

RESEARCH COMMUNICATION

Interaction of Coping Styles and Psychological Stress on Anxious and Depressive Symptoms in Chinese Breast Cancer Patients

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Abstract

Purpose: This study aimed to assess possible interactive effects of coping styles and psychological stress on depression and anxiety symptoms in Chinese women shortly after diagnosis of breast cancer. **Methods:** Four hundred and one patients with breast cancer were face-to-face interviewed by trained research staff according to a standardized questionnaire including information on socio-demographic characteristics, psychological stress, coping styles, and anxiety and depressive symptoms. Interactive effects were assessed by hierarchical multiple regression analyses. **Results:** There were significant associations of the four domains of psychological stress with anxiety and depressive symptoms except for the relationship between “worrying about health being harmed” and depressive symptoms. “Abreaction coping behavior” and “escaping coping behavior” significantly increased the level of both anxiety and depressive symptoms; whereas an “active coping style” resulted in significant decrease. The interaction of “active coping behavior” with “worrying about health being harmed” significantly increased the risk of the anxiety symptoms, while adopting “self-relaxing coping behavior” was associated with significant decrease. The interaction of “worry about daily life and social relationship being restricted” with “escaping coping behavior” significantly increased the risk of the depressive symptoms. **Conclusions:** The results of this study suggest that certain coping styles might moderate the association of psychological stress with anxiety and depressive symptoms in Chinese women with breast cancer.

Keywords: Coping styles - psychological stress - breast cancer - depression - anxiety - Chinese patients

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Introduction

Breast cancer is one of the most common malignancies affecting women (26% of all cancers) (Jemal et al., 2008). Although the incidence of breast cancer in China is lower than in other countries, but the incidence of breast cancer in past two decades have increased by 80% in young women (Zhang et al., 2010). The diagnosis and treatment for breast cancer in women can cause significant psychological distress (Zabora et al., 2001; Massie et al., 2004), and bring about psychological disturbance including anxiety and depression (Pandey et al., 2006; Jacobsen et al., 2008). Anxiety and depression are the most frequently reported cancer-related symptoms. More than 30% of the women with early breast cancer had depression, anxiety, or both at diagnosis (Burgess et al., 2005). Numbers of studies reported that depressed patients tend to be less proactive in seeking more aggressive treatments, and have severe symptoms, poor response to systemic therapy, long recovery times and poor outcomes (Walker et al., 1999

Colleoni et al., 2000; Hirschfeld, 2001). In addition, management of depression and anxiety leads to reduction in disease progression, improvement in survival rates, reduction in healthcare costs and improvement in quality of life (Frick et al., 2007; Satin et al., 2009; Pinquart and Duberstein, 2010).

Coping can generally be defined as an individual's cognitive or behavioral efforts to manage (decrease or tolerate) situations that are appraised as stress to individuals (Ogden, 2000). In a stress model, coping is viewed as a major component of the overall stress process, and is treated as a mediating link between stressors and psychological strain or as a moderator of the stress-strain relationship (Ogden, 2000). Coping style can be classified into two primary categories: problem-focused coping and emotion-focused coping (Ogden, 2000). It is evident that the effective use of problem-focused coping strategies may lower distress even in patients with advanced disease (Uitterhoeve et al., 2004; Naaman et al., 2009).

Most of the previous studies focused mainly on

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the prevalence of depression and the direct effects of psychological stress and coping on depression or anxiety symptoms, little attention has been paid to the interaction of these two factors on depression and anxiety in patients with breast cancer. The present study aimed to examine the major and interactive effects of psychological stress and coping styles on anxiety and depressive symptoms in Chinese patients with breast cancer.

Materials and Methods

Subjects

We invited to participate in our study a consecutive series of 401 women, aged 18 to 60 years, with a diagnosis of early breast cancer at Sun Yat-sen University Cancer Center (Guangzhou, China) during March 2010 to June 2010. Exclusion criteria included previous breast or other cancer, age younger than 18 or over 60, and distant metastasis at diagnosis. Trained interviewers screened the eligibility of potential patients initially via a structured face-to-face interview to ensure whether they met the criteria. Written informed consents were obtained from all the participants prior to the enrollments, following a detailed explanation on study objectives and the specific requirements of the survey introduced by well-trained interviewers. This study was granted approval by the Ethical Committee of the Sun Yat-sen University.

