

THE CORRELATION BETWEEN QUALITY OF LIFE AND NEGATIVE EMOTION IN ADMITTED PATIENTS WITH NASOPHARYNGEAL CARCINOMA AT DIFFERENT STAGES

JIN-TAO ZHANG¹, XIANG LI¹, QING-YU JIANG¹, YI-LIANG LI¹, CUI-RONG LIU¹, XIAO-YAN HUANG¹, HUI XIA¹, GUI-FEN FU^{2*}, YONG-FENG SI¹

¹Department of Otolaryngology-Head and Neck Oncology, The People's Hospital of Guangxi Zhuang Autonomous Region; 6 Taoyuan Road, Nanning 530021, China - ²Department of Nursing, The People's Hospital of Guangxi Zhuang Autonomous Region; 6 Taoyuan Road, Nanning 530021, China

ABSTRACT

Objective: This study aims to investigate the occurrence of negative emotion and quality of life in patients with newly diagnosed nasopharyngeal carcinoma (NPC), and analyze its correlation.

Methods: The quality of life of 75 NPC patients was investigated at the time of admission, during the treatment and at the end of treatment using the Quality of Life Questionnaire Core 30 (QLQ-C30), Zung self-rating depression scale (SDS) and self-rating anxiety scale (SAS).

Results: At the time of admission, the middle point of treatment and at the end of treatment, the SAS score was 41.78 ± 8.26 , 45.19 ± 9.44 and 47.92 ± 10.59 , respectively; and the SDS score was 51.55 ± 8.82 , 52.35 ± 8.74 and 54.27 ± 9.06 , respectively. The incidence of anxiety was highest the middle point of treatment ($P < 0.05$). At the end of treatment, the differences in physical, emotional and cognitive functions, fatigue, pain, insomnia and constipation symptoms at the time of admission and the middle point of treatment were statistically significant ($P < 0.05$). Anxiety and depression were negatively correlated with the functional area and overall health status but were positively correlated with symptoms ($P < 0.05$).

Conclusion: The occurrence of negative emotion at different stages of hospitalization in patients with newly diagnosed NPC varies, and quality of life is affected at different degrees. Corresponding psychological nursing should be conducted for patients at different stages, in order to reduce the adverse effects of negative emotion on the mental health of patients and improve its rehabilitation effect.

Keywords: nasopharyngeal carcinoma; chemoradiotherapy; quality of life; negative emotions.

DOI: 10.19193/0393-6384_2019_1_21

Received July 17, 2018; Accepted September 20, 2018

Introduction

Nasopharyngeal carcinoma (NPC) is a malignant tumor of the head and neck, which has a notable ethnic and geographic distribution⁽¹⁾. This is rare in Western countries, but it is endemic in South-East Asia; and high incidence rates have been observed in a number of provinces in South-East China^(2,3). Radiotherapy (RT) alone for early-stage patients and combined chemoradiotherapy for locoregionally advanced cases of the disease are the main treatments for NPC⁽⁴⁾. With the advance of RT techniques and the transformation from convention-

al 2-dimensional (2D) RT to 3-dimensional (3D) conformal or intensity-modulated RT (IMRT), the curative effect of treatment has increased, and the 5-year overall survival rate of NPC patients can reach up to 70-80%⁽⁵⁾.

It is well-acknowledged that adults diagnosed with cancer are vulnerable to depression and anxiety⁽⁶⁾. However, significant disease- and treatment-related symptoms such as taste change, dry mouth, sticky saliva, sore throat, lack of appetite and difficulty in swallowing remain of major concern to NPC patients undergoing treatment⁽⁷⁾. Patients with advanced stages of head and neck cancer have

physical limitations associated with high psychological distress and a negative impact on daily life functions⁽⁸⁾. Ghiggia⁽⁹⁾ found that even during the post-treatment observation period, a moderate percentage of patients revealed clinically relevant anxiety and depressive symptoms. A study on Malaysian NPC patients found that both depression and anxiety scores are higher in NPC patients, compared with cancer-free controls⁽¹⁰⁾. Patients with depression were noted to have poorer health-related quality of life in almost every function symptom⁽¹¹⁾. More seriously, unrecognized and untreated depression and anxiety could not only lead to difficulties in symptom control, poor compliance with the treatment and prolonged recovery time, but also increase the impairment of immune response and impair quality of life⁽¹²⁾.

