31 ± 17.03 |
| No                     | 99 (36.1)  | 14.62 ± 8.89   | 6.37 ± 3.68         | 16.56 ± 9.75     | 37.55 ± 22.13 |
| **t**                  | 7.504 | 7.352            | 7.774               | 7.689            |         |
| **P**                  | <0.001| <0.001           | <0.001              | <0.001           |         |
| **Family history**     |       |                  |                     |                  |         |
| Yes                    | 34 (12.4) | 18.38 ± 8.45   | 7.94 ± 3.59         | 21.18 ± 9.39     | 47.50 ± 21.23 |
| No                     | 240 (87.6) | 19.73 ± 8.49   | 8.48 ± 3.62         | 22.34 ± 9.43     | 50.55 ± 21.26 |
| **t**                  | -0.866| -0.818           | -0.672              | -0.783           |         |
| **P**                  | 0.387 | 0.414            | 0.502               | 0.434            |         |
| **Tumor location**     |       |                  |                     |                  |         |
| Cheek                  | 69 (25.2) | 25.26 ± 3.63   | 10.67 ± 1.82        | 25.98 ± 4.11     | 64.30 ± 9.06 |
| Tongue                 | 112 (40.9) | 22.86 ± 3.64   | 9.84 ± 2.70         | 26.04 ± 6.80     | 58.73 ± 15.35 |
| Gum                    | 73 (26.6)  | 12.33 ± 7.62   | 5.41 ± 3.25         | 14.08 ± 8.51     | 31.82 ± 19.22 |
| Others                 | 20 (7.3)   | 7.85 ± 2.15    | 3.65 ± 1.49         | 8.95 ± 2.48      | 20.45 ± 5.97 |
| **F**                  | 93.607 | 80.957          | 97.486              | 97.951           |         |
| **P**                  | <0.001| <0.001           | <0.001              | <0.001           |         |
| **Histopathological type** |   |                  |                     |                  |         |
| SCC                    | 168 (61.3) | 21.08 ± 7.80   | 9.04 ± 3.32         | 23.83 ± 8.60     | 53.95 ± 19.35 |
| Non-SCC                | 106 (38.7) | 17.16 ± 8.99   | 7.43 ± 3.85         | 19.59 ± 10.09    | 44.19 ± 22.78 |
| **t**                  | 3.692 | 3.531            | 3.579               | 3.655            |         |
| **P**                  | <0.001| <0.001           | <0.001              | <0.001           |         |
| **Tumor stage**        |       |                  |                     |                  |         |
| I                      | 8 (2.9)    | 12.00 ± 6.50   | 6.63 ± 2.50         | 14.25 ± 6.54     | 32.88 ± 14.52 |
| II                     | 109(39.8) | 15.85 ± 8.64   | 6.81 ± 3.68         | 18.08 ± 9.67     | 40.74 ± 21.72 |
| III                    | 122(44.5) | 21.70 ± 7.49   | 9.25 ± 3.26         | 24.45 ± 8.25     | 55.40 ± 18.72 |
| IV                     | 35(12.8)   | 25.37 ± 4.82   | 10.94 ± 2.17        | 28.94 ± 5.49     | 65.26 ± 12.19 |
| **F**                  | 20.861 | 18.749          | 20.873              | 21.073           |         |
| **P**                  | <0.001| <0.001           | <0.001              | <0.001           |         |

ANOVA analysis was used to compare the mean score for stigma among different groups of postoperative oral cancer patients. Abbreviation: SCC squamous cell carcinomas.

### Table 3 Relationships between psychosocial variables and stigma (N=274)

| Variables          | Social rejection | Internalized shame | Social isolation | Stigma  |
|--------------------|------------------|--------------------|------------------|---------|
| **Medical coping modes** |      |                    |                  |         |
| Confrontation      | -0.444**         | -0.438**           | -0.442**         | -0.448** |
| Avoidance          | 0.402**          | 0.388**            | 0.399**          | 0.403**  |
| Acceptance–resignation | 0.364**       | 0.344**            | 0.351**          | 0.360**  |
| Social support     | -0.151*          | -0.108             | -0.143*          | -0.142*  |
| Objective support  | -0.196**         | -0.183**           | -0.197**         | -0.197** |
| Subjective support | -0.091           | -0.042             | -0.071           | -0.075   |
| Utilization of support | -0.110         | -0.100             | -0.129*          | -0.118   |
| Self-efficacy      | -0.554**         | -0.520**           | -0.564**         | -0.560** |

Pearson correlation was used to analyze correlations among the study variables. **P<0.001; *P<0.05 (two-tailed)**
cancer is seen as a “self-inflicted” disease, and this negative self-perception can make patients feel ashamed [39].

