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Focus on Cancer Pain at Home: A Prospective Study of Quality of Life and Its Influencing Factors on Patients

Aijun Ji[1], Ruchun Shi[2*], Jing Han[3], Chen Yu[4]

[1]Pain Department, Jiangsu Cancer Hospital (Institute of Jiangsu Cancer Prevention and Control, Cancer Hospital Affiliated to Nanjing Medical University), Nanjing, China
[2]Cancer Specialist Nursing Clinic, Jiangsu Cancer Hospital (Institute of Jiangsu Cancer Prevention and Control, Cancer Hospital Affiliated to Nanjing Medical University), Nanjing, China
[3]Cancer Clinical Laboratory Center, Jiangsu Cancer Hospital (Institute of Jiangsu Cancer Prevention and Control, Cancer Hospital Affiliated to Nanjing Medical University), Nanjing, China
[4]Department of Integrated Chinese and Western Medicine, Jiangsu Cancer Hospital (Institute of Jiangsu Cancer Prevention and Control, Cancer Hospital Affiliated to Nanjing Medical University), Nanjing, China
Email: *srcsrc321@163.com

Abstract

Background and Aims: The treatment of patients with advanced cancer pain is mainly concentrated in the outpatient department, and most of the time in their family, these patients are easy to be ignored, To study the quality of life and its influencing factors of cancer pain patients at home is of great significance to improve the quality of life of patients. Meanwhile, it provides theoretical and practical basis for medical personnel to develop and implement individualized comprehensive intervention programs. **Patients and Methods:** According to the inclusion and exclusion criteria, 200 patients with cancer pain at home are selected to treat, and their quality of life conditions are observed before treatment, 1 week after treatment and 1 month after treatment, and their influencing factors are analyzed. **Results:** The patients' scores of body function, emotional function, cognitive function and social function exist significant difference before and after treatment (p < 0.01), the scores of role function and the overall evaluation scores before and after treatment, two stages after treatment exist significant difference (p < 0.01), the symptoms scores of fatigue, pain, diarrhea, nausea and vomiting are significant differences before and after treatment (p < 0.01); appetite loss score before a month and a week after treatment and treatment exists significant difference (p < 0.01), the scores of constipation symptom before treatment and a month after treatment exist significant difference (p < 0.01), only gender on cognitive function before treatment has significant difference (p <

0.05). One week after treatment, tumor staging and metastasis have impact on overall health evaluation, role function, cognitive function and emotional function (p < 0.05). The location of metastasis and the type of pain affect the role function and emotional function respectively (p < 0.05). One month after treatment, age, metastasis, metastasis site and pain type have influence on cognitive function, emotional function, overall health evaluation and role function respectively (p < 0.05). The overall health status, body function, role function, emotional function, cognitive function and social function of the patients are lower than those of the Norwegian norm (p < 0.001). The symptoms of pain, appetite, constipation, nausea and vomiting are higher than those of the Norwegian norm before and after treatment (p < 0.001). There was a significant positive correlation between quality of life and total score of social support (p < 0.01). Objective support and subjective support were positively correlated with quality of life (p < 0.01). **Conclusion:** Cognitive interventions should be individualized. The effectiveness of cancer treatment and the control of cancer recurrence and metastasis have influence on the quality of life of patients with cancer pain at home. Although the patients' function indexes have been improved after treatment, there exist differences in the improvement after treatment. The symptoms of nausea, vomiting, pain and appetite should be intervened promptly. The management of symptoms such as dyspnea, fatigue, constipation should be focused persistently. Objective support and subjective support were the influencing factors of patients' quality of life, the construction of social support system should be strengthened, we should help them to overcome negative emotions, return to normal family and social roles, seek help in a positive manner and use support to improve the quality of life.

1. Introduction

The International Association for the Study of Pain (IASP) revised the definition of pain in 2016, which is a painful experience associated with tissue injury or potential tissue damage in terms of feeling, emotion, cognition and social dimensions [1]. Cancer pain is the most common symptom in cancer patients, especially in patients with advanced cancer. It is also the most painful and frightening symptom [2] [3], which can have different degrees of influence on the physical (including body sensation and function), psycho-psychological and social aspects of the patient, thus these factors affected the quality of life of the patients. Internationally, pain has been listed as the fifth vital sign [4]. In China, there were 1.8 million new cancer patients in 2000, and the incidence of cancer pain was about 40% - 65%, including 15% - 30% in the early stage, 40% - 55% in the middle stage, and 50% - 75% in the late stage. Quarter of the patients did not

receive any pain relief treatment, among which 20% were moderate to severe [5]. For patients with advanced cancer at home, pain treatment may be the only way that they are likely to receive and benefit from because of limited treatment options. The purpose of this treatment is to relieve symptoms and improve patients' quality of life. The ideal cancer pain treatment should be: 1) continuous and effective elimination of cancer pain; 2) limit the adverse reactions of drugs; 3) cancer pain and treatment of the psychological burden and the social, family caused by the impact to the minimum; 4) improve the quality of life, extend the survival time. Therefore, the significance of cancer pain treatment goes far beyond pain relief itself, it can improve patients' quality of life, work ability, enjoy entertainment and enable them to perform normal functions in family and society [6]. In this study, the patients with moderate and severe advanced cancer pain treated normally at home were selected as the research objects and the follow-up investigation was carried out in different stages; we analyzed the therapeutic effective factors of the quality of life with the patients in order to provide the basis for the home intervention programme and improve the therapeutic effect and the quality of life.