Although psychological problems such as anxiety and depression are common in patients with NPC, there is still a lack of systematic studies on the emotional status of patients with NPC, especially changes in psychological distress during hospitalization⁽¹⁾. The psychological experiences of patients who live with NPC and suffer from related physical symptoms and side effects of its treatment are seldom documented. However, during hospitalization, the patient's major assignment is to receive treatment and care; and the quality of life of the patient is easily overlooked. In the present study, the quality of life and the occurrence of negative emotion during different periods of hospitalization were retrospectively analyzed; and the correlations between these two were further analyzed, in order to provide a reference for clinical treatment.

Subjects and Methods

Subjects

Convenience sampling was adopted in the present study. A total of 75 NPC patients, who were admitted to the Department of Otolaryngology Head and Neck Cancer of our hospital from September 2013 to January 2015, and met the inclusion criteria, were enrolled into this study. Among these patients, 49 patients were male and 26 patients were female; and the age of these patients ranged within 23-68 years old (44.36 ± 10.37 years old).

Education level: 13 patients had a primary school education level or below, 28 patients had a junior high school education level, 15 patients had a senior high school education level, and 19 patients had a university education level or above.

Tumor staging: 36 patients were at stage II, and 39 patients were at stage III.

Treatment regimen:

- Radiotherapy: IMRT was performed using a German SIEMENS linear accelerator, and the average radiation dose was 72 Gy/7-8W.

- Chemotherapy: two courses of platinum-based 5-fluorouracil chemotherapy were given, and medication was adjusted according to the patient's body surface area. The 5-fluorouracil was continuously infused using a micropump for 120 hours, and medication was given once every 28 days. Antiemetic, stomach and liver protection drugs were discontinued during chemotherapy.

Inclusion criteria:

- patients diagnosed with NPC by pathological examination;
- patients treated for the first time and received comprehensive treatment regimen based on RT: one course of RT and two courses of chemotherapy;
- patients with lucid consciousness, and were able to communicate in written or verbal form;
- patients who volunteered to participate in the investigation.

Exclusion criteria:

- patients who had critical illness or were unable to complete the treatment;
- patients who returned to the hospital for reexamination;
- patients who had a family history of mental disorders;
- patients who were unwilling to participate in or withdrew from the study.

Methods

Research tools

These tools included the following:

- General information: age, gender, education level, and tumor stage.

- The quality of life of NPC patients was evaluated using the Quality of Life Questionnaire Core 30 (QLQ-C30)⁽¹³⁾ established by the European Organization for Research on the Treatment of Cancer (EORTC). The questionnaire includes indicators including functional areas (soma, role, emotion, cognition and society), symptom areas (fatigue, nausea and vomiting, and pain), quality of life (general health status) and single symptoms (shortness of breath, insomnia, loss of appetite, constipation and economic difficulties).

Scoring method: The overall health status and quality of life are divided into seven grades, which had a score of 1-7 points, respectively. The other items were divided into four grades, which had a score 1-4 points, respectively. The scores of the functional area and overall health status were positively correlated with the score for quality of life, and the scores for symptoms were negatively correlated with the score for quality of life. The standardized score for each area is between 0-100 points⁽³⁾. Depression was evaluated using the Zung self-rating depression scale (SDS), while anxiety was evaluated using the Zung self-rating anxiety scale (SAS).

