

# Coping and psychological distress among head and neck cancer patients

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## Abstract

**Introduction** Few studies have described the relationship between the psychological distress associated with head and neck cancer and how patients cope with their disease.

**Purpose** The purpose of this study is to investigate how head and neck cancer patients 6–12 months after their diagnosis cope with their disease and how their coping skills are related to their anxiety and depression levels.

**Methods** We conducted a cross-sectional study among 157 head and neck cancer patients. We evaluated coping strategies using the Ways of Coping Checklist and anxiety and depression using The Hospital Anxiety and Depression Scale.

**Results** Bivariate analyses revealed that there was an association between patients' levels of anxiety and depression and the type of coping strategies used. Patients with higher levels of anxiety and depression used more “blamed self”, “wishful thinking”, and “avoidance” coping strategies. These associations were further confirmed by multivariate linear regression analyses that controlled for age, gender, time since end of treatment, tumor stage, and occupation.

**Conclusion** These findings suggest that coping strategies in head and neck cancer patients vary according to their level of psychological distress. However, the cross-sectional nature of the data does not permit directional inferences for this association.

**Keywords** Head and neck cancer · Oncology · Coping · Anxiety and depression · Psychological distress

## Introduction

It is reported that up to 46% of head and neck cancer patients suffer from depression [1–3]. This high prevalence of depression reflects the complexity of patients' condition. Head and neck cancer and its associated treatments have a multidimensional influence on patients' lives. They can cause patients to endure facial disfigurement that is usually visible and difficult to hide, altering the appearance and body image [4, 5]. In addition, head and neck cancer can affect vital functions like eating, breathing, and talking [6, 7]. Such manifestations can result in reduced satisfaction with life that can lead to fear from society, rejection, and loss of communication compromising patients' social and personal relationships [6, 8].

In the last two decades, attention to psychological problems associated with cancer diagnosis has been increasing. A number of studies have focused on understanding how patients cope and adapt to their disease which can provide imperative knowledge to assist in dealing with the affected individuals. According to Lazarus and Folkman's theoretical framework, coping is defined as “constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” [9, 10]. Coping has been studied among different cancer patients, particularly breast cancer, and was related to several health outcomes like distress, survival, and cancer recurrence [11, 12]. It has been shown that breast cancer patients use different coping strategies to adapt to their disease. Stanton et al. reported that women with breast

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cancer who coped through emotional expression had lower psychological distress levels [11].

Although recently, the psychological adaptation and coping of patients with head and neck cancer has gained research attention, still little is known about coping with head and neck cancer. Only a few studies have investigated coping in head and neck cancer patients. Sherman et al. showed that head and neck cancer patients use different coping strategies according to their phase of treatment. Patients who were in treatment or less than 6 months post-treatment used more denial, behavioral disengagement, and suppression of competing activities as types of coping compared to patients who had not started their treatment or who were more than 6 months after their treatment [13]. In addition, coping was related to patients' quality of life. Kohda et al. demonstrated in their cohort study among head and neck cancer patients the factors affecting patients' quality of life. Their analysis revealed that emotion-oriented coping was positively related to patients' general health-related quality of life [14]. Further research is needed to confirm these findings and to further explore coping strategies and their association with patients' psychological status. Therefore, the purpose of our study was to investigate how head and neck cancer patients 6–12 months after their diagnosis cope with their disease and how their coping skills are related to their anxiety and depression levels. We hypothesized that those head and neck cancer patients with low levels of anxiety and depression use different coping skills compared to those with high levels of anxiety and depression 6–12 months following the diagnosis of their cancer. We compared patients according to their combined levels of anxiety and depression (high versus low levels of each) to allow for better identification of those patients with worse psychological distress levels.

## Patients and methods

### Study design and sample

The data collected in this study were cross-sectional in nature and were some of the baseline data from a randomized control trial investigating the effects of coping strategies intervention. Study subjects were recruited while they attended the outpatient head and neck cancer clinics of four different hospitals in Montreal. The physician responsible for the patients' cancer management introduced the study to patients. Research assistants (RA) at each of the recruitment sites then provided a complete explanation of the study and gave a consent form to patients who agreed to participate. After obtaining written consent, the RA collected information from subjects through interviews.