With respect to demographic variables, male patients had a much higher risk of suffering from stigma than females, which was different from previous studies [40]. We speculate that this difference may be a function of the specific nature of Chinese culture and the age of the patients. Most of the participants in this study were middle-aged men who were the main economic pillars in their respective families; in China, this population shoulders the greatest social responsibilities. When they became ill, their working capacity was reduced and their income level declined, which led to further, and more serious, stigma for male participants [41]. We also found that higher education levels and average incomes were related to lower stigma, which is consistent with previous findings [42]. Cancer is such a taboo topic in China which is easily associated with uninformed and misinformed social identification [43]. Patients with more education have more and better access to information, which enables them to obtain disease-related knowledge and to better understand their condition [18]. Moreover, as part of one’s personal social resources, a higher education level and an average income can greatly reduce the psychological and financial stress caused by cancer diagnosis and treatment. In view of this finding, governments should invest in more subsidies for postoperative oral cancer patients to ease their high cancer treatment costs, while healthcare staff should pay more attention to male postoperative oral cancer patients with lower education levels and lower incomes.

Patients who smoked and chewed betel quid experienced greater stigma. The prevalence of oral habits such as betel quid, smoking, and alcohol consumption are cause for concern worldwide because of their strong connection to oral cancer [44]. In traditional Chinese culture, cancer is regarded as a “bad omen”; suffering from cancer is equivalent to being sentenced to death [39]. Chinese people often talk about “cancer discoloration” and associates cancer with “dirty” and “sin.” These people believe that the emergence of cancer is not only a punishment in the present life but also a repayment of debts in the previous life, which becomes “causal reincarnation.” Therefore, some postoperative oral cancer patients who have smoked and practiced betel quid regret having engaged in those habits. It also constituted an important social source of stigma for postoperative oral cancer patients in the present study. Religious beliefs can give spiritual strength to patients through the gods, which is conducive to promoting patients to correctly face the disease and accept their current state [45]. The role of religion in coping strategies to stress events in schizophrenics has been empirically studied [46]. Kao et al.’s findings suggested that religion was relevant when treating individuals with schizophrenia because it helps reduce symptom severity, enhances adaptive coping, and fosters recovery [46]. Patients with religious beliefs had less stigma in this study. There was a large gap between the number of people with and without religious beliefs, which may have an impact on the results, and further research is needed. Thus, strengthening national and local tobacco- and betel-nut-control policies is critical to reduce this growing cancer burden in China. It is also necessary to respect the religious beliefs of the patient and guide them correctly.

Tumor location and tumor stage were important influencing factors of stigma. Treatment for oral cancer is complex and can lead to functionality issues such as dysphagia and breathing difficulties, as well as impose the cosmetic burden of facial disfigurement. Importantly, facial disfigurement is consistently associated with the development of shame and the perception of stigma [47]. Tumor stage of oral cancer is related to the scope and size of the primary tumor [6]. Therefore, the higher the tumor stage, the greater the postoperative reconstruction range and the greater the range of defects, and the longer the treatment cycle, making the patient extremely prone to physiological and psychological burdens. Furthermore, squamous cell carcinomas (SCC) had a much higher risk of suffering from stigma than non-squamous cell carcinoma (Non-SCC). SCC is prone to recurrence, which interrupts the patient’s career while simultaneously causing stigma and increasing their social and economic burden.

![Table 4](image-url)
High levels of stigma not only have a negative impact on follow-up treatments, including treatment compliance, treatment-seeking behaviors, self-esteem, and social adaptation but are also harmful to patients’ recovery [18]. Given these considerations, healthcare staff should provide individualized support that focuses on helping patients adjust to their illness and its negative impact on their body image.

We also found that coping style was an important influencing factor of stigma. Stigma was significantly and positively associated with confrontation. As a negative coping styles, conversely, a higher level of “avoidance” was correlated with a higher level of stigma among postoperative oral cancer patients. Our study indicates that stigma is more common in postoperative oral cancer patients who have problems dealing with stress. A “confrontation” coping style describes patients who pay attention to their disease and actively seek support and help from others [49]. An “avoidance” coping style may regulate patients’ emotions and behaviors after oral cancer surgery [19]. Furthermore, avoidance may decrease a patient’s social participation and negatively impact their attitude toward daily life. Therefore, it is necessary to provide psychological interventions and coping-skills training for postoperative oral cancer patients experiencing stigma. Healthcare staff should help postoperative oral cancer patients establish the belief that disease adaptation can help them adopt positive coping styles and thereby decrease the degree of stigma.