Scoring method: The SDS and SAS had 20 items each, the scores were divided into four grades according to the frequency of the symptoms, the scores of all items were added up, and the sum was converted into a standard score using a formula. Patients with a SDS standard score of ≥ 53 points were diagnosed with depression, and patients with a SAS standard score of ≥ 50 points were diagnosed with anxiety⁽¹⁴⁾. The Chinese versions of QLQ-C30, SDS and SAS are widely being used in China, which have good reliability and validity.

Data acquisition

Before the investigation, the precautions for filling up all the questionnaires were explained in detail by the researcher to the investigators. All patients and (or) their family members provided an informed consent prior to the delivery of the questionnaire, understood the investigation, and volunteered to cooperate in filling up the scales. During the investigation, if the respondents could not independently fill up the scales due to illness or low education level, the scales were interpreted by the investigators to help patients understand, allowing them to fill up the scales. All three scales were delivered at the time of admission, at the 16th RT and the end of treatment, which returned back on the spot. In the present study, 75 copies of questionnaires were delivered, 75 valid copies of questionnaires were returned, and the rate was 100%.

Statistical methods

Statistical analysis was conducted using statistical software SPSS 16.0. Measurement data were expressed as mean \pm standard deviation ($\bar{x} \pm SD$). The normality test was performed using the Shapiro - Wilkes. Measurement data collected at the time of admission, the middle point of treatment and at the

end of treatment with normal distribution and homogeneity of variance were evaluated using analysis of variance. Otherwise, these data were evaluated using the K-W nonparametric test. Pairwise comparison was conducted using the Student-Newman-Keuls test. Count data were evaluated using Chi-square test. Pearson's correlation analysis was used to analyze the association of quality of life with depression and anxiety.

Results

Depression and anxiety in patients with NPC during hospitalization

The incidence of anxiety was highest during treatment in patients with NPC (35 cases, 47%), and the differences were statistically significant when compared with incidences at the time of admission and at the end of treatment ($P < 0.05$). The incidence of depression was highest at the end of treatment (58 cases, 77%), but the differences when compared with incidences before the end of treatment were not statistically significant ($P > 0.05$). The scores of depression and anxiety gradually increased from admission up to the end of treatment, and anxiety scores at the end of treatment was significantly higher than scores at the time of admission ($P < 0.05$). Details are shown in Tables 1 and 2.

group	On admission	middle point of treatment	end of treatment	χ^2	P
anxiety group	15	35	28	12.127	0.002
non-anxiety group	60	40	47		
depression group	50	56	58	2.339	0.311
non-depression group	25	19	17		

Table 1: Anxiety and Depression in Patients with Nasopharyngeal Carcinoma during Hospitalization(n).

Quality of life scores in NPC patients during hospitalization

In this study, the scores for the functional area and overall health status of NPC patients gradually decreased, and the scores for symptoms gradually increased. Differences in physical, emotional and cognitive functions, fatigue, pain, insomnia and constipation at the end of treatment and at the time of admission were statistically significant when compared with scores the middle point of treatment

($P < 0.05$). The scores of all items for quality of life during hospitalization are shown in Table 3.

item	n	On admission	middle point of treatment	end of treatment	F	P
anxiety	75	41.78±8.26	45.19±9.44	47.92±10.59	4.626	0.011
depression	75	51.55±8.82	52.35±8.74	54.27±9.06	1.245	0.291

Table 2: Patient depression and anxiety scores during hospitalization($\bar{x} \pm s$, score).