Patients were included if they met the following criteria: (1) were diagnosed with a primary cancer of the head and neck region, (2) had completed cancer therapy with curative intent for that cancer, (3) were diagnosed 6–12 months previously, and (4) were able to understand and complete either French or English questionnaires. Patients were excluded if they: (1) were undergoing palliative or terminal care only, (2) had a previous history of malignant disease other than head and neck cancer, (3) had a prior or current history of treatment for depression, and (4) had a prior or current history of treatment for anxiety. Information concerning these two criteria were gathered by asking each potential subject whether they had ever been treated for depression or anxiety and through reviewing the patient's medical chart seeking a clear indication of treatment for one (or both) of these conditions. The person reviewing the medical chart was the RA responsible for recruiting subjects, with no training as a clinician but with excellent experience of reviewing charts for a wide variety of information pertinent to this and other studies. Zero subjects were excluded due to these criteria. Ethics committee approval for the study was provided by the Institutional Review Board of McGill University Faculty of Medicine. All eligible subjects signed a consent form.

### Variables and measures

Data about subjects' demographic characteristics (language, gender, age, living arrangement, occupation, and education) were collected through interviews. Cancer-related information (tumor site and stage, time since diagnosis, treatment modality, and time since end of treatment) were collected from subjects' medical records.

We used the Hospital Anxiety and Depression scale (HADS) to assess psychological distress. This scale includes two subscales: anxiety and depression. Each subscale consists of seven items and every item is rated on a four-point Likert scale from 0 to 3, with a higher score indicating more frequent or more severe symptoms. Item scores for each subscale are summed so the possible scores range from 0 to 21 for each subscale [15, 16]. We used both the English and French versions of the HADS because the participants in the study speak either English or French. The validity and reliability of both versions have been confirmed in several previous studies [17–19]. We used a cut-off point of 8 to dichotomize the levels of symptoms. Subjects who score less than 8 on either scale are considered to have low levels of anxiety or depression and those who score  $\geq 8$  on either scale are considered to have medium to high levels of anxiety or depression. This cut-off point is validated and commonly used in the literature [15, 16, 18, 20].

We used a revised version of the Ways of Coping Checklist (WOCC) to assess coping skills [21, 22]. It is a 42-item scale describing responses to a stressful situation. The response to each statement is rated on a four-point scale response (0=not used, 1=used somewhat, 2=used quite a bit, and 3=used a great deal). The revised WOCC measures five coping strategies, namely, problem-focused, seek social support, blamed self, wishful thinking, and avoidance coping. Scores are calculated by summing the ratings for each coping strategy to describe the extent of use of each of those strategies, wherein higher score indicates more use of the strategy [21, 22]. We used the English and French versions of the WOCC to assess coping skills in this study. The validity and reliability of both versions were demonstrated in previous studies [21, 23].

### Statistical analysis

Simple descriptive statistics were used to analyze the sociodemographic and clinical data and to describe the HADS and the WOCC scores in the sample. To address our aim, we categorized patients according to their anxiety and depression levels into four groups (having low anxiety and low depression, low anxiety and high depression, high anxiety and low depression, and high anxiety and high depression). We considered the different coping strategies as the dependent variables and the HADS score as the independent variable. An ANOVA test was used to examine the association between the four aforementioned HADS categories and WOCC scores for each coping strategy. We used a parametric approach because the distribution of WOCC scores was close to normal. Furthermore, we standardized each coping strategy on a scale from 0 to 100 to enable comparison between rates of use of different coping strategies. Following these bivariate analyses of the association between levels of anxiety and depression and coping strategies, multivariate linear regression analysis was used to confirm or not the bivariate associations observed, while controlling for covariables. Other independent variables (age, gender, time since end of treatment, tumor stage, and occupation) were included in the model based on the level of statistical significance of their association with WOCC scores in the bivariate analysis ( $p$  value < 0.05). For bivariate analyses, coping strategies were considered as the dependent variable and demographic and clinical variables were considered as independent variables. Given the normal distribution of the relevant variables, we used  $t$  test and ANOVA to assess these relationships depending on the categorization of independent variables (if the independent variable was binary, we used  $t$  test, and if it was categorical, we used ANOVA). All independent variables were entered in the model in a

stepwise process. The data were analyzed using the Statistical Package for the Social Sciences version 11. For all tests,  $p$  values less than 0.05 were considered statistically significant.

