

Original Article

Quality of Life in Cancer Patients with Pain in Beijing

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ABSTRACT

Objective: To investigate the quality of life (QOL) of cancer pain patients in Beijing, and explore the effect of cancer pain control on patients' QOL.

Methods: Self-developed demographic questionnaire, numeric rating scale and SF-36 questionnaire were used together among 643 cancer pain patients in 28 Grade 2nd to 3rd general hospitals and 2 Grade 3rd cancer hospitals.

Results: The SF-36 eight dimensions scores ranged from 31.75 to 57.22 in these cancer pain patients. The *t* test and Wilcoxon rank sum test were used to compare the QOL between pain controlled (PC) group and pain uncontrolled (PUC) group, and the results showed that patients in PC group had the higher QOL scores in 6 areas of SF-36 ($P < 0.05$). Binary logistic regression results found that pain management satisfaction scores ($P < 0.001$), family average personal monthly income ($P = 0.029$), current receiving chemotherapy ($P = 0.009$) and cancer stage ($P < 0.001$) were the predictors to cancer pain controlled results.

Conclusion: Cancer patients with pain in Beijing had poor QOL. Pain control will improve the QOL of cancer pain patients.

Key words: Cancer patients; Cancer related pain; Quality of life (QOL)

INTRODUCTION

Recent data from China Ministry of Health show that cancer is the top risk factor causing Chinese people death and about 24.26%–27.01% people died from cancer^[1]. The prevalence of pain is estimated at 25% for the newly diagnosed cancer patients, 33% for undergoing activate treatment and more than 75% with advanced disease^[2, 3]. In 1997, China Ministry of Health conducted a survey on cancer pain in 1,555 cancer patients from 29 provinces and cities, and the results showed that about 61.6% cancer patients had cancer pain^[4]. Liu, et al.^[5] investigated the cancer pain status in Beijing and found 66.3% cancer patients had pain, thereamong mild pain and severe pain incidences were 25.9% and 5.2%. The World Health Organization (WHO) and international pain community have identified cancer pain as a global health concern^[6]. Cancer pain is one of the most

common symptoms experienced by cancer patients^[7], and it is also the main reason affecting quality of life (QOL) in cancer patients^[8-10]. The American Society of Clinical Oncology (1996) has also established QOL as an important outcome, secondary in importance only to survival. Recent years, many researchers suggested that QOL is a more appropriate outcome variable for evaluating the efficacy of cancer treatment^[11, 12]. Cancer pain can affect patient's physiological, psychological, social and mental functions, and decrease the QOL of cancer patient^[13]. Cancer pain can not only cause great suffering in cancer patients but also bring heavy burden on family and society^[14]. In 1986, the WHO published a final monograph under the title of Cancer Pain Relief that aimed to improve the management of cancer pain^[15]. Pain control plays a key role in determining health-related QOL, and if pain is ongoing and uncontrolled, it will have a detrimental and deteriorating effect on virtually every aspect of a patient's life^[16]. Many research results showed that pain controlled results influenced the QOL in cancer patients^[17, 18]. But there are limited researches^[19] about QOL in cancer pain patients and

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no evidence of the effect of pain control status on QOL in cancer patients with pain in China. In order to learn about the QOL status in cancer patients with pain and compare the QOL between pain controlled (PC) group and pain uncontrolled (PUC) group, we conducted a survey in cancer pain patients from 30 hospitals in Beijing and try to explore the effect of pain control on QOL in cancer pain patients.

MATERIALS AND METHODS

Participants and Settings

This descriptive, cross-sectional study selected data from a convenience sample of cancer patients in outpatient department and inpatient department (hospital stay <7 d) from 2 cancer hospitals and cancer departments of 28 general hospitals from October 2009 to October 2010.

Inclusion criteria: (1) 18 years old or above; (2) being diagnosed with cancer by pathological examination; (3) experiencing cancer-related pain in recent one month; (4) being able to read and understand the questionnaires; and (5) being willing to participate in this study and gave his/her written informed consent.

