

• GASTRIC CANCER •

# Comparison of quality of life between urban and rural gastric cancer patients and analysis of influencing factors

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**Received:** 2003-11-18 **Accepted:** 2003-12-08

## Abstract

**AIM:** The conception of quality of life has been widely accepted by clinic doctors. Evaluations of the treatment effect of chronic diseases have been changed to depend not only on the survival time, but also on the quality of life of the patients. Fuzhou City and Changle County are high-incidence areas of the gastric cancer in Fujian Province. The aims of this research were to compare the quality of life of urban patients with that of rural patients and analyze the factors influencing quality of life of gastric cancer patients in Fujian Province.

**METHODS:** The samples were drawn with cluster sampling. The urban sample consisted of 162 patients aged 25 to 75 with 143 males and 19 females. The rural sample consisted of 200 patients aged 32 to 78 with 166 males and 34 females. The patients in both the urban and rural areas were investigated, and their scores on 21 items reflecting the quality of life were measured. The methods of *t* test and stepwise regression were used to analyze the data.

**RESULTS:** The average total scores of quality of life of the urban patients and rural patients were 64.11 and 68.69 respectively. There was a significant difference between the means of two samples ( $P = 0.0004$ ). Seven variables in the regression model estimated by the urban sample and 4 variables in the model by the rural sample were at the level of significance  $\alpha = 0.05$ . Family income, nutrition and rehabilitating exercise were selected into both the urban and rural regression models.

**CONCLUSION:** Most of the gastric cancer patients have poor quality of life in Fujian Province and the rural patients have lower quality of life than that of urban patients. The patients having more family income have better quality of life, and enhanced nutrition and doing rehabilitating exercise are helpful in improving the quality of life of the gastric cancer patients.

Tian J, Chen ZC, Wu B, Meng X. Comparison of quality of life between urban and rural gastric cancer patients and analysis of influencing factors. *World J Gastroenterol* 2004; 10(20): 2940-2943

<http://www.wjgnet.com/1007-9327/10/2940.asp>

## INTRODUCTION

Along with the changes of medical pattern and health care practice, evaluations of the treatment effect of chronic diseases have been changed to depend not only on the survival time, but also on the quality of life of the patients. The quality of life of a person is his personal feeling in sections of physiology, psychology and society<sup>[1,2]</sup>. The quality of life of the cancer patients can reflect not only treatment effect but also rehabilitation effect, so it has attracted much attention since 1980. Many studies have been done regarding the quality of life of the cancer patients in western countries and Japan<sup>[3-8]</sup>, and there also have been several relevant studies in China<sup>[9-11]</sup>. Another important aspect of research on the quality of life is analyzing factors influencing the quality of life. Since many factors can impact on the quality of life of the cancer patients, it is important to analyze which factors may be related to the quality of life in order to improve the quality of life of the patients. Fuzhou City and Changle County are high-incidence areas of gastric cancer in Fujian Province. Every year, there are many new cases reported in the two areas<sup>[12]</sup>. A lot of efforts have been made in prevention and treatment of gastric cancer. However, little attention has been paid to the quality of life of the gastric cancer patients and few studies have been done on how to improve the quality of life of the patients. In order to understand the levels of quality of life of the gastric cancer patients in Fujian Province, we made an epidemiological survey from May 1999 to July 1999. In this paper, we describe the levels of the quality of life of the urban patients and rural patients, compare the quality of life of the urban patients with that of the rural patients, and analyze the factors influencing the quality of life. The results of this research may be useful to doctors and nurses in the community health center to help improve the quality of life of the gastric cancer patients.

## MATERIALS AND METHODS

### Materials

The populations of the gastric cancer patients diagnosed between 1997 and 1998 were provided by the Tumor Registration Office of Fujian Province. The samples were drawn from the populations with cluster sampling. All of the gastric cancer patients in the urban sample were residents in Fuzhou City and diagnosed by the provincial-level hospitals. The patients in the rural sample were residents in Changle County and diagnosed by the county-level above hospitals. All of the patients in the two samples had survived for no less than one year.

### Methods

The questionnaire was composed of two sections, one with 16 items related to the disease, treatment and rehabilitation of the gastric cancer patients (Table 1), and the other with 21 items related to the quality of life of the patients (Table 2). Each of the 21 items of survival quality was scored from 1 to 5 indicating the function from the worst to the best. The internal consistency and stability index, Cronbach  $\alpha = 0.9866$ , confirmed the reliability of the 21 items describing the quality of life. The investigators