Measurements

We conducted a face-to-face interview for each participant to obtain relevant information using a structured questionnaire consisting of four major sections: socio-demographic and medical factors; psychological stress; coping style; anxiety and depression. Our pilot study revealed that using a self-administered questionnaire had higher incomplete data than those obtained from an interview-based approach. The reason might be that many of the patients were poorly educated, and unable to understand the questionnaire correctly. Moreover, some patients with breast cancer had vision problems which might prevent them from reading and filling the questionnaire by themselves. Therefore, an interview-based approach was used to collect information from the participants, which could assure to get complete and exact data.

Socio-demographic and medical factors

Socio-demographic characteristics included in the questionnaire were age, educational level, marital status, occupation, and income. Patients were asked to report their experiences of basic disease, including benign breast disease, cerebrovascular, cardiovascular, and metabolic diseases.

Psychological stress

Psychological stress was measured using the scales originally developed by Leung et al (Leung et al., 1999) with slightly modifications: omitting some sexual-related items based on Chinese culture reasons and combining similar items as appropriate. So, the modified questionnaire consisted of 30 items finally. Each item was

scored on a 5-point Likert-type scale (from 1=never or rarely to 5=very often). The patients were asked to choose only one number from each of the item.

Coping style

Coping style was measured using validated scale (Shen et al., 2000). The scale consisted of 24 items and a 4-point Likert-type scale was used for each item, ranging from 1 to 4 (1=never do, 2=seldom do, 3= often do, 4=always do). Factor analysis yielded four latent domains, in detail in Ye et al (Ye et al., 2008). According to the nature and contents of the items included in each domain, we defined the four domains as: "active coping style", "abreaction coping style", "self-relaxing", and "avoidance coping style".

Anxiety and depression

Hospital Anxiety and Depression Scale (HADS) was used to assess anxiety and depression (Zigmond and Snaith, 1983). It consists of 14 items, 7 items for anxiety and 7 for depression. Sub-scale scores of anxiety and depression were calculated separately, and the score for each subscale ranges from 0-21. The higher the score is, the worse the status is presented with respect to a particular category. The Chinese version of HADS has been developed and validated by previous studies (Zheng et al., 2003).

Data Analysis

The main and interactive effects of psychological stress and coping style on anxiety and depressive symptoms were separately assessed using a hierarchical multiple regression procedure. In the first block, age, educational level, marital status, and occupation as the covariates were included into the model by the enter method, employing anxiety or depressive symptoms as the dependent variable. In the second block, the main effects for psychological stress and coping style were simultaneously input into the model by the enter method to estimate the amount of variance accounted for by these variables. In the third block, the product term(s) of the source of psychological stress and coping style were entered in the model by using the enter method. $P < 0.05$ value was considered statistically significant. All the analyses were performed with SPSS for Windows (Release 11, SPSS Inc., Chicago, USA).

In data analysis, the definitions of independent variables were as following: age, educational level (primary school or below=0, middle school=1, college or above=2), marital status (married =0, unmarried/divorce/ bereft of one's spouse=1), and employment status (administrator or other white collar=0, blue collar worker=1, farmer/others=2).

Results

General Demographic Characteristics of Patients

The main socio-demographic characteristics and medical conditions of 401 patients with breast cancer. The mean \pm SD age of the participants was 46.9 ± 10.1 years, 77.6% had education attainment below college, while only

Table 1. Hierarchical Regression Analysis on Association of Psychological Stress and Coping Style with Anxiety Symptoms in Breast Cancer Patients