2. Patients and Methods

Data sources and selection criteria: From October 2017 to April 2019, patients with cancer pain are selected to be treated at home. Inclusive Criteria are as follows: all patients with advanced cancer are diagnosed by clinical, imaging and pathological patients could not be treated with radical therapy such as surgery or radiotherapy and chemotherapy. Exclusion criteria are as follows: those who do not meet the above inclusive criteria or could not be treated according to the requirements; those who have mental disorders or psychosis are unable to judge the degree of pain autonomously; those who have severe heart, liver and kidney dysfunction; those who can not tolerate the use of analgesic drugs or serious adverse reactions; the treatment effect cannot be judged because of incomplete information.

General features of data: There are 200 cases, sex: males (124, 62.0%), females (76, 38.0%); age: 29 - 85 years (58.52 ± 10.58); degree of education: primary and secondary schools (20, 10.0%), junior high schools (42, 21.0%), senior middle schools (69, 34.5%), universities (60, 30.0%), other types (9, 4.5%); Pathological type: cases second stage (31, 15.5%), third stage (47, 23.5%), fourth stage (122, 61.0%); Transfer situation: metastasis (147, 73.5%), no metastasis (53, 26.5%); Transfer position: Visceral metastasis (57, 28.5%), bone metastasis (54, 27.0%), Visceral metastasis and bone metastasis (23, 11.5%), others (66, 33.0%); pain type: visceral pain (98, 49.0%), Somatic pain (31, 15.5%), neuropathic pain (7, 3.5%) and mixed pain (64, 32.0%).

Assessment and treatment method: Use the numeral rating scale (NRS) to assess the pain degree of patients. On the basis of evaluation, we reasonably select strong opioid drugs and adjuvant drugs, increasing or decrease the dosage of

drugs, replacing and dealing with pain outbreak according to the treatment principle of WHO three ladder analgesia and the path requirements of NCCN Clinical practice Guide for Adults with Cancer pain. The dosage of the drug was converted to daily morphine use. During the treatment, we observe the adverse reaction of drugs and deal with it in time to improve the patients' compliance.

Investigation of Quality of life: A quality of life (QOL) scale for cancer patients is developed by the European Organization for Cancer Research and treatment. The scale includes p6 indexes (physical function, cognitive function, role function, emotional function, social function, self overall evaluation,) and 30 symptom factors. There are seven answers to the overall self-evaluation: very poor (1), poor (2), poor (3), average (4), good (5), better (6), good (7), and other indicators have four answers: no (1), a little (2). Often (3), yes (4), the survey first got a rough score, Then it is converted to a standard score, the score of function index $SS = \left[1 - (RS - 1)/R\right] \times 100$, the score of symptom field and general health: $SS = \left[(RS - 1)/R\right] \times 100$. The higher score that the overall self-evaluation has, the smaller impact on quality of life has and the higher score of functional indicators (physical function, cognitive function, role function, emotional function, social function) has, the greater impact on quality of life has.

Statistical methods: EXCEL was used to input and review the survey data, and SPSS17.0 software is used for statistical analysis. The statistical analysis took $p < 0.05$ as the significant test level. Descriptive statistical indicators include composition ratio, mean, standard deviation and so on: T test or ANOVA is used to compare data among groups; enumeration data. Chi-square test or Fisher exact probability method is used to compare the rate or composition ratio; the characteristic data and quality of life (QOL) factors of cancer pain patients are analyzed by ANOVA.

3. Results

Comparison of functional Indexes in QOL-C30 scale before and after treatment are in Table 1, The scores of somatic function, emotional function and cognitive function are significantly different before and after treatment ($p < 0.01$), but there is no significant difference between the two stages after treatment ($p > 0.05$). There are significant differences in role function and overall evaluation score before and after treatment ($p < 0.01$), There is significant difference in social function score before and after treatment ($p < 0.01$), but there is no significant difference between the two stages after treatment.

Comparison of symptom factors of QOL-C30 scale before and after treatment are in Table 2, The scores of fatigue, pain and diarrhea are significantly different before and after treatment ($p < 0.01$), and the scores of nausea and vomiting are significantly different before and after treatment ($p < 0.01$). There is a significant difference in appetite loss score between one month after treatment and one week after treatment, before treatment ($p < 0.01$). There is significant difference in constipation symptom score one month after treatment and one month

Table 1. Comparison of functional indexes in QOL-C30 scale before and after treatment ($\bar{X} \pm S$).