## Results

### Patient characteristics

We initially identified 270 head and neck cancer patients to participate in the study. Twenty-six patients were excluded (eight did not speak English or French, four were deceased, five had types of cancer other than head and neck, six were too weak to participate, and three could not be reached) and 87 refused to participate mostly due to lack of interest. The mean age of the 157 patients included in the study was 62.6 years and the majority was male (71%). Among the participants, 55% were homemakers or retired, and most of the subjects were living with another person (71%). The most common cancer sites were the pharynx (38%) followed by the oral cavity (33%) and the larynx (29%). Almost half of the patients presented with TNM stage IV (50%; Table 1).

### Anxiety, depression and coping

Among the participants, the mean anxiety rating was 4.7 and the mean depression rating was 3.9 (Table 2), with 13.4% and 7.6% of subjects with medium (8–10) and high (>10) anxiety ratings, respectively, and 9.6% and 5.1% of subjects with medium and high depression ratings, respectively. There were 112 subjects (71.3%) who had a combination of both low levels of anxiety and depression and 11 subjects (7%) who had a combination of both high levels of anxiety and depression. In addition, there were 12 (7.6%) subjects who had low levels of anxiety but high levels of depression and 22 (14%) subjects who had high anxiety but low depression levels. Subjects used a variety of coping strategies with “problem-focused” coping strategy being used the most (mean 41.2) and “blamed self” coping strategy being the least used (mean 16.7; Table 2).

In the ANOVA analyses performed to determine associations between different coping strategies and anxiety and depression levels, there were statistically significant associations between anxiety and depression levels and “blamed self” ( $F(3)=6.9$ ,  $p<0.001$ ), “wishful thinking” ( $F(3)=8.7$ ,  $p<0.001$ ), and “avoidance” ( $F(3)=13.5$ ,  $p<0.001$ ) coping strategies (Table 3).

The multivariate analyses confirmed the results of the bivariate analyses with subjects reporting both high anxiety and depression also reporting greater use of “blamed self” ( $B=0.2$ ,  $p=0.011$ ), “wishful thinking” ( $B=0.29$ ,  $p<0.001$ ), and “avoidance” ( $B=0.41$ ,  $p<0.001$ ) coping strategies compared

**Table 1** Demographic and clinical characteristics of the patients ( $N=157$ )

Characteristics	Number of cases	%	Mean	SD
Language				
English	29	18.5		
French	128	81.5		
Gender				
Female	45	28.7		
Male	112	71.3		
Age groups, year				
≤55	41	26.1	62.6	11.80
56–63	42	26.8		
64–70	37	23.6		
≥71	37	23.6		
Living arrangements				
Alone	46	29.3		
With other	111	70.7		
Occupation				
Employed, working	29	18.5		
Employed, on sick leave/unemployed	42	26.8		
Homemaker/retired	86	54.8		
Education				
Did not graduate from high school	58	36.9		
High school graduate	32	20.4		
College/CEGEP	28	17.8		
University	39	24.8		
Cancer site				
Pharynx	59	37.6		
Larynx	45	28.7		
Oral cavity/other	52	33.1		
TNM				
I	33	21.0		
II	19	12.1		
III	24	15.3		
IV	78	49.7		
Treatment				
Chemotherapy+radiotherapy	41	26.1		
Radiotherapy only	39	24.8		
Surgery only/surgery+chemotherapy	47	29.9		
All three	29	18.5		
Time since diagnosis <sup>a</sup>				
6 to 8 months	73	46.5	8.8	2.23
9–12 months	82	52.9		
Time since end of treatment <sup>b</sup>				
Up to 24 weeks	96	61.1	22.3	9.56
More than 24 weeks	60	38.2		

<sup>a</sup> Time since diagnosis varied among the participants from 6 to 12 months

<sup>b</sup> Time since end of treatment varied among the participants from 3 to 47 weeks

to those with low levels of anxiety and depression. Multivariate analysis controlled for age and gender in addition to all the variables that showed statistical significance in the bivariate analysis ( $p$  value= $<0.05$ ; time since end of treatment, tumor stage, and occupation; Table 4).