Exclude criteria: (1) with mental disorder; (2) because of not feeling comfort and could not finish the questionnaire; and (3) receiving operation or invasive procedure within one week.

Instruments

All patients completed the following questionnaires:

Demographic and Clinical Characters Questionnaires

Demographic characters include age, gender, marital status, family average personal monthly income, educational level and hospital charges paid way. Clinical characters include type of cancer, cancer stage, received treatments, and current receiving treatments.

Numerical rating scale (NRS)^[20]

NRS Uses 0–10 to evaluate the pain intensity. 0 is no pain, 1–3 is mild pain, 4–6 is moderate pain and 7–10 is severe pain. In this study, NRS was used to evaluate the current pain and worse pain past 24 hours. A descriptive NRS is a valid and reliable measure of pain intensity^[21].

Pain Management Satisfaction^[22]

Only one question from American Pain Society Patient Outcome Questionnaire (APS-POQ) was used to evaluate pain management satisfaction of cancer

pain patient. The question is “select the phrase that indicates how satisfied or dissatisfied you are with the results of your pain treatment overall”. Number 1 to 6 separately represents very dissatisfied, dissatisfied, slightly dissatisfied, slightly satisfied, satisfied, and very satisfied. The higher score shows the patient's higher satisfaction of pain management result, and the score ≥ 4 indicates patients are satisfied.

Short Form 36 Health Survey Questionnaire (SF-36)^[20]

The SF-36 is a validated, 36-item questionnaire measuring QOL in eight areas of perceived health using a single multi-item scale. SF-36 scales measure perceived health in the areas of physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH), with higher scores (range 0–100) reflecting better perceived health. SF-36 was widely used by many researches conducted in cancer patients regardless of adults or children^[23–27]. And the SF-36 mental health score was significantly related to better survival compared with European Organisation for Research and Treatment of Cancer (EORTC) QLQ-C30 in colorectal and lung cancer patients^[25].

Data Collection and Quality Control

The research group was composed of researchers, survey supervisors and nurse investigators. The researchers trained the nurse investigators from 30 hospitals twice before the formal survey. During the survey, the nurse investigators investigated the cancer pain patients in 30 hospitals, and the survey supervisors went around all the hospitals, visited each hospital once a week and collected the finished questionnaires. The valid questionnaire required missing item in demographic and clinical characters questionnaire less than 1 item and no missing item in other three questionnaires of each patient. Six hundreds and eighty-four of 800 questionnaires were returned. Questionnaires with less than one missing item in the demographic form and no missing item in other three questionnaires were considered as valid. According to this rule, 643 of 684 questionnaires were considered as valid (valid rate=80.38%).

Statistical Analyses

Analyses were conducted using the SPSS Version 18.0 (SPSS Inc., Chicago, IL, USA). Comparisons of QOL between the PC group and the PUC group were performed by independent sample *t*-tests and Mann-Whitney rank sum test. Independent sample *t*-test and Chi-square test were used to compare the demographic and clinical characteristics between two

groups. Binary logistic regression was used to analyze the factors which predict the cancer pain controlled or not. All significance levels referred to two-sided tests. A *P* value less than 0.05 was considered significant. Values are presented as $\bar{x}\pm s$.

RESULTS

Patients Characteristics

The mean age of the cancer patients was (58.74±14.01) years, range from 18 to 93 years. There were 361 (56.1%) male patients and 282 (43.9%) female patients. The patients' socio-demographic and clinical characteristics are present in Table 1. Among these patients, 309 (48.1%) received surgery, 463 (72.0%) received chemotherapy, and 255 (39.7%) received radiotherapy. Now, 308 cancer patients (47.9%) are

undergoing chemotherapy, 138 cancer patients (21.5%) are undergoing radiotherapy, and 56 cancer patients (8.7%) are followed up.