functional Indexes/Treatment stage	Case	Before treatment*	1 week after treatment▲	1 month after treatment**
Somatic function	200	42.65 ± 14.60	33.12 ± 20.18	30.18 ± 10.68
T value		4.85	1.36	7.62
P value		p < 0.01	p > 0.05	p < 0.01
Role function	200	42.39 ± 21.97	29.57 ± 25.16	18.16 ± 17.21
T value		4.18	3.68	9.21
P value		p < 0.01	p < 0.01	p < 0.01
Emotional function	200	45.63 ± 16.12	32.85 ± 14.78	32.56 ± 14.26
T value		6.78	−0.23	5.48
P value		p < 0.01	p > 0.05	p < 0.01
Cognitive function	200	35.24 ± 12.69	21.25 ± 20.36	19.28 ± 12.51
T value		4.16	1.29	9.21
P value		p < 0.01	p > 0.05	p < 0.01
Social function	200	49.51 ± 15.74	23.76 ± 20.62	42.60 ± 17.14
T value		11.43	−5.68	1.14
P value		p < 0.01	p < 0.01	p > 0.05
Overall evaluation	200	35.64 ± 11.12	57.32 ± 13.53	68.79 ± 8.68
T value		−12.29	−6.63	−22.36
P value		p < 0.01	p < 0.01	p < 0.01

Note:* On behalf of 1 week after treatment compared with pre-treatment, p < 0.01; **On behalf of 1 month after treatment compared with pre-treatment, p < 0.01; ▲On behalf of1 weeks after treatment, compared with 1 months, p < 0.01.

Table 2. Comparison of symptom factors of QOL-C30 scale before and after treatment ($\bar{X} \pm S$).

functional Indexes/Treatment stage	Case	Before treatment*	1 week after treatment▲	1 month after treatment**
Fatigue	200	47.12 ± 11.24	32.42 ± 0.57	28.76 ± 11.64
T value		7.92	0.78	7.53
P value		p < 0.01	p > 0.05	p < 0.01
Nausea and vomiting	200	24.85 ± 21.45	32.04 ± 24.89	23.14 ± 13.12
T value		−2.26	2.81	0.23
P value		p > 0.05	p < 0.01	p > 0.05
Pain	200	69.24 ± 16.42	35.41 ± 18.03	26.63 ± 9.62
T value		12.61	4.18	21.41
P value		p < 0.01	p < 0.01	p < 0.01
Dyspnea	200	16.52 ± 21.16	11.24 ± 15.31	13.45 ± 18.36
T value		1.78	−1.42	0.28
P value		p > 0.05	p > 0.05	p > 0.05
Dyssomnia	200	53.41 ± 25.96	19.18 ± 21.18	11.27 ± 15.36
T value		1.16	3.12	15.23
P value		p < 0.01	p < 0.01	p < 0.01
Appetite loss	200	37.12 ± 28.14	41.73 ± 23.54	27.25 ± 22.14
T value		−1.25	4.24	2.84
P value		p > 0.05	p < 0.01	p < 0.01
Constipation	200	13.45 ± 25.52	14.14 ± 21.36	23.45 ± 21.26
T value		0.14	−3.56	−2.86
P value		p > 0.05	p < 0.01	p < 0.01
Diarrhoea	200	7.34 ± 19.42	3.46 ± 10.38	1.16 ± 5.14
T value		1.09	2.42	2.45
P value		p > 0.05	p < 0.05	p < 0.05

Note:* On behalf of 1 week after treatment compared with pre-treatment, p < 0.01; **On behalf of 1 month after treatment compared with pre-treatment, p < 0.01; ▲On behalf of1 weeks after treatment, compared with 1 months, p < 0.01.

after treatment (p < 0.01), but there is no significant difference between one week after treatment and before treatment, one month after treatment (p > 0.05). There is no significant difference in dyspnea score before and after treatment (p > 0.05).

Analysis of characteristic data and quality of Life and functional Indexes of patients before and after treatment are demonstrated in (Tables 3-5): There is only significant difference in cognitive function between sex before treatment (p < 0.05). One week after treatment, tumor staging and metastasis have impacts on overall health evaluation, role function, cognitive function and emotional function (p < 0.05). The location of metastasis has an effect on the role function (p < 0.05), and the type of pain has an effect on the emotional function (p < 0.05). One month after treatment, the age, location of metastasis and type of pain has significant impacts on cognitive function, emotional function, general health evaluation and role function (p < 0.05).

Scores of General quality of Life, functional Indexes and symptom factors before and after treatment are in Table 6, before and after treatment, the overall health status, body function, role function, emotional function, cognitive function and social function of the patients are lower than the Norwegian norm (p < 0.001). Before treatment, all symptoms except dyspnea and diarrhea are higher than the Norwegian norm (p < 0.001). One week after treatment, all symptoms except dyspnea, insomnia, fatigue and diarrhea are higher than the Norwegian norm, and diarrhea symptoms were lower than the Norwegian norm (p < 0.001). One month after treatment, all symptoms except dyspnea, fatigue, and other symptoms are higher than the Norwegian norm (p < 0.001).

Correlation between social support and quality of life of patients are shown in Table 7 and Table 8, the total score of social support was 40.15 ± 13.01, the score of objective support was 9.47 ± 4.15, the score of subjective support was 26.27 ± 6.48, and the utilization of support was 6.53 ± 2.79. There was a significant positive correlation between quality of life and total score of social support (r = 0.70, P < 0.01). Objective support and subjective support were positively correlated with quality of life (p < 0.01), while utilization of social support was not correlated with quality of life (p > 0.05). Objective support was correlated with physical function, emotional function and social function, support utilization was correlated with physical function, social function and cognitive function, and the total score of subjective support and social support was correlated with five functional indexes.