note: when compared with on admission, $P < 0.05$

area		on admission	middle point of treatment	end of treatment	F/Z	P
function area	physical function	89.75±14.71	79.48±21.60	68.35±24.85*	27.323	< 0.001
	role function	75.02±28.68	64.77±33.42	55.46±35.03	4.713	0.01
	emotional function	76.81±18.55	74.67±23.57	67.31±26.37*	3.066	0.216
	cognitive function	85.23±18.25	79.12±21.35	68.52±27.13*	11.335	0.003
	social function	55.81±31.43	49.10±31.93	42.31±28.34	2.528	0.083
to overall	verall health situation	56.71±22.95	41.65±21.93	41.83±24.52	7.241	0.001
to symptoms	fatigue	20.85±20.29	39.02±29.66	50.60±26.24*	32.983	< 0.001
	nausea and vomiting	11.23±19.69	28.87±33.65	36.83±32.70	21.067	< 0.001
	pain	24.06±24.72	32.67±24.40	43.31±30.49*	12.013	0.002
	shortness of breath	10.19±18.06	14.69±24.17	23.69±26.76	8.05	0.018
	insomnia	35.88±34.91	48.69±34.05	60.88±34.84*	6.785	0.002
	loss of appetite	22.35±28.55	51.25±37.10	60.27±32.46	31.822	< 0.001
	constipation	11.48±19.64	19.17±27.50	35.83±30.22*	21.822	< 0.001
	diarrhea	3.17±9.82	8.33±19.70	9.58±19.04	3.602	0.165
	financial difficulties	67.27±34.70	64.13±35.51	66.12±32.71	0.111	0.895

Table 3: Quality of life of patients with nasopharyngeal carcinoma during hospitalization($\bar{x} \pm s$, score).

note: *when compared with on admission, middle point of treatment, $P < 0.05$; *when compared with on admission, $P < 0.05$

Association of quality of life with depression and anxiety in inpatients during hospitalization

In the present study, the functional area and overall health status in quality of life were negatively correlated with anxiety and depression, and symptoms were positively correlated with anxiety and depression. At the middle point of treatment and at the end of treatment, there was a significant correlation between anxiety and functional area and symptoms ($P < 0.05$ or $P < 0.01$). Details are shown in Table 4.

Discussion

The incidence of anxiety and depression was higher in patients with NPC during hospitalization

Anxiety and depression are troubling and harmful symptoms in patients, especially when patients suffer severe side effects of radiation and chemotherapy. Significant negative emotion is common across all stages of this life-threatening disease, with anxiety and depression representing

typical manifestation⁽¹⁵⁾. Anxiety disorders are the most common psychological problem, it is found in 10% to 30% of people with cancer, while depression occurs in about 10% to 25% of cancer patients⁽¹⁶⁾. These important psychological symptoms have historically been neglected in care but are gaining more attention recently as the quality of life during hospitalization and survival period. The results of this study revealed that the incidence and scores of anxiety and depression in patients with NPC gradually increased with the time of hospitalization, and increased to the highest levels at the end of treatment. This is inconsistent with the results of a study conducted by Bijuan Wu et al.⁽¹⁷⁾, in which the scores of anxiety and depression in patients with NPC were highest at the middle of RT. Since concurrent chemoradiotherapy is the main treatment for NPC patients, during the therapeutic process of hospitalization, negative emotions such as anxiety and depression may be induced by different reasons at each stage. The main affecting factors during hospitalization include the following: economic burden, chemoradiotherapy side effects, cancer pain, worry about the prognosis, etc.

In this study, these patients completed one course of RT and two courses of chemotherapy at the end of treatment; and the side effects of the treatment also reached the peaked at this time. Physical and mental status and economic pressure were more likely the cause of negative emotion at the end of treatment. In the patients of this study, the incidence of anxiety increased from 20% (15/75) to 37% (28/75, $P < 0.05$), and the incidence of depression increased from 67% (50/75) to 77% (58/75). The incidence of anxiety was lower than 41.79% (84/201) in NPC patients residing in the

Chaoshan area, Guangdong province, China ($P > 0.05$); and the incidence of depression was higher than that in NPC patients in the Chaoshan area (62.19% (18), $P < 0.05$). At the end of treatment, the anxiety score was 47.92 ± 10.59 , and the depression score was 54.27 ± 9.06 ; and these were both higher than the norm in China and the results in related studies⁽¹⁹⁻²¹⁾. This suggests that the incidence of anxiety and depression is high in NPC patients during hospitalization. In addition to the treatment and nursing of diseases, clinicians should pay more attention to the occurrence of negative emotion.