Cancer Pain Status

Cancer pain status of 643 cancer patients is shown in Table 2, and 89.6% (576) of these patients received the pain medication. The routes of administration were oral in 485 (75.4%), transdermal 73 (11.3%), injection 133 (20.7%), and anal 10 (1.6%). Among the medication patients, 168 (29.2%) were mild pain, 279 (48.4%) were moderate pain, and 129 (22.4%) were severe pain. Among the medication patients, 483 (83.9%) were satisfied with the pain controlled results, and only 93 (16.1%) were not satisfied with the pain controlled results.

Table 1. Socio-demographic and clinical characteristics of the study participants

Item	No. of cases	Percentage (%)
Education (<i>n</i> =638)		
Primary school	92	14.4
Middle school	169	26.5
High school	177	27.7
Associate degree	108	16.9
Bachelor degree	92	14.4
Marital Status (<i>n</i> =634)		
Unmarried	24	3.8
Married	546	86.1
Divorced	22	3.5
Widowed	42	6.6
Family average personal monthly income (<i>n</i> =634)		
<1,000	101	16.0
1,000–1,999	184	29.0
2,000–2,999	181	28.5
3,000–4,999	102	16.1
≥5,000	66	10.4
Hospital charges paid by (<i>n</i> =632)		
Public health service	122	19.3
Medical insurance	372	58.9
New rural cooperative health service	58	9.2
Self-paid	80	12.7
Type of Cancer (<i>n</i> =643)		
Lung cancer	222	34.5
Breast cancer	73	11.4
Colon and rectum cancer	56	8.7
Gastric cancer	48	7.5
Liver cancer	37	5.8
Pancreatic cancer	34	5.3
Bladder cancer	35	5.4
Uterus and ovarian cancer	26	4.0
Esophageal cancer	25	3.9
Bone tumor	13	2.0
Lymphoma	13	2.0
Else	61	9.5
Cancer stage (<i>n</i> =643)		
Stage I	23	3.6
Stage II	96	14.9
Stage III	123	19.1
Stage IV	271	42.1
Unknown	130	20.2

Table 2. Cancer pain status of cancer patients ($n=643$)

Item	$\bar{x}\pm s$ (range)	n (%)
Current pain intensity (NRS)	4.55±2.32 (0–10) (M=5)	
Mild pain		219 (34.1%)
Moderate pain		292 (45.4%)
Severe pain		132 (20.5%)
Worst pain intensity of past 24 h (NRS)	5.47±2.53 (0–10)	
Pain management satisfaction	4.19±0.97 (1–6)	
Satisfied		510 (79.3%)
Dissatisfied		133 (20.7%)

M: median

Table 3. Cancer patients' eight areas scores of SF-36 ($\bar{x}\pm s$)

Item	Participants ($n=643$)	Old cancer patients ($n=83$)	Normal people ($n=2249$)
PF	33.06±28.96 (M=30)	58.60±4.80	90.62±15.40
RP	31.75±36.42 (M=0)	32.40±7.60	79.51±34.70
BP	37.42±22.92 (M=32)	61.60±5.90	85.61±18.37
GH	35.38±18.57 (M=35)	36.00±6.40	69.55±21.32
VT	41.35±21.97 (M=45)	52.20±3.70	70.29±17.07
SF	36.55±25.85 (M=38)	45.90±5.70	86.85±17.28
RE	37.50±38.58 (M=33)	45.00±7.90	76.45±38.47
MH	57.22±21.56	61.70±3.60	72.65±16.81

M: median

Table 4. Comparison of SF-36 scores between PC group and PUC group ($\bar{x}\pm s$)

Item	PC ($n=219$)	PUC ($n=424$)	t/Z	P
PF	39.85±27.53	27.52±27.31	4.988*	<0.001
RP	29.91±35.70	30.41±36.19	0.038*	0.970
BP	47.41±21.31	29.32±18.68	9.138*	<0.001
GH	38.63±17.22	32.65±18.22	3.743*	<0.001
VT	45.71±20.52	37.37±21.63	4.287*	<0.001
SF	41.81±25.78	31.75±24.11	4.246*	<0.001
RE	39.31±40.18	34.90±37.46	1.261*	0.207
MH	58.98±21.10	54.56±21.42	2.258	0.024

*Mann-Whitney rank sum test

QOL in Cancer Pain Patients

Cancer patients' eight areas scores of SF-36 are shown in Table 3, and were compared with the SF-36 scores of old cancer patients^[28] and normal people^[29] in China.