4. Discussion

Pain is one of the most common clinical symptoms in cancer patients. Cancer pain affects the patient's quality of life in many aspects, such as physiology, psychology, society and spirit, which leads to the decline of the patient's overall quality of life [7]. The treatment of patients with advanced cancer pain was mainly concentrated in outpatient clinics, and most of the time in the family and

Table 3. Single factor analysis of characteristic data and quality of life and functional indices score of patients before treatment.

Characteristic data	Case	Overall health evaluation	Body function	Role function	Cognitive function	Emotional function	Social function
Age							
≤44	17	33.15 ± 8.61	52.37 ± 18.15	42.37 ± 19.87	28.16 ± 15.76	47.89 ± 23.27	45.62 ± 23.23
45 - 59	92	35.95 ± 11.38	45.38 ± 12.28	43.54 ± 21.39	34.67 ± 13.63	46.23 ± 18.21	48.19 ± 13.29
60 - 74	73	42.41 ± 8.35	42.13 ± 10.34	42.13 ± 20.23	35.27 ± 12.18	49.53 ± 12.35	51.29 ± 11.34
≥75	18	32.23 ± 19.63	45.37 ± 26.31	51.23 ± 25.15	41.28 ± 13.67	55.15 ± 16.27	55.10 ± 23.58
F		1.92	0.69	0.21	0.74	0.69	0.28
P		0.12	0.48	0.89	0.19	0.52	0.82
Sex							
Male	124	35.10 ± 12.36	45.68 ± 13.25	44.25 ± 22.34	36.42 ± 13.68	48.78 ± 15.33	52.29 ± 13.23
Femal	76	32.14 ± 11.12	45.63 ± 13.23	45.23 ± 23.23	32.17 ± 12.07	43.17 ± 15.35	45.35 ± 15.35
F		0.38	0.32	0.18	4.92	2.38	1.26
P		0.35	0.54	0.69	0.15	0.13	0.19
Educational degree							
Primary and secondary Schools	20	38.11 ± 11.85	46.15 ± 12.35	45.24 ± 21.67	41.34 ± 15.26	52.26 ± 16.25	52.36 ± 16.35
Junior high schools	42	39.16 ± 9.26	41.56 ± 12.65	42.23 ± 20.18	36.96 ± 15.87	47.39 ± 12.86	48.19 ± 13.76
Senior middle schools	69	35.58 ± 11.36	46.26 ± 16.35	42.26 ± 18.09	33.28 ± 12.36	48.78 ± 18.24	46.26 ± 16.26
Universities	60	36.16 ± 13.16	49.82 ± 16.78	46.13 ± 27.69	32.19 ± 13.86	42.07 ± 19.26	54.27 ± 19.28
other	9	40.57 ± 10.73	45.17 ± 10.29	38.50 ± 29.26	26.07 ± 16.26	30.26 ± 13.52	46.78 ± 16.98
F		0.68	0.85	0.26	0.54	1.32	0.83
P		0.53	0.54	0.89	0.79	0.46	0.42
Cancer stage							
II	31	40.72 ± 8.90	42.75 ± 16.46	36.42 ± 13.16	35.29 ± 13.26	43.28 ± 16.53	51.03 ± 15.23
III	47	37.16 ± 8.42	45.46 ± 11.28	39.13 ± 18.26	33.12 ± 18.08	45.28 ± 18.25	48.23 ± 13.78
IV	122	36.75 ± 12.56	46.24 ± 16.27	47.86 ± 26.23	38.52 ± 15.39	52.26 ± 19.23	52.26 ± 13.26
F		0.93	0.78	2.28	0.28	1.43	0.93
P		0.42	0.58	0.16	0.79	0.23	0.36
Metastasis							
Yes	147	36.82 ± 11.23	48.13 ± 16.13	48.16 ± 22.68	36.19 ± 15.46	48.75 ± 16.56	52.21 ± 13.67
No	53	38.68 ± 8.28	42.69 ± 14.26	35.36 ± 18.26	37.16 ± 16.28	40.67 ± 16.52	49.26 ± 12.73
F		1.88	2.56	5.46	0.16	3.64	0.28
P		0.19	0.11	0.03	0.86	0.09	0.65
Location of metastasis							
Visceral	57	36.19 ± 11.45	45.13 ± 16.43	43.24 ± 26.12	32.73 ± 16.13	45.78 ± 16.16	49.24 ± 18.24
Bone	54	36.28 ± 11.29	46.16 ± 16.91	52.12 ± 24.46	38.12 ± 19.26	51.16 ± 20.08	50.50 ± 19.56
Visceral and bone	23	37.69 ± 13.26	47.16 ± 26.16	33.43 ± 28.97	33.13 ± 11.42	40.58 ± 19.35	56.59 ± 23.46