Independent variables	β	Total R ²	Δ R ²	F
Block 1(socio -demographics)		0.011	0.011	0.088
Age	-0.018			
Educational level	-0.193			
Marital status	-0.490			
Occupation	-0.120			
Block 2 (psychological stress and coping style)		0.391	0.379	14.610***
Worrying about health being harmed	0.796***			
Fear of decline of physical function	0.419**			
Worry about daily life and social relationship being restricted	0.348*			
Fear of family being harmed	0.347*			
Active coping behaviors	-1.133*			
Abreaction coping behaviors	0.763***			
Escaping coping behaviors	0.526**			
Self-relaxing coping behaviors	0.442**			
Block 3 (interaction terms)		0.646	0.027	14.042***
Worrying about health being harmed \times Self-relaxing coping behaviors	-0.757**			
Worrying about health being harmed \times Active coping behaviors	0.466*			

P<0.05; **P<0.01; ***P<0.001

Table 2. Hierarchical Regression Analysis on Association of Psychological Stress and Coping Style with Depression Symptoms in Breast Cancer Patients

Independent variables	β	Total R ²	Δ R ²	F
Block 1(socio-demographics)		0.057	0.057	4.562***
Age	0.009			
Educational level	-0.423*			
Marital status	-0.391			
Occupation	-1.166			
Block 2 (psychological stress and coping style)		0.454	0.397	18.782***
Worrying about health being harmed	-0.130			
Fear of decline of physical function	0.738***			
Worry about daily life and social relationship being restricted	0.771***			
Fear of family being harmed	0.726***			
Active coping behaviors	-1.517***			
Abreaction coping behaviors	0.519**			
Escaping coping behaviors	0.628***			
Self-relaxing coping behaviors	-0.056			
Block 3 (interaction terms)		0.474	0.020	17.515***
Worry about daily life and social relationship being restricted \times Escaping coping behaviors	0.463**			
Worry about daily life and social relationship being restricted \times Abreaction coping behaviors	-0.371*			

*P<0.05; **P<0.01; ***P<0.001

26.4% were white collar workers. We noted that 23.9% had basic disease prior to breast cancer.

Effect of Coping Style on Psychological Stress with Anxiety and Depressive Symptoms

Results from hierarchical regression analysis on psychological stress and coping style with anxiety symptoms are shown in Table 1. In the first block, the socio-demographic variables accounted for 1.1% of unique variance. In the second block, the main effects of the four identified factors of psychological stress and the four factors of the coping style accounted for 39.7% of unique variance. "Worrying about health being harmed", "Fear of decline of physical function", "Worry about daily life and social relationship being restricted", "Fear of family being harmed", "Abreaction coping behaviors", "Escaping coping behaviors", and "Self-relaxing coping behaviors" were significantly positively

associated with anxiety symptoms. "Active coping behaviors" were significantly negatively associated with anxiety symptoms. In the third block, among the sixteen interaction terms between the psychological stress and the coping style, two achieved statistically significant. The interactive effects of "Worrying about health being harmed" with "Self-relaxing coping behaviors" significantly decreased the level of anxiety symptoms; while the joint effect of "Worrying about health being harmed" with "Active coping behaviors" was positively related with the increased risk of anxiety symptoms, which accounted for 2.7% of unique variance. The whole model explained of 64.6% of the total variance.

With the same approach, results from hierarchical regression analysis on psychological stress and coping style with depressive symptoms are presented in Table 2. In the first block, higher educational level is at low risk of depression symptoms. In the second block, "Fear of

decline of physical function”, “Worry about daily life and social relationship being restricted”, “Fear of family being harmed”, “Abreaction coping behaviors”, and “Escaping coping behaviors” were significantly increased the risk of depression symptoms, whereas “Active coping style” significantly decreased the risk of depression symptoms. In the third block, among the sixteen interaction terms between the psychological stress and the coping style, two achieved statistically significant. The interactive effects of “Worry about daily life and social relationship being restricted” with “Abreaction coping behaviors” significantly decreased the level of depressive symptoms; while the joint effect of “Worry about daily life and social relationship being restricted” with “Escaping coping behaviors” significantly increased the level of depressive symptoms. Overall, the whole model explained of 47.4% of total variance, and the first, second, and third block accounted for 5.7%, 39.7%, and 2.0% of the unique variance, respectively.