## Discussion

This is the first study to investigate the relationship of coping strategies and symptoms of anxiety and depression in head and neck cancer patients who are often a relatively

**Table 2** Means and standard of deviations for coping strategies and anxiety and depression levels for the whole sample

	Mean (SD)	Range
Coping strategy <sup>a</sup>		
Problem-focused	41.2 (21.6)	0–86.7
Seek social support	36.7 (26.7)	0–100
Blamed self	16.7 (23.4)	0–100
Wishful thinking	30.1 (23.5)	0–91.7
Avoidance	23.9 (16.1)	0–90
Anxiety/depression levels <sup>b</sup>		
Anxiety	4.7 (3.7)	0–17
Depression	3.9 (3.5)	0–18

<sup>a</sup> Possible WOCC score for each strategy can range from 0 to 100

<sup>b</sup> Possible score for each anxiety and depression level can range from 0 to 21

unique group in terms of their emotional and psychological outcomes. This study documents clear differences in coping strategies related to anxiety and depressive symptoms, although we can make no assertion as to the temporal relationship. Further work should aim to explore this temporal relationship such that we can gain insight as to how best to intervene to help reduce anxiety and depression in head and neck cancer patients, among whom the burden of problem is high.

The results of our study are similar to the work of List et al. who reported social support-seeking as the most common strategy in their sample of head and neck cancer patients [24]. Sherman et al. also found that acceptance, religion, and active coping were the main coping strategies used by head and neck cancer patients in their sample at different phases of their illness [13]. Beyond the very limited work investigating levels of coping strategies in head and neck cancer patients, Felder investigated patients with a variety of cancers and reported that among the

different coping styles measured by the Jalowiec Coping Scale, optimistic, confrontive, and evasive coping styles were most often used by the patients [25].

There were significant associations between different coping strategies and levels of anxiety and depression in our sample. According to patients' combined level of anxiety and depression, we found that those patients with a combination of both high anxiety and depression were associated with "blamed self", "wishful thinking", and "avoidance" coping strategies compared to those with low levels of anxiety and depression. It was particularly interesting to note that the variation in coping strategies among the groups with differing levels of anxiety and depression was concentrated principally in the emotion-based strategies. As previously mentioned, all groups used problem-focused strategies approximately equally. Although not significantly different, there was a trend for increased use of social support-seeking among subjects with high levels of anxiety. Meanwhile, the use of self-blame was very low in those with low levels of anxiety and depression but constant across the other groups. Finally, the patterns of wishful thinking and avoidance use were similar across all groups, being low in the low anxiety/low depression group, increasing to a medium level in those with mixed levels (high anxiety/low depression and vice versa), and increasing again to a high level for those with high levels of both problems. Although we used a different instrument to assess coping strategies than that used in other studies, our results largely concur with findings of studies with mixed cancer populations [26–30] that observed higher rates of emotion-based coping strategies in patients with high levels of anxiety and depressive symptoms and low rates of these strategies in people with no such symptoms. With respect to observations of the association between coping strategies and levels of anxiety and depression in head and neck cancer patients, very few data are available to

**Table 3** Statistical associations between different coping strategies and anxiety and depression levels

	Mean (SD)				<sup>a</sup> <i>P</i> value
	Low anxiety, low depression	Low anxiety, high depression	High anxiety, low depression	High anxiety, high depression	
Problem-focused	41 (22.5)	35.7 (21.7)	46.8 (17.2)	37.2 (21.1)	0.46
Seek social support	34.1 (25.8)	34.7 (29.6)	47.5 (28.5)	43.4 (25.4)	0.143
Blamed self	11.6 (17.9)	29.6 (32.9)	29.3 (30)	29.3 (29.1)	<0.001
Wishful thinking	24.7 (21.4)	41.3 (28.9)	39.8 (20.4)	53 (21.3)	<0.001
Avoidance	19.8 (13.5)	31.9 (16.2)	29.6 (9.4)	45.4 (26)	<0.001