Continued

Others	66	33.95 ± 7.46	47.83 ± 9.46	43.72 ± 18.96	35.85 ± 13.46	52.56 ± 18.29	48.72 ± 13.96
F		0.89	0.56	1.29	0.88	1.09	0.59
P		0.42	0.68	0.32	0.43	0.36	0.56
Type of pain							
Visceral pain	98	39.42 ± 12.50	45.06 ± 13.42	41.46 ± 21.03	36.29 ± 16.89	49.79 ± 15.45	50.46 ± 18.26
Somatic pain	31	36.25 ± 11.27	46.24 ± 18.13	42.28 ± 31.26	34.36 ± 18.26	43.64 ± 15.63	52.13 ± 18.26
Neuropathic pain	7	52.69 ± 4.03	24.56 ± 1.09	34.69 ± 4.09	23.96 ± 8.23	31.16 ± 8.18	39.46 ± 9.19
Mixed pain	64	33.20 ± 11.12	46.93 ± 13.31	48.58 ± 23.37	36.46 ± 16.03	53.71 ± 18.08	46.70 ± 11.28
F		2.86	1.52	0.86	1.26	1.36	0.87
P		0.06	0.19	0.46	0.28	0.23	0.44

Note: $P < 0.05$ represents a significant difference.

Table 4. Single factor analysis of characteristic data and quality of life and functional indices score of patients one week after treatment.

Characteristic data	Case	Overall health evaluation	Body function	Role function	Cognitive function	Emotional function	Social function
Age							
≤44	17	54.23 ± 15.12	41.78 ± 26.70	32.18 ± 21.52	25.56 ± 21.33	34.18 ± 16.26	21.78 ± 22.69
45 - 59	92	61.36 ± 11.36	31.25 ± 16.39	24.36 ± 21.89	16.26 ± 21.55	31.26 ± 13.26	19.34 ± 20.10
60 - 74	73	57.09 ± 16.35	34.10 ± 21.82	31.28 ± 27.96	28.26 ± 26.49	36.46 ± 13.56	26.89 ± 23.43
≥75	18	50.75 ± 15.76	43.79 ± 26.60	41.73 ± 32.79	34.53 ± 21.52	35.82 ± 8.90	38.36 ± 23.29
F		1.09	1.36	1.42	1.76	0.68	1.82
P		0.36	0.26	0.39	0.29	0.75	0.21
Sex							
Male	124	56.29 ± 12.38	35.51 ± 18.30	28.36 ± 27.45	26.50 ± 23.19	34.46 ± 12.13	25.86 ± 20.16
Femal	76	56.68 ± 14.53	34.23 ± 21.86	30.56 ± 25.48	21.28 ± 24.26	32.28 ± 16.34	22.86 ± 21.16
F		0.04	0.078	0.06	0.38	0.28	0.01
P		0.78	0.81	0.71	0.51	0.49	0.76
Educational degree							
Primary and secondary Schools	20	62.17 ± 12.39	33.29 ± 11.12	36.29 ± 18.87	21.27 ± 20.17	35.16 ± 12.40	25.01 ± 15.56
Junior high schools	42	59.43 ± 8.56	28.12 ± 14.71	21.83 ± 21.59	24.61 ± 14.22	32.19 ± 12.65	13.62 ± 16.46
Senior middle schools	69	56.15 ± 13.22	31.27 ± 21.08	28.39 ± 23.20	22.39 ± 24.46	30.78 ± 14.25	23.13 ± 20.67
Universities	60	52.26 ± 18.13	42.49 ± 23.12	42.18 ± 29.19	28.17 ± 25.46	34.28 ± 14.16	28.43 ± 29.04
other	9	62.28 ± 3.10	32.46 ± 11.46	8.30 ± 9.48	8.16 ± 7.26	21.03 ± 16.92	22.62 ± 15.74
F		0.85	1.46	2.03	0.99	0.86	1.07
P		0.42	0.21	0.06	0.39	0.42	0.29
Cancer stage							
II	31	62.29 ± 6.18	26.29 ± 16.07	21.25 ± 13.68	9.45 ± 9.26	67.29 ± 10.59	17.65 ± 12.57

