RESEARCH ARTICLE

Depression and Predictors in Taiwanese Survivors with Oral Cancer

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Abstract

Background: Depression is a comorbid disabling problem and potentially affects patient likelihood of survival. The aims of this study were to recognize the characteristics of depression and investigate associated predictor factors in patients with oral cancers. Methods: A cross-sectional and correlational design was used to collect data for this study conducted in northern Taiwan. A set of questionnaires was used to measure depression, symptom distress, performance status, social support, and demographic and disease-related information. Logistic regression was conducted to determine important factors predicting depression. Results: A total of 132 oral cancer patients participated in this study. Of these, 18.2% were identified as depression cases. The patient average performance status score was 90 or higher. Patients reported mild-to-moderate levels of symptom distress. The majority of social support was from families. Religious belief, alcohol use, symptom distress, and social support from family were found to be important factors predicting depression. Patients with religious belief with alcohol use reported greater symptom distress, and those with lower levels of social support from families were significantly more likely to develop depression. Conclusions: Clinicians should assess patient emotional status and manage symptoms in a timely manner to enhance coping abilities. Supportive care provides assurance during the acute survivor phase.

Keywords: Oral cancer - acute survivor stage - depression - social support

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Introduction

Cancer is a leading cause of death worldwide, accounting for 20 million new diagnoses annually worldwide (American Cancer Society, 2012). In Taiwan, 79,818 new cases were diagnosed in 2008 (Taiwan cancer registry, 2012). Of patients diagnosed with cancer, nearly 60% will survive (Canadian Cancer Society, 2012). An individual is considered a cancer survivor from the time of cancer diagnosis through the balance of life (National Cancer Institute, 2012). Depression is a comorbid disabling problem that affects approximately 15% to 25% of cancer patients (Derogatis et al., 1983; Henriksson et al., 1995), and impacts the patients' likelihood of survival (Spiegel et al., 2003). Approximately 11-45% of oral cancer patients experience depressive symptoms during treatment (Haisfield-Wolfe et al., 2009), and Monika et al. found that symptoms of depression were found in more than 40% of patients with oral malignancy before surgery and in 58.5% postoperatively (Rutkowska et al., 2007). Emotional distress was reported as 1.5-fold by head and neck cancer patients compared to other cancer patients before discharge (Singer et al., 2012). Approximately 55% of patients diagnosed with oral cancer in Taiwan present with stage III or IV disease (Chen et al., 2008). Surgical excision and radiation therapy (RT) and surgery with concurrent chemoradiation therapy (CCRT) are the primary treatment modalities for patients with advanced oral cancer (Shah et al., 2009). Depression may interfere with treatment decisions. Starting with the initial diagnosis through completing the course of therapy, depression is more likely to affect morbidity and mortality (Fisch, 2004; Evans et al., 2005).

Tobacco and alcohol are regarded as major carcinogens for oral cancer (International Agency for Research on Cancer, 2004). Most oral cancer patients in Taiwan are male and betel nut chewing has been identified as associated with oral cancer (Ko et al., 1995). Of Taiwanese betel chewers, 86% were smokers and 75% were alcohol drinkers (Ko et al., 1992). Patients who had been betel nut, tobacco, and alcohol users reported use in their 20s, 30s and 40s before diagnosis (Tsai et al., 2009). Depression is a psychological disorder that affects a person's mood changes, physical functions and social interactions (Keith et al., 1985). Previous studies have identified the correlates of depressive symptoms among alcohol and tobacco user populations (Breslau et al., 1998; Hasin et al., 2002). Morse et al. (2010) showed that oral cancer patients with

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diagnosis-year smoking had twice the odds (relative to never-smoking) of a subsequent depression. Thornton et al. (2012) investigated 976 participants with tobacco and alcohol use habits and found that 54% of subjects experienced depression.

Several studies have reported on the clinical and personnel factors contributing to depression. A study by Kandasamy et al. (2011) showed that depression was negatively correlated with spiritual well-being in patients in India with advanced cancer. The religious behavior of African American and white patients with colorectal and lung cancers were negatively associated with depressive symptoms; and in 64% of white patients, religious behavior was negatively associated with depressive symptoms (Holt et al., 2011). There was a mild negative correlation between intrinsic religiosity and depression, but a strong negative association between spirituality and depression as reported by 367 American men with prostate cancer (Nelson et al., 2009). Mild symptoms of depression were reported by 55% of 1439 advanced cancer patients in Canada; patients had a lower performance status score and higher distressing symptoms and were more likely to report depressed feelings (Salvo et al., 2012).