Using current pain intensity (NRS scores) divided the cancer pain patients into PUC group (NRS <4) and PC group (NRS ≥4)^[30]. Independent sample t test and rank sum test were used to compare SF-36 eight areas scores between PC group and PUC group. The results are shown in Table 4.

The independent t test was used to compare age and pain management satisfaction scores between the two groups. There was no significant difference between the two groups in age ($t=0.325$, $P=0.745$). But the PC group had the higher pain management satisfaction score than the PUC group ($t=4.433$, $P<0.001$). Chi-square test was used to compare gender,

educational level, with or without spouse, family average personal monthly income, hospital charges paid way, type of cancer, received treatment, current receiving treatment and cancer stage in the two groups. There were no significant differences in gender ($\chi^2=2.235$, $P=0.135$), with or without spouse ($\chi^2=1.157$, $P=0.282$), educational level ($\chi^2=5.895$, $P=0.317$), family average personal monthly income ($\chi^2=10.851$, $P=0.054$), hospital charges paid way ($\chi^2=7.826$, $P=0.098$), type of cancer ($\chi^2=11.850$, $P=0.690$), received surgery ($\chi^2=3.404$, $P=0.065$), received radiotherapy ($\chi^2=4.649$, $P=0.098$), received chemotherapy ($\chi^2=2.334$, $P=0.127$), and current receiving radiotherapy ($\chi^2=1.950$, $P=0.163$). And there were differences in current receiving chemotherapy ($\chi^2=9.238$, $P=0.002$), and cancer stage ($\chi^2=26.752$, $P<0.001$) between the two groups.

Binary logistic regression was used to analyze the predicted factors of cancer pain controlled status. Pain

controlled results is the dependent variable and age, pain management satisfaction scores, gender, educational level, family average personal monthly income, current receiving chemotherapy and cancer stage were the independent variables according to others research results^[31-35] and based on the above univariate analysis results. Binary logistic regression results are shown in Table 5.

DISCUSSION

Pain is one of the most common and deleterious symptoms suffered by cancer patients^[36] and QOL is an important treatment outcome of cancer pain patients. In this study the average level of NRS of cancer patients with pain was 4.55 ± 2.32 and the majority (65.9%) were moderate to severe pain (Table 2). A total of 576 (89.6%) cancer pain patients received medication but only 29.2% patients' pain was controlled (NRS <4). These data indicated that cancer pain in these patients was not well controlled. Although several guidelines for cancer pain management have been published since 1987^[37-40],

undertreatment was well documented and even reach 82% of cancer patients^[41]. A recent systematic review suggested that nearly one of two patients with cancer pain is undertreated^[42]. As we know, considerable clinical evidences showed that cancer pain may be controlled in up to 90% cases with available therapies^[43, 44]. Cancer pain still needs more attention and more structured interventions to improve QOL in cancer patients in Beijing.

Otherwise about 79.3% patients were satisfied with the pain management results (Table 2). It has been repeatedly documented that patients with pain are satisfied with their pain management whether or not the pain has been successfully relieved^[45-48]. Tang, et al.^[49] pointed out that cancer patients' satisfaction with pain management was influenced more by perceived pain management practices than by pain relief itself. In this study, we found that lung cancer was the most common cancer, similar to other study^[50] showing that lung cancer patients experienced cancer pain more often than other cancer patients. So we should pay more attention to lung cancer patients' pain.