In our study, the dimension “objective support” was negatively associated with stigma. Objective support refers to practical support, which includes direct material support, the existence of and participation in social networks, and group relations [34]. For numerous possible reasons, social support can help patients regulate their emotions and problem-solve, which can enhance their resilience when facing stigma and thus provide a buffer from experiencing stress [50]. Objective support, moreover, mitigates some of the negative consequences of stigma [51]. Thus, these findings can inform and guide future interventions that focus on developing the role of objective support to help patients cope with feeling stigmatized.

Self-efficacy was found to be an important predictor of stigma in postoperative oral cancer patients in this study. As a self-regulating factor, self-efficacy can help people quickly recognize and respond accurately and effectively in a changing environment [52]. It can also motivate those suffering from pain to actively seek more adaptable coping strategies and improve compliance and prognosis [53]. When individuals are confronted with painful difficulties in life or are excluded by others, those who have adequate self-efficacy tend to cope more effectively; they remain calmer, experience fewer negative emotions, and evidence more positive coping strategies [22]. Therefore, healthcare staff should focus more on relevant positive psychological factors when stigma impacts oral cancer patients’ recovery, to improve their prognosis and promote their physical and mental healing.

**Study limitations**

The present study has several limitations that should be noted. First, because it was a cross-sectional design, no causal inferences can be made about, nor can any long-term effects be claimed for, the associations between stigma and the other study variables in postoperative oral cancer patients. Second, because stigma is a sensitive topic, some patients may have concealed their true mental state, although we assured them that their information would be kept confidential. Finally, the results of this study may closely reflect traditional Chinese culture, and thus any generalizations to other populations should be made with extreme caution. This study was merely an initial step in describing the stigma experienced by postoperative oral cancer patients, and therefore larger, and longitudinal, studies should be conducted in future to provide more in-depth findings.

**Clinical implication**

Despite these limitations, our findings have several clinical implications. First, medical staffs should regularly assess stigma in postoperative oral cancer patients and pay more attention to those patients who have low educational levels, low income, and unstable work. Second, medical staffs should provide timely knowledge about the disease and treatment, and help patients cope with their condition in a positive way to alleviate their stigma. Third, through publicity to increase social awareness of oral cancer to encourage society to accept patients and to reduce the source of patient stigma. In addition, medical staffs should improve the assessment of self-efficacy in postoperative oral cancer patients and focus more on increasing patients’ self-efficacy levels using cognitive training. At the same time, more social support should also be provided to postoperative oral cancer patients.

**Conclusions**

Stigma levels among postoperative oral cancer patients in China are moderate, as evidenced by the total stigma scores collected. Stigma is positively predicted by tumor stage and avoidance but negatively predicted by education level, smoking status, betel quid, tumor location, confrontation, and self-efficacy. In clinical practice, healthcare staff should identify highly stigmatized patients and develop strategies to help them deal with the consequences of stigma; this is
particularly important for postoperative oral cancer patients. Medical staff should take effective measures, such as providing patients with cognitive training or individualized guidance to improve patients’ confidence in adjusting to their disease and encouraging patients to accept a new and changed body image. Further interventions should focus on patients, especially in the early postoperative period, to encourage them to accept themselves and thereby reduce feelings of stigma.

**Authors’ contributions** Concept and design: Ye Man, Tan Chuxia. Acquisition, analysis, or interpretation of data: Zhong Chenxi, Mei Ranran, Yang Ronghong, Wang Dangdang. Drafting of the manuscript: Ye Man, Tan Chuxia. Critical revision of the manuscript for important intellectual content: Deng Xianjiao, Chen Shihao. Statistical analysis: Tan Chuxia. All authors read and approved the final manuscript.

**Funding** This work was supported by Scientific Research Project of Hunan Provincial Health Commission (Grant numbers:202214023438).

**Data availability** The data that support the findings of this study are available from the corresponding author upon reasonable request.

**Code availability** Not applicable.

**Declarations**

**Ethics approval** This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Review Committee of the School of Nursing, Central South University (No. E202060).

**Consent to participate** Informed consent was obtained from all individual participants included in the study.

**Consent for publication** Not applicable.

**Conflict of interest** The authors declare no competing interests.

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