Continued

Ⅲ	47	61.09 ± 7.12	28.72 ± 16.80	17.81 ± 15.39	13.19 ± 10.32	26.15 ± 14.50	15.27 ± 15.46
Ⅳ	122	52.39 ± 16.77	36.80 ± 24.16	35.46 ± 26.79	31.36 ± 24.56	34.22 ± 16.69	26.28 ± 23.08
F		4.29	2.36	5.16	7.09	4.08	2.98
P		0.01	0.06	0.02	0.01	0.03	0.06
Metastasis							
Yes	147	59.03 ± 14.26	38.29 ± 21.35	35.29 ± 26.50	24.03 ± 21.68	38.14 ± 13.26	26.28 ± 22.56
No	53	62.29 ± 6.04	29.50 ± 15.50	18.19 ± 16.76	9.27 ± 10.46	22.42 ± 11.46	16.26 ± 14.25
F		4.56	4.75	5.29	11.08	13.56	2.39
P		0.02	0.06	0.02	0.001	0.001	0.08
Location of metastasis							
Visceral	57	51.23 ± 11.29	34.26 ± 16.26	31.29 ± 21.06	21.26 ± 22.19	36.24 ± 13.48	25.12 ± 18.26
Bone	54	52.26 ± 18.56	42.46 ± 23.59	46.26 ± 23.19	35.48 ± 29.26	36.15 ± 19.06	36.08 ± 21.36
Visceral and bone	23	56.26 ± 3.19	25.64 ± 16.35	26.06 ± 13.06	15.36 ± 4.06	26.16 ± 8.26	14.19 ± 10.25
Others	66	53.26 ± 16.11	33.26 ± 26.26	36.03 ± 28.26	27.15 ± 19.04	35.64 ± 10.12	21.27 ± 23.50
F		0.68	1.06	4.16	1.18	0.12	1.19
P		0.62	0.53	0.01	0.35	0.23	0.37
Type of pain							
Visceral pain	98	53.62 ± 16.26	34.25 ± 20.26	28.69 ± 24.18	18.64 ± 21.26	29.47 ± 14.12	23.48 ± 20.45
Somatic pain	31	50.29 ± 16.49	36.54 ± 31.39	28.56 ± 30.26	31.15 ± 31.39	36.26 ± 22.21	26.28 ± 25.68
Neuropathic pain	7	62.67 ± 5.26	13.36 ± 0.52	34.33 ± 0.26	31.26 ± 26.69	25.26 ± 0.26	19.47 ± 2.04
Mixed pain	64	56.34 ± 12.13	36.39 ± 12.45	31.39 ± 15.64	25.93 ± 15.83	36.29 ± 11.26	24.28 ± 18.25
F		1.56	1.94	0.04	2.18	2.43	0.32
P		0.18	0.32	0.99	0.09	0.05	0.86

Note: $P < 0.05$ represents a significant difference.

Table 5. Single factor analysis of characteristic data and quality of life and functional indices score of patients one month after treatment.

Characteristic data	Case	Overall health evaluation	Body function	Role function	Cognitive function	Emotional function	Social function
Age							
≤44	17	62.26 ± 8.31	32.56 ± 9.29	21.36 ± 15.89	16.43 ± 12.42	43.83 ± 15.35	54.73 ± 13.28
45 - 59	92	71.53 ± 8.26	32.53 ± 11.56	17.19 ± 15.21	14.05 ± 11.43	34.26 ± 11.57	40.03 ± 16.34
60 - 74	73	72.84 ± 5.23	36.34 ± 12.04	18.43 ± 12.58	21.58 ± 17.29	34.26 ± 12.08	42.28 ± 18.06
≥75	18	70.19 ± 12.26	30.38 ± 13.05	16.27 ± 11.27	18.05 ± 21.42	25.19 ± 8.26	40.83 ± 16.26
F		1.52	0.27	0.08	3.36	2.38	0.63
P		0.24	0.78	0.92	0.02	0.08	0.67
Sex							
Male	124	72.42 ± 8.54	32.51 ± 12.81	15.36 ± 16.42	15.28 ± 16.53	32.26 ± 13.26	42.79 ± 18.15