item	on admission		middle point of treatment		end of treatment	
	anxiety	depression	anxiety	depression	anxiety	depression
physical function	-0.231	-0.144	-0.668**	-0.005	-0.448*	-0.132
role function	-0.011	-0.075	-0.436*	-0.204	-0.484*	-0.179
emotional function	-0.141	-0.12	-0.630**	-0.386*	-0.503**	-0.188
cognitive function	-0.181	-0.080	-0.384*	-0.230	-0.512**	-0.116
social function	-0.314	-0.105	-0.499*	-0.443**	-0.305	0.006
general health status	-0.520**	-0.084	-0.153	-0.219	-0.136	-0.017
tired	0.249	0.225	0.683**	0.287	0.509**	0.140
nausea and vomiting	0.112	0.073	0.520**	0.239	0.549**	0.231
pain	0.331	0.159	0.387*	0.211	0.426*	0.033
shortness of breath	0.081	0.217	0.734**	0.155	0.591**	0.396*
insomnia	0.102	0.282*	0.374*	0.330*	0.007	0.219
loss of appetite	0.278	0.285*	0.370*	0.150	0.430*	0.134
constipation	0.265	0.236	0.138	0.103	0.369*	0.178
diarrhea	0.038	0.038	0.219	0.105	0.608**	0.502**
financial difficulties	0.480*	0.090	0.472*	0.466**	0.229	0.040

Table 4: Relationship between quality of life and SAS and SDS in patients with nasopharyngeal carcinoma(r value).
note: * $P < 0.05$; ** $P < 0.01$

Analysis of quality of life in patients with NPC during hospitalization

With the development of the medical mode and medical technology, survival rate or fatality rate is no longer treated as the only index to evaluate the therapeutic effect and recovery of cancer patients; and the medical profession and the whole society are paying more and more attention on determining how to improve the quality of life of cancer patients⁽²²⁾. In quality of life, the social and psychological status of patients play important roles; which emphasizes the subjective feeling and functional status of patients, and reflects the health status of patient from multiple aspects. In the patients

of this study, functional area and overall health level decreased with the time of hospitalization; while symptom scores increased. At the end of treatment, the differences in physical, emotional and cognitive functions, fatigue, pain, insomnia and constipation symptoms compared with these states at admission and during treatment were statistically significant ($P < 0.05$).

In the patients of this study, the overall health level score was 41.83 ± 24.52 at the end of treatment, the score of each item in functional area was < 70 points, the scores of fatigue, insomnia and loss of appetite in symptom area and economic difficulties were all > 50 points. Repeated nasal obstruction, tinnitus, hearing decline, headache and diplopia caused by nasopharyngeal tumors, and side effects during chemoradiotherapy such as nausea and vomiting at different degrees, loss of appetite, gastrointestinal reactions, myelosuppression, oral ulcers and radiation-induced dermatitis cause the physiological function of patients to decrease. This in turn would affect the patient's social function, emotional function and overall quality of life. Long-term malnutrition, pain and fatigue, and other symptoms caused patients to suffer from physiological and psychological impacts at different degrees. Patients were mostly young or middle-aged men are unable to continue to support their family as the main labor force during hospitalization. On the contrary, the increase in economic pressure of their families due to high treatment costs has brought about a heavy burden to their families, causing the further decrease in the quality of life of patients.

Effect of anxiety and depression on quality of life in NPC patients

In the present study, the functional area and overall health status in quality of life were negatively correlated with anxiety and depression; and symptom area was positively correlated with anxiety and depression. These were consistent with the results of a study conducted by Huijiao Cao et al.⁽²³⁾. This study revealed that the more severe the anxiety and depression of patients, the poorer the patient's body, role, emotional, cognitive and social function and overall health status became, and the more severe the symptoms caused by the disease and side effects of treatment become. Thus, the overall quality of life of patients decreased.