Depressive mood was found to be significantly related to higher frequency and intensity of symptoms (Delgado-Guay et al., 2009). A negative association between depression and symptoms has been documented (Lloyd-Williams et al., 2004; Teunissen et al., 2007). Patients with high social support have been found to be more likely to have lower depression rates (Pinar et al., 2012). Head and neck cancer patients' social support from family members did not have a direct or indirect influence on depression. Patients with greater higher social support from friends perceived lower social distress and depression (Deno et al., 2012). Social support as a buffer on depressive symptoms and the impact of source and type of social support varied in effect (Carpenter et al., 2010).

Previous studies addressed depression and related factors only and did not specifically include oral cancer patients. If patients' depression and predictive factors are better understood for this group, particularly in the survivors, then healthcare providers would be better able to manage patients and be better prepared to assist patients in coping with side-effects of adjuvant therapy. The aims of this study are to (1) recognize the characteristics of factors in depression, and (2) investigate predictive factors associated with depression in oral cancer patients during the survival period.

Materials and Methods

Study design

This is a cross-sectional correlational study. Participants were recruited from the outpatient departments of otolaryngology and head and neck cancer, and RT of a 4000-bed medical center in northern Taiwan.

Sample

Patients were included if they met the following criteria: (1) age greater than 20 years, (2) pathologic confirmation of newly diagnosed oral cancer and patient awareness of the cancer diagnosis, (3) have completed surgery and RT or concurrent chemoradiation therapy (CCRT) and off treatment current status, (4) able to speak/read/write Mandarin and Taiwanese, and (5) willingness to participate in the study after being fully informed of the research aims.

Ethical considerations and data collection

This study was approved by the Institutional Review Board of the medical center. All patients signed informed consent before data collection. Data were collected at the first outpatient follow-up visit after discharge from the hospital.

Questionnaire

Participants were assessed using the following questionnaires: The demographic information form included demographic variables (age, gender, marital status, religion, and alcohol and betel nut use) as well as disease- and treatment-related variables (tumor location, cancer pathological stage, and type of treatment).

Hospital Anxiety and Depression Scale (HADS) Depression Subscale, the HADS-Depression subscale was used to assess patients' depression (Zigmond et al., 1983). The 7-item depression subscale is a Likert scale with 0-3 scoring. Higher scores indicate higher levels of anxiety. A score of 11 or more on the depression subscale is considered to indicate a significant case of psychological morbidity, while scores of 8-10 represent "borderline" and 0-7 "normal" (Zigmond et al., 1983). The patients were divided into two groups based on the HADS depression subscale score: those with scores of 10 or lower were considered "non-depression cases" or "borderline depression cases," and those with scores of 11 or higher were considered "depression cases" (Zigmond et al., 1983). The HADS is used to screen for anxiety or depression (Thomas et al., 2005). Satisfactory psychometric properties have been shown for the HADS in cancer-related study in Taiwan (Chen et al., 2011). In the present study, the Cronbach α values for the depression subscales were 0.76.

Symptom Distress Scale Modified for Head and Neck Cancer (SDS-mhn), the SDS-mhn is composed of 27 items of cancer-related symptom distress following surgery, modified from the Symptom Distress Scale (McCorkle et al., 1987). The SDS-mhn is a five-point Likert scale (1=no distress, 2=mild distress, 3=moderate distress , 4=severe distress and 5=the most severe distress). Higher scores indicate greater perceived symptom distress. In previous study, the scale was shown to be a reliable tool for assessing symptom distress in Taiwan (Chen et al., 2010). The Cronbach's α values were 0.96 in this study.
Karnofsky Performance Status Index (KPS), functional status was measured using the Karnofsky Performance Status Index (KPS), which is scored from 0 to 100; 0 indicating expired and 100 indicating normal function. Patients were assessed based on their level of physical performance (Karnofsky et al., 1948). The KPS has been used in clinical cancer studies to assess cancer patient's level of physical performance and function (Chen et al., 2010).

Table 1. Basic Profile of Patients (n=132)

Variable	Mean (SD)/ Number (%)	Range
Age	50.64 (10.21)	22 – 82
>65	20 (15.2)	
64-40	102 (77.3)	
<40	10 (7.6)	
Gender		
Male	125 (94.7)	
Female	7 (5.3)	
Marital status		
Unmarried	15 (11.4)	
Married	117 (88.6)	
Religion		
None	58 (43.9)	
Yes	74 (56.1)	
Alcohol used		
None	56 (42.4)	
Yes	76 (57.6)	
Betel nut used		
None	49 (37.1)	
Yes	83 (62.9)	
Sub-site		
Lip	5 (3.8)	
Buccal mucosa	63 (47.7)	
Tongue	40 (30.3)	
Gingiva	10 (7.6)	
Mouth floor	1 (0.8)	
Hard plate	12 (9.1)	
Retromolar	1 (0.8)	
Cancer pathological stage		
I	28 (21.2)	
II	32 (24.2)	
III	25 (18.9)	
IV	47 (35.6)	
Type of treatment		
Surgery only	69 (52.3)	
Surgery + radiation	34 (25.8)	
Surgery + chemotherapy	5 (3.8)	
Surgery + radiation + chemotherapy	24 (18.2)	