Continued

Femal	76	67.18 ± 9.25	32.34 ± 12.56	23.56 ± 14.29	17.28 ± 14.06	38.93 ± 14.86	46.58 ± 14.17
F		0.39	0.02	2.42	0.02	3.82	1.59
P		0.62	0.89	0.26	0.87	0.05	0.29
Educational degree							
Primary and secondary Schools	20	65.35 ± 686	39.26 ± 12.83	25.64 ± 21.86	18.26 ± 16.25	32.91 ± 14.26	46.28 ± 12.43
Junior high schools	42	69.45 ± 6.85	32.23 ± 11.85	15.85 ± 12.64	15.03 ± 13.46	34.46 ± 18.20	44.67 ± 15.46
Senior middle schools	69	72.12 ± 8.46	26.49 ± 12.48	15.46 ± 13.45	16.56 ± 14.46	32.65 ± 11.46	47.26 ± 17.57
Universities	60	71.46 ± 9.36	30.36 ± 10.37	24.89 ± 17.28	16.88 ± 18.39	38.35 ± 14.62	42.80 ± 19.64
other	9	65.55 ± 7.90	42.38 ± 12.67	25.06 ± 21.81	16.27 ± 12.63	36.24 ± 7.68	45.64 ± 8.72
F		1.87	2.16	1.35	0.26	0.86	0.46
P		0.13	0.08	0.36	0.92	0.42	0.73
Cancer stage							
II	31	68.56 ± 8.56	32.46 ± 17.59	22.46 ± 19.26	18.27 ± 14.06	32.83 ± 14.26	48.56 ± 18.26
III	47	71.43 ± 8.46	28.43 ± 18.83	12.42 ± 14.49	15.18 ± 13.54	35.86 ± 13.59	42.76 ± 19.72
IV	122	68.75 ± 7.46	33.69 ± 12.43	21.19 ± 15.48	15.43 ± 15.16	35.45 ± 12.59	42.86 ± 15.78
F		1.48	1.38	2.26	0.85	1.87	0.70
P		0.24	0.36	0.26	0.79	0.65	0.52
Metastasis							
Yes	147	72.33 ± 8.72	31.24 ± 12.89	17.43 ± 15.83	17.41 ± 15.43	32.83 ± 13.26	42.46 ± 15.72
No	53	69.42 ± 8.89	34.82 ± 12.76	22.56 ± 18.84	15.82 ± 12.74	38.46 ± 12.40	45.72 ± 24.06
F		0.68	0.21	0.48	0.12	5.72	0.39
P		0.42	0.66	0.52	0.94	0.03	0.58
Location of metastasis							
Visceral	57	72.08 ± 8.41	28.78 ± 12.76	11.82 ± 12.83	15.72 ± 12.18	32.76 ± 11.29	43.80 ± 17.73
Bone	54	71.42 ± 9.48	32.76 ± 13.18	22.69 ± 18.69	21.68 ± 21.86	33.89 ± 14.46	47.13 ± 13.65
Visceral and bone	23	58.56 ± 8.46	38.67 ± 8.98	32.65 ± 11.84	2.96 ± 17.72	28.27 ± 11.18	35.59 ± 5.89
Others	66	69.38 ± 7.17	32.60 ± 12.85	13.35 ± 12.92	14.89 ± 10.46	32.08 ± 16.75	43.28 ± 14.48
F		3.68	0.64	2.58	2.26	0.16	0.42
P		0.03	0.65	0.07	0.06	0.94	0.87
Type of pain							
Visceral pain	98	68.85 ± 7.59	34.02 ± 13.95	15.25 ± 16.96	16.82 ± 14.78	33.75 ± 15.28	46.64 ± 18.84
Somatic pain	31	64.83 ± 7.82	35.29 ± 14.30	29.51 ± 15.23	19.29 ± 20.26	34.26 ± 14.85	38.94 ± 11.69
Neuropathic pain	7	62.26 ± 12.46	41.56 ± 12.64	38.95 ± 21.75	5.89 ± 9.28	35.58 ± 8.96	48.45 ± 8.76
Mixed pain	64	73.14 ± 8.56	27.62 ± 12.26	17.65 ± 15.69	12.97 ± 14.26	32.79 ± 13.86	42.68 ± 16.75
F		1.06	2.95	3.56	0.89	0.36	0.79
P		0.42	0.08	0.01	0.46	0.94	0.43

Note: P < 0.05 represents a significant difference.

Table 6. Scores of general quality of life, functional indexes and symptom factors before and after treatment.

Content	Before treatment ($\bar{X} \pm S$)	One week after treatment ($\bar{X} \pm S$)	One month week after treatment ($\bar{X} \pm S$)	Norwegian norm	Before treatment		One week after treatment		One month week after treatment	
					t	P	t	P	t	P
Overall health status	35.86 ± 10.12	57.25 ± 13.52	31.47 ± 11.85	75.3	−33.58	<0.001	−11.36	<0.001	−5.56	<0.001
Body function	46.65 ± 13.92	35.09 ± 20.09	34.58 ± 15.26	89.9	−29.36	<0.001	−25.36	<0.001	−44.35	<0.001
Emotional function	47.82 ± 18.17	33.23 ± 14.78	18.63 ± 17.85	82.8	−18.69	<0.001	−32.43	<0.001	−35.03	<0.001
Role function	42.18 ± 22.03	30.39 ± 26.25	18.30 ± 15.12	83.3	−16.52	<0.001	−20.38	<0.001	−36.61	<0.001
Social function	51.02 ± 14.80	22.36 ± 20.89	42.68 ± 17.35	85.8	−22.49	<0.001	−28.13	<0.001	−21.35	<0.001
Cognitive function	33.63 ± 14.54	23.25 ± 23.36	65.12 ± 8.90	86.5	−33.23	<0.001	−26.72	<0.001	−43.01	<0.001
Fatigue	38.09 ± 15.58	32.67 ± 20.64	31.75 ± 12.64	28.8	6.69	<0.001	1.38	0.18	0.78	0.51
Nausea and vomiting	26.11 ± 21.63	34.04 ± 22.13	25.61 ± 13.29	4.0	7.97	<0.001	11.29	<0.001	12.89	<0.001
Pain	69.25 ± 16.74	36.37 ± 18.25	25.83 ± 10.41	20.4	25.28	<0.001	7.68	<0.001	4.52	<0.001
Dyspnea	16.56 ± 23.16	11.123 ± 12.80	15.44 ± 18.36	14.3	0.56	0.59	−1.87	0.06	0.07	0.94
Dyssomnia	58.14 ± 23.78	18.78 ± 22.45	10.48 ± 15.69	20.4	14.23	<0.001	−0.62	0.54	−6.09	<0.001
Appetite loss	38.24 ± 26.16	42.74 ± 22.48	27.45 ± 23.18	20.4	5.75	<0.001	8.29	<0.001	3.17	<0.001
Constipation	14.25 ± 27.56	14.25 ± 21.56	23.16 ± 21.21	4.2	3.35	<0.001	5.36	<0.001	8.09	<0.001
Diarrhea	7.35 ± 22.16	4.18 ± 10.27	1.28 ± 6.31	7.4	0.01	0.99	−2.89	0.02	−9.18	<0.001

Note: P < 0.05 represents a significant difference.