**Table 1** List of factors that may affect the quality of life of gastric cancer patients

Factor	Definition			
Gender	Male	1	Female	2
Age (yr)				
Marital status	Single	1	Married	2
	Divorced	3	Widowed	4
Education	Primary school	1	Middle school	2
	High school	3	University	4
Family income (per capita, Yuan)				
Medical insurance	Yes	1	No	0
Clinical stage of tumor	1-4			
Survival time (mo)				
Surgery	2/3 gastrectomy 1, 4/5 gastrectomy 2, total gastrectomy 3			
Number of chemotherapy programs				
Time from the latest chemotherapy to the enrollment (mo)				
Treatment of traditional Chinese medicine	Yes	1	No	0
Home nursing staff	Spouse	1	Other relatives	2
	Housekeepers	3	None	4
Chemotherapy	Yes	1	No	0
Enhanced nutrition	Yes	1	No	0
Rehabilitating exercise	Yes	1	No	0

visited the patient's family and asked the patient to complete the questionnaire except the contents of the disease stage and treatments which were collected from the medical records at the hospitals. The scores for the individual items shown in Table 2 were summed to produce a 'total score', representing the quality of life of each patient.

Numerical descriptive statistics were used in summarizing the total score of quality of life in urban patients and rural patients respectively, *t* test was used for testing the difference between the means of two samples and stepwise regression<sup>[13]</sup> was used for analyzing the factors influencing quality of life. SAS software package was used for all analyses<sup>[14]</sup>.

**Table 2** The 21 parameters of the quality of life

Items		Items	
1	Sleep	12	Knowledge of cancer
2	Range of activities	13	Mental status
3	Eating	14	Fear of disease
4	Ability of using traffic vehicles independently	15	Psychological pain
5	Ability of body movement	16	Connection with relatives and friends
6	Ability to live independently	17	Social contact
7	Housework	18	Disappointment
8	Pain	19	Confidence of fighting the disease
9	Recreational activities	20	Intellectual activities
10	Watching TV or listening to radio	21	Attitude towards treatment
11	Interest or hobby		

## RESULTS

### Description of samples

The urban sample consisted of 162 patients aged 25 to 75. There were 143 male and 19 female patients in the urban sample, about 88.3% and 11.7% of the urban sample size respectively. The rural sample consisted of 200 patients aged 32 to 78. There were 166 male and 34 female patients in the rural sample, about 83.0% and 17.0% of the rural sample size respectively. In the urban sample, the workers represented 42.6% and government functionaries took up 23.5%. All of the patients in the rural sample were peasants.

### The quality of life

The distributions of total scores of urban patients and rural patients are shown in Table 3. Among the urban patients, the highest score was 96 and the lowest score 22, and 36.42% of the patients, the largest group, had total scores between 70 and 80 and 1.23%, the smallest group, had total scores between 90-105. Among the rural patients, the highest score was 81 and the lowest score 19, and 34.5% had total scores between 60 and 70 and none had a total score between 90-105. Table 4 shows the means and standard deviations of the total scores of the urban and rural patients. The difference of total scores between the urban and rural patients was significant ( $P = 0.0004$ ). These results suggest that most of the gastric cancer patients had poor quality of life in Fujian Province and the qualities of life of rural patients were worse than those of urban patients.

**Table 3** Distributions of total scores in urban patients and rural patients

Total score	Urban		Rural	
	<i>n</i>	Percentage (%)	<i>n</i>	Percentage (%)
<30	3	1.85	4	2.00
30-	3	1.85	6	3.00
40-	8	4.94	16	8.00
50-	17	10.49	54	27.00
60-	43	26.54	69	34.50
70-	59	36.42	41	20.50
80-	27	16.67	10	5.00
90-105	2	1.23	0	0.00

**Table 4** Means and standard deviations of total scores in the two samples

	Number of the patients	mean	SD	95% confidence interval
Urban	162	68.69	12.98	66.69-70.69
Rural	200	64.11	11.29	62.54-65.67
		$t = 3.5885$	$P = 0.0004$	

### Factors influencing the quality of life

The relationship between the total scores, also called dependent variables, and the factors shown in Table 1, also called independent variables, was analyzed by using method of stepwise regression.

Setting the level of significance  $\alpha = 0.05$ , we had the result

of regression analysis with urban patients (Table 5). Table 5 shows the factors influencing quality of life of gastric cancer patients and the regression coefficients. This result suggests that the factors related to the total score of urban patients were age ( $P=0.0001$ ), family income ( $P=0.0032$ ), clinical stage of the tumor ( $P=0.0375$ ), the time from the latest chemotherapy to the enrollment ( $P=0.0095$ ), home nursing staff ( $P<0.0001$ ), enhanced nutrition ( $P=0.0431$ ) and rehabilitating exercise ( $P=0.0115$ ). As indicated by the regression coefficients, the quality of life of elder patients was worse than that of the younger ones, the patient in the early stage of gastric cancer had a better quality of life than that in the late stage and patients with a longer time period from the latest chemotherapy to the enrollment had a better quality of life than one with a shorter time period.