Social Support Scale—modified (SSS-m), the level of social support was measured by the SSS-m modified (Lin, 2002) from the Social Support Scale (Cohen et al., 1983). The 32-item SSS-m has 2 subscales that assess perceived availability of support from family members and healthcare professionals. Each subscale measures four types of social support: emotional (4 items), informational (4 items), appraisal (4 items), and practical (4 items) support. SSS-m items are scored from 0 (not at all) to 3 (always), with higher total scores indicating higher levels of social support. The scale has been reported to have satisfactory psychometric properties in previous study in Taiwanese (Liao et al., 2012).

Data analysis

Descriptive statistics were used to analyze demographic characteristics, disease- and treatment-related characteristics, depression, performance status, symptom levels, and social support. To identify the risk factors associated with depression, the patients were divided into two groups, depression cases and non-depression cases. A HADS-depression score ≥ 11 indicates a depression case, and a score ≤ 10 represents a non-depression case (Zigmond et al., 1983). Logistic regression was used to identify factors associated with depression or non-depression (dependent variable). Independent variables included religion, alcohol use, betel nut use, performance status, symptom distress, and social support (social support from family and social support from healthcare professional). The level of statistical significance was set at $p < 0.05$. All calculations were made using SPSS for Windows, version 15.0 (SPSS Inc., Chicago, IL, USA).

Table 2. Characteristics in Clinical Associated Depression (n=132)

Variables	Mean (SD)	Number (%)	Range
Depression (HADS-Depression)	6.36 (3.77)		0 – 15.00
Case		24(18.2)	
Non-case		108(81.8)	
Performance status(KPS)	89.09 (3.80)		80 – 100
80	16 (12.1)		
90	112 (84.8)		
100	4 (3.0)		
Overall mean symptom distress (SDS-m)	1.49 (0.56)		1.00 – 3.30
Social support(SSS-m)			
Family	2.21 (0.55)		1.00 – 3.00
Healthcare professional	1.85 (0.66)		0.50 – 3.25

HADS-Depression, Hospital Depression and Anxiety (HADS)-depression subscale; KPS, Karnofsky Performance Status; SDS-m, Symptom Distress Scale Modified for Head and Neck Cancer (SDS-mhn); SSS-m, Social Support Scale-modified (SSS-m)

Results

Respondent rate

Of the 140 patients who met the criteria, 8 patients refused to participate because of lack of interest. The remaining patients (n=132) were interviewed face-to-face using structured questionnaires administered by a trained research assistant (94.3% response rate).

Basic profile of patients

The 132 participants had a mean age of 50.64 years (range: 22-82 years). Most were male (94.7%), married (88.6%), and had a religious affiliation (56.1%). Nearly two-thirds of patients have experienced alcohol use (57.6%) and betel use (62.9%). Most women had stage IV (35.6%) disease and 52.3% received surgery only. Nearly one-half of patients were at buccal mucosa (47.7%) and one-third of patients were at tongue (30.3%) tumor subsites (Table 1).

Characteristics in clinical associated depression

According to the HADS classification, 18.2% of patients with oral cancer (n=24) were classified as having clinical depression. The patients' average performance status was 89.03, and the majority had a score of 90 or higher. The mean overall symptom distress score for the oral cancer patients was 1.49 (SD = 0.56). The average social support from family score was 2.21(SD = 0.55), and the average score of social support from healthcare professionals was 1.85 (SD = 0.66) (Table 2).

Predictors associated with depression

The results of logistic regression showed that religious belief, alcohol use, greater symptom distress, and lower

Table 3. Logistic Regression* of Risk Factors Associated Depression (n=132)

Variable	Wald test	Exp for (beta)	95% CI for exp (beta)
Religion	11.173	0.008	0.001 – 0.137
Alcohol used	7.084	31.575	2.484 – 401.310
Betel nut use	0.773	3.379	0.224 – 50.999
Performance status	0.216	0.943	0.735 – 1.209
Symptom distress	4.875	5.619	1.214 – 26.010
Social support from family	7.481	0.084	0.014 – 0.495
Social support from healthcare professional	0.001	1.015	0.338 – 3.043
Constant	0.090	33.418	---

*Dependent variable was depression case (HADS-depression scores ≥ 11) or non-depression case (HADS-depression scores ≤ 10)

levels of social support from family were significant predictive factors associated with depression ($p < 0.05$) (Table 3).