<sup>a</sup> Based on ANOVA



**Table 4** Correlates of different coping strategies based on linear regression analysis

Coping strategy	Correlates	Beta	P
Blamed self <sup>a</sup>	Low anxiety, high depression	0.210	<i>P</i> =0.007
	High anxiety, low depression	0.269	<i>P</i> =0.001
	High anxiety, high depression	0.198	<i>P</i> =0.011
Wishful thinking <sup>b</sup>	Low anxiety, high depression	0.173	<i>P</i> =0.019
	High anxiety, low depression	0.216	<i>P</i> =0.004
	High anxiety, high depression	0.289	<i>P</i> <0.001
	On sick leave from work/Unemployed	0.283	<i>P</i> <0.001
Avoidance <sup>c</sup>	Low anxiety, high depression	0.201	<i>P</i> =0.006
	High anxiety, low depression	0.211	<i>P</i> =0.004
	High anxiety, high depression	0.408	<i>P</i> <0.001

<sup>a</sup> Adjusted  $R^2=0.107$ ;  $F_{3,152}=7.179$ ,  $P<0.001$ . Age, gender, time since end of treatment, and low anxiety and depression levels were not significant predictors in this model

<sup>b</sup> Adjusted  $R^2=0.203$ ;  $F_{4,150}=10.78$ ,  $P<0.001$ . Age, gender, time since end of treatment, tumor stage, low anxiety and depression levels, employed (working) and homemaker/retired were non-significant predictors in this model

<sup>c</sup> Adjusted  $R^2=0.194$ ;  $F_{3,153}=13.5$ ,  $P<0.001$ . Age, gender, and low anxiety and depression levels were not significant predictors in this model

compare to our results. A study by Kugaya et al. demonstrated an association between greater use of helpless/hopeless coping style and high depressed mood in head and neck cancer patients [31]. This was further confirmed by another study by Hassanein et al. who showed a significant association between ineffective (described as the sum of the scores of helplessness/hopelessness, anxious preoccupation, and fatalism coping) coping styles and anxiety and depression [32].

A number of limitations exist in our study. First, the cross-sectional design used prevented any conclusions on whether coping strategies used by patients were adaptational to their psychological condition or whether the reverse was true. In addition, changes over time in anxiety, depression, and coping could not be evaluated. Second, our sample size was relatively small. However, we were able to identify statistically significant associations between anxiety and depression and the different coping strategies used by patients. Third, there was the issue of generalizability of the results; our sample was a convenience sample of head and neck cancer patients visiting several hospitals in Montreal. Therefore, our results cannot necessarily be generalized to other populations and settings, and further research with other samples is needed to investigate whether our observations can be repeated in other settings and cultures. Another limitation concerns variation in time since treatment within our sample. It has been shown that phase of treatment plays a role in anxiety, depression, and

coping strategies among head and neck cancer patients [13]. However, our study had some control over this issue by including only patients who had completed their treatment and were 6–12 months following diagnosis of their cancer. In addition, we controlled for this variable in our multivariate analysis. Finally, the WOCC used to assess coping in our study, particularly the French version, has had limited validity testing, although the concurrence of the results of this project with similar studies investigating coping strategies in patients with other cancers lends credence to its validity.

In conclusion, our findings suggest that coping strategies in head and neck cancer patients vary according to patients' level of psychological distress. These findings highlight the need for further research to explore the association between patients' coping strategies and their sociodemographic and clinical characteristics longitudinally and to investigate how changing patients' coping strategies could change health outcomes in this group. Furthermore, it suggests the need for early psychological interventions for head and neck cancer patients to meet their anxiety and depression-related needs and help them to learn how to live and cope with their disease to improve health outcomes. We recommend that this study be considered as a descriptive study concerning coping strategies in patients with head and neck cancer. Further studies are needed to confirm the temporal relationship between anxiety, depression, and coping in head and neck cancer patients.

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