This study revealed that the middle point of treatment and at the end of treatment, quality of life

of patients was more closely correlated with anxiety and depression. This suggests that we should pay more attention to the occurrence of anxiety in patients during chemoradiotherapy, and perform psychological nursing for patients in a timely manner.

References

- 1) Yao-Tiao Deng, Wu-Ning Zhong, Yu Jiang. Measurement of distress and its alteration during treatment in patients with nasopharyngeal carcinoma. *Head & Neck*, 2014, 36(8): 1077-1086.
- 2) Lindsey A. Torre, Freddie Bray, Rebecca L. Siegel, Jacques Ferlay, Joannie Lortet-Tieulent, Ahmedin Jemal. Global cancer statistics, 2012. *Ca A Cancer Journal for Clinicians*, 2015, 65(2): 87-108.
- 3) Jacques Ferlay, Isabelle Soerjomataram, Rajesh Dikshit, Sultan Eser, Colin Mathers, Marise Rebelo, Donald Maxwell Parkin, David Forman, Freddie Bray. Cancer incidence and mortality worldwide: Sources, methods and major patterns in globocan 2012. *International Journal of Cancer*, 2015, 136(5): 359-386.
- 4) Wei-Xiong Xia, Hai-Bo Zhang, Jun-Li Shi, Xing Lu, Lin Wang, Yan-Fang Ye, Ka-Jia Cao, Chao-Nan Qian, Xiang Guo, Yan-Qun Xiang. A prognostic model predicts the risk of distant metastasis and death for patients with nasopharyngeal carcinoma based on pre-treatment serum c-reactive protein and n-classification. *European journal of cancer*, 2013, 49(9): 2152-2160.
- 5) WL Tsai, CY Chien, HY Huang, KC Liao, FM Fang. Prognostic value of quality of life measured after treatment on subsequent survival in patients with nasopharyngeal carcinoma. *Quality of Life Research*, 2013, 22(4): 715-723.
- 6) Yi-Long Yang, Guo-Yuan Sui, Guang-Cong Liu, De-Sheng Huang, Si-Meng Wang and Lie Wang. The effects of psychological interventions on depression and anxiety among chinese adults with cancer: A meta-analysis of randomized controlled studies. *BMC cancer*, 2014, 14(1): 1-26.
- 7) Shawna Rekshmy D'dharan, Nithya Jagannathan. Oral complications due to radiotherapy and chemotherapy in cancer patients. *Dental & Medical Problems*, 2015, 52(1): 11-16.
- 8) FM Fang, HC Chiu, WR Kuo, CJ Wang, SW Leung, HC Chen, LM Sun, HC Hsu. Health-related quality of life for nasopharyngeal carcinoma patients with cancer-free survival after treatment. *International journal of radiation oncology, biology, physics*, 2002, 53(4): 959-968.
- 9) Ghiggia Ada, Castelli Lorys, Riva Giuseppe, Tesio Valentina, Erica Provenzano, Ravera Mattia, Garzaro Massimiliano, Pecorari Giancarlo, Franco Pierfrancesco, Potenza Ilenia. Psychological distress and coping in nasopharyngeal cancer: An explorative study in western europe. *Psychology, Health & Medicine*, 2017: 1.
- 10) KO Noor Jan Naing, AANorAzillah, INooriny, CH Tan, YYYeow, AHamidin. Anxiety and depressive symptoms and coping strategies in nasopharyngeal carcinoma patients in hospital kuala lumpur. *Malaysian Journal of Medicine & Health Sciences*, 2010, 6(1): 71-81.
- 11) Chiou WY, Lee MS, Ho HC, Hung SK, Lin HY, Su YC, Lee CC. Prognosticators and the relationship of depression and quality of life in head and neck cancer. *Indian Journal of Cancer*, 2013, 50(1): 14-20.