Discussion

This study aimed to assess the moderating effects of coping styles on anxiety and depressive symptoms caused by psychological stress originated from the diagnosis in Chinese patients with breast cancer. The results showed that psychological stress and coping styles might directly and interactively affect anxious and depressive symptoms in patients with breast cancer after controlling for potential confounding factors.

Patients diagnosed with breast cancer are confronted with a severe stressor that can result in psychological distress (Iwamitsu et al., 2005). The later may develop several psychological symptoms such as depression, anxiety, other form of psychological morbidity (Reynolds et al., 2000; Landmark et al., 2001; Coward et al., 2004). Studies indicate that 20% to 40% of women with breast cancer show a significant level of distress (Golden-Kreutz and Andersen, 2004; Bardwell et al., 2006; Hegel et al., 2006). There are interpersonal differences in the degree of psychological distress, which factors may include demographic characteristics such as financial problems, educational level, and marital status, as well as personal psychiatric history and level of social support (Ando et al., 2011). In this study, we found that demographic characteristics are significantly associated with psychological distress. Especially, high educational level is at low risk of depression, which is in line with related study (Schwarz et al., 2008).

Coping can generally be defined as an individual’s cognitive or behavioral efforts to manage (decrease or tolerate) situations that are appraised as stress to individuals (Ogden, 2000). Many women adapt different coping strategies to deal with the physical and psychological challenges of the disease (Hack et al., 2004; Lauver et al., 2007; Manuel et al., 2007). Generally, problem-focused coping may be linked to better health outcomes, whereas emotion-focused coping is possibly related to poor health outcome (Ogden, 2000). In the present study, our results showed that breast cancer patients adopting more “active coping style” (a type of problem-focused

coping strategy) was negatively associated with anxiety and depression, and using “escaping coping behaviors” and “abreaction coping behaviors” (two kinds of emotion-focused coping strategy) experienced more anxious and depressive symptoms. Our findings were consistent with several previous studies (Carver et al., 1993; Kershaw et al., 2004). These results suggested that women who report more active coping show lower levels of distress regardless of disease status.

Coping styles affecting health outcomes can also moderate the relationship between psychological stressors and well-being (Ogden, 2000). In this study, we observed significant interactive effects of different types of coping styles on the anxiety and depressive symptoms caused by the psychological stress. Specifically, patients who used active coping behaviors were more likely to show a relationship between worrying about health being harmed and anxiety symptoms, which were less like to show when patients used self-relaxing coping behaviors. In the same, patients who used escaping coping behaviors were more likely to show a relationship between worry about daily life and social relationship being restricted and depressive symptoms, which were less like to show when patients used abreaction coping behaviors. Thus, for the same psychological problem, different coping behaviors patients used bring into differential regulatory effects. These finding suggest that the majority of the variance in psychological adjustment to breast cancer can be attributed to coping style (Glanz et al., 1992). More studies are needed to further clarify the interaction between coping and stress on the health outcomes (Sonntag et al., 2003).

Our study has some limitations. First, being a cross-sectional study, it is unlikely to determine the cause-effect relationships of the psychosocial factors with the anxiety and depressive symptoms. Further study with a longitudinal design may provide a solution to this issue. Second, sampling bias might not be avoided completely. The patients were sampled from Sun Yat - sen University Cancer Center, which is a top class hospital in this region. The patients of the hospitals usually have a relatively higher social economical status than those from other smaller hospitals or clinics. Such a sample might not well represent patients with breast cancer in the general population. Third, the psychological stress scale used in this study just included generic stressors related to chronic disease, and some cancer-specific stressors were not covered, which might have lost some of the information of psychological stress. Despite these limitations, the sample size of this study is relatively large; complete and exact data were collected by an interview-based approach; the whole Cronbach alphas of both psychological stress and coping style were over 0.90.

In summary, the present study indicates that the physiological stress might directly increase the risk of anxiety and depressive symptoms, and the effects of the psychosocial stress on anxiety and depressive symptoms are moderated by the coping styles used by the Chinese patients with breast cancer. Healthcare professionals should be aware of the different coping mechanisms that women use when diagnosed with cancer. Integrating a coping strategy into the treatment regimen would

constitute an important milestone in the palliative care of patients with breast cancer.

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