Discussion

The study focused on early post-surgery stage patients with oral cancer, with 18.2% falling into the definition of depression case. The prevalence of depression is similar to the range found in previous literature review (Haisfield-Wolfe et al., 2009). Findings in this study indicated more depression cases than obtained in an earlier study done in Hong Kong (Rajandram et al., 2011). Rajandram et al. (2011) concluded that approximately 8% of the oral cancer study participants met the clinical cut-off for depression. This difference may be due to time since treatment completion. In the Rajandram et al. (2011) study, patients had lower rates of depression possibly because they had completed tumor treatment 6-months prior to the study, and our subjects were just 2-3 weeks after surgery. More sustaining approaches may be necessary, such as empathy, listening, and companionship.

The mean score of depression in this study was lower than that of patients undergoing treatment in a survey by Chen et al. (2012), and higher than patients who had completed treatment. Such findings may reflect that active treatment is a possible stress event. Early identification and intervention for patients with oral cancer is important to reduce needless suffering and should be sustained through subsequent treatment.

Patients confront difficult situations after surgery and before discharge. They experience limitations in their daily lives, facial disfigurement, oral dysfunction, financial difficulties, and altered family processes. A low prevalence of depression is reported in this study that might be rooted in a cultural context, because in Taiwan, males are expected to be valiant and may not talk openly to someone about their feelings. Most of time during clinical care, we observed that patients remained silent. The insufficient expression of emotions and lack of stress release impose a heavy burden on patients and may aggravate depressive symptoms. Clearly, interventions, such as writing, notes, and meditation methods to help these patients, are needed to deal with the stressors that lead to depressive symptoms and potential worsening of survival.

Alcohol use was found as one of the unique predictors of depression. In Taiwan, most oral cancer patients have long-term drinking, smoking, and betel nut chewing habits over a long period of time. Substances are added to betel nuts, such as caffeine, to generate a reinvigorating effect. The majority of patients who were betel nut users belonged to laborer and lower socioeconomic groups, who chewed betel nut during work. A synergistic effect on depression was caused from suddenly stopping the substance used, having a cancer diagnosed, treatment side-effects, the economic issue of disease, and other factors. In the clinical setting, nurses are encouraged to sensitively assess the potential of withdrawal syndromes among patients in their care and to refer patients to a psychologist or psychiatrist for further treatment. Clinicians should strengthen relationships with these clients as well as with relatives or friends.

Religiousness has been identified as a risk factor for depression morbidity. This result is the same as that in other studies (Nelson et al., 2009; Holt et al., 2011; Kandasamy et al, 2011); religion belief may provide a protective effect against depression. In the clinical setting, we observed that patients often look for a Buddhist temple or prayed to God for help. Sometimes patients aware of the meaning of illness believed they had done wrong or were being punished for a crime in a previous existence. The practice of religion may offer inner strength and spiritual support to help patients face their difficult situations. Research on intervention, including individualized, adequate religion activities and access to religion books to determine the most effective approaches, is also critical.

Our findings revealed that the level of social support from family was a significant predictor of depression. This finding was consistent with the research of Pinar et al. (2012), Deno et al. (2012), and Carpenter et al. (2010) who found that social support plays an important role in reducing the frustration experienced during the illness process. In contrast, the study also found that patients perceived less support from healthcare professionals than from family. This may indicate that subjects were more dependent on their families for supportive and instrumental care at the treatment stage. Clinical providers may focus on patients' concrete problems and neglect the patients' perception of support needed. Problems appear to exist in terms of a lack of adequate support systems and continuing service, which if addressed adequately, would help patients build-up support systems properly over time.

There are some limitations with this study. A convenience sample was used for gathering data that may limit the findings' generalizability. Geographical factors might also have influenced the results. Although some patients did come from southern Taiwan to the hospital, the study participants were recruited only from the inpatient wards of a medical center in northern Taiwan. It is recommended that further studies focus on more inclusive geographic areas. Additionally, a cross-sectional survey limits the understanding of the predictors and depression. To better elucidate these phenomena, future studies should use qualitative research to allow patients to be interviewed in-depth about their inner feelings.

In conclusion, this study revealed that 18.2 % of patients surveyed in a medical center in Taiwan experienced depression associated with a diagnosis of oral cancer. Religious belief, alcohol use, symptom distress, and social support from family were identified as risk predictors of depression. Personnel should be aware of the clinical factors that influence the development of depression in oral cancer patients. Supportive care and religion belief provides assurance during the acute survivor phase. Clinicians should assess patients' emotional status and manage symptoms in a timely manner to enhance the coping ability of patients during future treatment.

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