- 12) Reiche EM, Nunes SO, Morimoto HK. Stress, depression, the immune system, and cancer. *Lancet Oncology*, 2004, 5(10): 617-625.
- 13) Rachel Phillipsa, Mihir Gandhia, Yin Bun Cheunga, Michael P. Findlay, Khin Maung Win, Hoang Hoa Hai, Jin Mo Yang, Rolley Rey Lobo, Khee Chee Soo, Pierce K.H. Chow. Summary scores captured changes in subjects' QoL as measured by the multiple scales of the EORTC QLQ-C30. *Journal of Clinical Epidemiology*, 2015, 68(8): 895-902.
- 14) Wang Xiao, Huang Yu-Qing, Huang Yue-Qin, Wang Jun, Liu Jun, Jin Lu-Ming; Cui Jian, Liu Qiang; Yang Ying-Shun, Min Xian-Jun, Liu Zhao-Rui, Chen Hong-Guang. Comorbidity and risk factors of depressive and anxious symptoms in postoperative patients with lung tumor. *Chinese Mental Health Journal*, 2016, 30(6): 401-405.
- 15) Teunissen SC, De GA, Voest EE, de Haes JC. Are anxiety and depressed mood related to physical symptom burden? A study in hospitalized advanced cancer patients. *Palliative Medicine*, 2007, 21(4): 341-346.
- 16) Linda F. Brown, Kurt Kroenke, Dale E. Theobald, Jingwei Wu, Wanzhu Tu. The association of depression and anxiety with health-related quality of life in cancer patients with depression and/or pain. *Psycho-Oncology*, 2010, 19(7): 734-741.
- 17) Wu Bijuan, Jiang Miaoling, Xiuying C. Study on correlation between psychological status and quality of life of nasopharyngeal carcinoma patients in different courses of treatment. *Chinese nursing research*, 2015, 29(3b): 950-951.
- 18) Lin Yun, Huang Liping, Zhang Xiulian, Qiu Jiehua, Xu Xiaodan, Xu Muming. Influencing factors of coexisting anxiety and depression in patients with npc in chaoshan region. *Modern Clinical Nursing*, 2016, 15(1): 5-9.
- 19) Jiang ZN, Zhu Y, Ya-Li MO, Jiang S. Level of anxiety and depression on volunteers in clinic trial. *Chinese Journal of Pathophysiology*, 2008, 24(1): 51-53.
- 20) Ru-Chun Shi, Ai-Feng Meng, Weng-Lin Zhou, Xiao-Yan Yu, Xin-En Huang, Ai-Jun Ji, Lei Chen. Effects of home nursing intervention on the quality of life of patients with nasopharyngeal carcinoma after radiotherapy and chemotherapy. *Asian Pacific Journal of Cancer Prevention Apjcp*, 2015, 16(16): 7117-7121.
- 21) Yang JY. Clinical study of psychological intervention to improve the life quality of patients with gynecological cancer. *Medical Innovation of China*, 2014, 11(27): 94-97.
- 22) Dai YH, Hou AH. Effects of mind and heart care on negative emotions and quality of life in nasopharyngeal carcinoma patients undergoing radiotherapy and chemotherapy. *Journal of Nursing Administration*, 2012, 12(4): 278-280.
- 23) Cao H, Qin H, Huang W. Correlation analysis of anxiety, depression and quality of life in patients with breast cancer. *Modern Clinical Nursing*, 2009, 7(8): 1-3.

Fund:Guangxi Science and Technology Project(Guiké attack 14124003-3);Self-raised Subject of Guangxi Science and Technology Commission(Z2013358、 Z2015686)

Corresponding author

GUI-FEN FU

Department of Nursing, The People's Hospital of Guangxi Zhuang Autonomous Region; 6 Taoyuan Road, Nanning 530021, China

E-mail: happyguifenu@21cn.com

(China)