**Table 5** Results of stepwise regression with urban patients

Variable	Regression coefficient	SEM	<i>t</i>	<i>P</i>
Age (yr)	-0.10620	0.02654	-4.00	0.0001
Family income	1.11909	0.36949	3.03	0.0032
Clinical stage of the tumor	-1.10772	0.52498	-2.11	0.0375
Time from the latest chemotherapy to the enrollment	0.09199	0.03876	2.37	0.0095
Home nursing staff	-2.98233	0.57659	-5.17	<0.0001
Enhanced nutrition	1.80669	0.88221	2.05	0.0431
Rehabilitating exercise	1.01185	0.39245	2.58	0.0115

At  $\alpha=0.05$ , the results of regression analysis of the rural patients are shown in Table 6. The results suggested that the factors related to the total score of rural patients were family income ( $P=0.0193$ ), surgical operation ( $P<0.0001$ ), enhanced nutrition ( $P=0.0488$ ) and rehabilitating exercise ( $P=0.0125$ ). Based on regression coefficients, patients with total gastrectomy had a worse quality of life than those with a partial gastrectomy.

**Table 6** Results of stepwise regression with rural patients

Variable	Parameter estimated	SEM	<i>t</i>	<i>P</i>
Family income	1.0860	0.45974	2.36	0.0193
Surgery	-14.24462	2.77803	5.12	<0.0001
Enhanced nutrition	-2.73243	1.37834	1.98	0.0488
Rehabilitating exercise	-2.20909	0.87618	2.52	0.0125

Three factors: family income, nutrition and rehabilitating exercise, in both regression models, might be important for improving the quality of life of the gastric cancer patients. The patients having more economic incomes had a better quality of life, and increased nutrition and doing rehabilitating exercise are helpful in improving the quality of life of the gastric cancer patients.

## DISCUSSION

Traditionally, the effects of treatments were evaluated by such quantitative indexes as survival rate, survival time and the volumes of tumors. The conception of quality of life is proposed, along with the changes of medical and health care practice patterns and progress of medical science. It is used to evaluate the effects of treatments for chronic diseases and cancers. The purpose of this study was to obtain the information about quality of life of gastric cancer patients in Fujian Province and explore which factors impacted on the quality of life of gastric cancer patients.

For most of gastric cancer patients, the prognosis and their qualities of life were poor since the cancers had been in advanced stages when they were diagnosed<sup>[15,16]</sup>. Our results show that most of the gastric cancer patients have low quality of life in Fujian Province, and the quality of life of rural gastric cancer patients are worse than that of urban patients. It may be that the rural patients suffered more physical and psychological pain because of their lower levels of education and economic income compared with the urban patients.

Some researchers held that patient's nutritional status played a critical role in maintaining a positive quality of life from both physical and emotional points of view<sup>[17-20]</sup>. Nutrient depletion adversely affects immune function, the patient's enjoyableness and social interactions with family and friends, which can further depress appetite<sup>[17]</sup>. Low hemoglobin levels were associated with fatigue, poor overall quality of life, and decreased ability to work. Interventions that reverse fatigue and other anemia-related symptoms should have a positive effect on quality of life<sup>[19]</sup>. Our results also showed that improved nutrition was one of the factors influencing quality of life both in rural and urban areas. This may suggest that appropriate nutritional care can help maintain the patient's body weight and protein status, reduce fatigue and improve quality of life.

Rehabilitating exercise has been thought to be a factor influencing quality of life of breast cancer patients. A review on 24 studies dealing with physical exercise and quality of life of cancer patients published between 1980 and 1997 demonstrated that physical exercise had a positive effect on quality of life including physical, functional, psychological, and emotional well-being<sup>[21-27]</sup>. In our research, rehabilitating exercise was related to quality of life of gastric cancer patients, which is consistent with previous researches. Not only can taking rehabilitating exercise improve the patient's body function, but it can also please his mood, strengthen his confidence of defeating the disease and improve his ability of contacting society.

Our results also showed that the quality of life of urban patients could be affected by the home nursing staff and rural patients affected by the surgery. The psychological status of the nursing staff may have more influence on the physiological and psychological functions of the patient. Good nutritional care for the patient requires full support from the home nursing staff<sup>[28-32]</sup>. Patients who have been given a partial gastrectomy achieved a better quality of life than those having a total gastrectomy. When the entire gastric is removed, the patients should adjust to a different eating schedule involving eating small quantities of food more frequently and high-protein foods, so the home nursing staff should be educated on providing cancer care and nutritional support. The family members should have adequate knowledge as to how to support the patient.

In summary, our data obtained by epidemiological survey show that most of the gastric cancer patients have poor quality of life in Fujian Province, and the quality of life of the rural patients are worse than that of the urban patients. The patients having more family income have better quality of life, and enhanced nutrition and doing rehabilitating exercise are helpful in improving the quality of life of the gastric cancer patients.

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Edited by Hu DK and Zhu LH Proofread by Chen WW and Xu FM