Table 5. Binary logistic regression analyses for variables predicting Cancer Pain Controlled results

Variable	B	S.E.	OR	P	95% CI of OR
Family average personal monthly income	0.175	0.080	1.191	0.029	1.018–1.394
Cancer stage	-0.393	0.093	0.675	<0.001	0.563–0.810
Current receiving chemotherapy	-0.519	0.200	0.595	0.009	0.403–0.880
Pain management satisfaction scores	0.427	0.114	1.533	<0.001	1.225–1.917

B: bias regression coefficient; S.E.: standard error; OR: odds ratio; 95% CI: 95% confidence interval.

Pain is often cited as the most critical symptom in cancer patients. Unrelieved pain impacts all dimensions of QOL and profoundly influences the patient's ability to endure treatment, return to health as a cancer survivor, or achieve a peaceful death^[51]. In this study, the participants were cancer patients with pain and their mean eight areas scores of SF-36 are from 31.75 to 57.22, lower than the scores of normal people reported by Li, et al.^[29] and also lower than the scores of old cancer patients reported by Wang, et al.^[28]. Peng, et al.^[19] reported that cancer pain patients had the poor QOL that was even lower than other cancer patients. Pain was significantly correlated with appetite, mood, quality of sleeping, fatigue, pain intensity, daily activity, side effect, general appearance, and support from family^[52], and the relationship between pain and QOL was found to be reciprocal^[53]. If pain was not relieved, the patient's QOL will certainly decrease. Many research results found that pain was the main reason affecting QOL in cancer

patients^[8-10]. In these patients, the role-physical score was the lowest area score and the mental health score was the highest area score among the eight areas in these cancer patients. The mean age of these patients was 58.74 ± 14.01 years and the old cancer patients' mean age was 71.32 ± 6.41 years in Wang's^[28] report. Li, et al.^[29] found that young people had better quality of life than old people. But the old cancer patients' SF-36 scores in Wang's^[28] report were even higher than these patients, that indicates cancer pain affected these patients' QOL much. Morgan, et al. found that pain had a significantly negative direct effect on patients' QOL^[54]. The domestic studies also confirmed that pain was the key factors affecting QOL in patient with cancer, the more severe pain the poorer QOL^[19, 55].

In this study, the PC group had the higher SF-36 scores ($P < 0.05$) in 6 areas than the PUC group except RP and RE in cancer pain patients. It indicates that pain control will improve the QOL of cancer patients. Pain is considered to be one of the most feared

symptoms of cancer and disrupt all aspects of life^[56, 57]. It was found that cancer patients experienced lower QOL than cancer patients without pain^[58].

Binary logistic regression found that pain management satisfaction scores, family average personal monthly income, current receiving chemotherapy and cancer stage were the predictors of pain controlled results. Patients with higher pain management satisfaction scores and high level of family average personal monthly income had the better pain controlled status. Patients with late cancer stage and current receiving chemotherapy had the bad pain controlled status. When cure is impossible, prolongation of life and palliation of symptoms become the ideal goals than intent to cure. In late-stage cancer patients, there was more severe pain^[2, 3] but less treatment method. Pain should be paid more attention to in late-stage cancer patients. Wang, et al.^[59] found treatment was one important reason affecting pain management result. Chemotherapy can lead to painful neuropathies^[51] and this will bring more difficulties to pain management. In this study, patients in PC group had the better pain management satisfaction. Bookbinder, et al.^[60] pointed out that low pain relief caused the low levels of satisfaction of pain management. So low pain management scores could indicate the bad pain control. Most clinical settings select opioids sustained release tablets as the main medication for cancer patient to control pain, but such medicines are expensive and will bring financial burden to many patients' family. So patient's family financial status should also be considered according cancer pain control. In this study, age was not the predictor of pain controlled results. Bennett, et al.^[61] also found the management of pain in older cancer patients was not different from that in younger patients. Pud, et al.^[32] found that the female patients reported significantly lower psychological dimension of QOL than their male counterparts. But this study did not found gender was the predictor of pain controlled results in cancer pain patients.

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