Table 7. Correlation between patients' social support and quality of life.

Content	r value	p value
Objective support	0.53	<0.01
Subjective support	0.61	<0.01
Utilization of social support	0.31	>0.05
Total score of social support	0.70	<0.01

Note: p < 0.05 represents a significant difference.

Table 8. Correlation between patients' social support and functional indexes of quality of Life.

Content	Somatic Function	Emotional Function	Role Function	Social Function	Cognitive Function
Objective support	0.62[b]	0.78[b]	0.21[c]	0.52[b]	0.18[c]
Subjective support	0.35[a]	0.36[b]	0.45[b]	0.32[a]	0.65[b]
Utilization of social support	0.28[a]	0.12[c]	0.15[c]	0.34[a]	0.54[b]
Total score of social support	0.49[b]	0.48[b]	0.42[b]	0.50[b]	0.49[b]

Note: [a]p < 0.05, [b]p < 0.01, [c]p > 0.05.

society, these patients who are often ignored easily should are paid attention to and studied. Dynamic investigation and analysis of the quality of life and its influencing factors of patients with cancer pain at home and comprehensive inter-

vention are of great significance for improving the therapeutic effect and improving the quality of life of patients.

Pain is a total pain, physical, social, mental, economic, and cognitive factors that may be the cause of other symptoms [8]. In this study, we find that gender factors influence cognitive function before treatment, stage of tumor after treatment, metastasis and age factors, which indicates that cognitive function. This indicates that there are differences in cognitive function before and after treatment, and there are differences in age in addition to the disease itself after treatment. Therefore, attention should be paid to gender and age factors in the implementation of cognitive intervention. In a pain management study by Erol O and other experts, it was suggested that educational intervention should be provided for patients with advanced cancer pain, but the knowledge and skills of pain assessment should be improved [9].

The analysis on the influencing factors of the function index in the quality of life shows that the metastasis is the influencing factor of the patient's role function at 1 week after treatment ($p < 0.05$), and the tumor stage. Metastasis and pain type are the influencing factors of patients' emotional function ($p < 0.05$). In addition, tumor stage and metastasis are also the factors of patients' overall health evaluation and cognitive function ($p < 0.05$). The disease itself has an effect on the quality of life of patients. Besides the timely treatment of cancer pain, the improvement of the effectiveness of tumor treatment and the control of tumor recurrence and metastasis have an impact on the quality of life of patients with cancer pain at home.

The results of study on symptom factors of patients with cancer pain at home show these symptoms such as fatigue, nausea and vomiting, pain, appetite, constipation and other symptoms have impact on the quality of life ($p < 0.001$). The symptoms of nausea and vomiting are higher than that of the Norwegian norm ($p < 0.001$), but the other symptoms except dyspnea are improved. The nausea and vomiting are aggravated at the early stage of treatment, then alleviated, and constipation gets worse with prolonged treatment. The symptoms of appetite are not improved obviously at the early stage of treatment, but improved significantly in the later stage, fatigue symptom doesn't improve obviously after treatment. Therefore, we should get timely intervention in the treatment of nausea, vomiting, pain, appetite and so on. Continuous focus should be given to dyspnea, fatigue, constipation and other symptoms to reduce the impact on the patient's quality of life.

Cancer pain had a negative effect on patients' emotional function [10] [11]. This study showed that the type of pain has a significant effect on the emotional function of patients one week after treatment ($p < 0.05$) and the type of pain had an effect on the role function of patients one month after treatment ($p < 0.05$), The quality of life of patients with cancer pain in home are lower than that of norm ($p < 0.001$). The function index and overall evaluation of quality of life of patients with cancer pain are improved before and after treatment, and the im-

provement of role function is more obvious with the prolongation of treatment time. Opioid drugs can effectively improve the quality of life of patients, this view has been reported in domestic and foreign documents [12].

It was found that the social support of cancer pain patients was higher than that of normal people, which indicated that cancer pain patients received more social support, objective support and subjective support were the influencing factors of patients' quality of life, but the degree of support utilization had no significant effect on patients' quality of life, and patients lacked the willingness to make active use of social support. We should guide patients to seek and make effective use of social support and improve the utilization of social support so as to improve the quality of life of patients. The objective support of the patients is not related to cognitive function, which suggests that we should strengthen the cognitive education of the patients and correct the cognitive error. Cancer pain is not a sign that there is no cure for the disease and we should promote the early intervention. There is no correlation between patient support utilization and emotional function and role function, which suggests that we should pay attention to emotional and role management of patients. Because of long-term pain, patients may have fear, anxiety, despair and lack of role function, we should help them to overcome negative emotions, return to normal family and social roles, seek help in a positive manner, use support to consolidate the therapeutic effect and improve the quality of life.

5. Conclusion

The influence of quality of life of patients with advanced cancer pain is multidimensional, complex and interactive. In view of this group, it is particularly important to fully understand the many factors that affect the quality of life of patients. How to maintain good therapeutic effect, reduce the adverse reactions caused by treatment, take intervention measures timely for influencing factors, and improve the quality of life of cancer pain patients at home are worthy subjects of our long-term study.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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