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Original Article

The Impact of Multidisciplinary Educational Team-Based Clinical Nursing Pathway on the Psychological Resilience, Treatment Adherence, Pain Management and Quality of Life in Cancer Patients

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Abstract

Background: We aimed to investigate the impact of multidisciplinary educational team-based clinical nursing pathway on the psychological resilience, treatment adherence, pain management and quality of life in cancer patients.

Methods: From 2019 to 2020, eighty two cancer patients were selected and randomly divided into the control group and the observational group. Both groups were treated with routine oncology nursing and the multidisciplinary educational team-based clinical nursing pathway, respectively. Psychological resilience, pain management and qualify of life were assessed by the Chinese version of the Connor-Davidson resilience scale, revised American Pain Society Patient Outcome Questionnaire and the Nottingham health profile, respectively. Treatment adherence was semi-quantitatively classified as "good", "fair" and "bad".

Results: Patient's psychological resilience, compliance, pain outcome and quality of life were similar between the control group and the observational group on admission. Patient's psychological resilience, compliance and pain outcome in the observational group were significantly superior to those in the control group one day prior to discharge and 2 months post-discharge (all $P<0.05$). The scores of energy, emotions, sleep and mobility were significantly different between the observational group and the control group one day prior to discharge and 2 months post-discharge (all $P<0.05$). Significant improvements were observed with regard to the scores of energy, sleep and mobility in the control group 2 months post-discharge, whereas the scores of energy, emotions, sleep and mobility improved dramatically in the observational group (all $P<0.05$).

Conclusion: Compared with routine oncology nursing, multidisciplinary educational team-based clinical nursing pathway could improve patient's psychological resilience, treatment adherence, pain management and quality of life.

Keywords: Cancer; Treatment adherence; Pain management; Psychological resilience; Quality of life

Introduction

Cancer is the first cause of death of patients in China. The vast majority of cancers cannot be cured. Surgery, chemotherapy, radiotherapy, targeted therapy, immunotherapy and traditional Chinese medicine are the common means of cancer treatment at present. Pain is a common clinical symptom of cancer patients, which can not only lead to negative emotions such as anxiety and depression, but also affect the therapeutic effect (1).

In fact, both the treatment plan and the patient's adherence significantly affect the survival and quality of life of cancer patients (2). Psychological resilience describes the psychological adaptability of individuals to effectively cope with threats and adversity in the face of pressure environment. Patients' good psychological resilience can increase treatment adherence and self-management ability, which is very important for relieving pain, improving quality of life and prolonging survival (3).

The management of cancer patients involves many disciplines and parts, which need the cooperation of all disciplines. General routine nursing in hospital is difficult to cover the nursing needs of patients during hospitalization, especially ignoring the early warning of psychological counseling and treatment side effects.

Therefore, we intended to explore the impact of multidisciplinary educational team-based clinical nursing pathway on the psychological resilience, treatment adherence, pain management and quality of life in cancer patients.

Methods

General information

From December 2019 to December 2020, 82 cases of cancer were selected as the research object. Inclusion criteria: 1) The patient's cancer diagnosis was definite (confirmed by pathology); 2) The patient's age is ≥18 years; 3) The expected survival time of patients was > 1 year; 4) The patients understood the contents of this study and signed a consent form to participate voluntarily.

Exclusion criteria: 1) The patient was presumed to be cancer with no clear pathological evidence; 2) The patient was complicated with severe dysfunction of other organs, such as severe hepatic and renal insufficiency; 3) At the end of cancer, the patient's life expectancy was less than one year, and the general physical strength of the East American Cancer Cooperative Group's ECOG score was greater than 3 points; 4) The patient had mental disorder or can't understand this study, and refused to participate in this study. The subjects were randomly divided into control group and observation group by random number table method, and were given routine nursing and multidisciplinary educational team-based clinical nursing.

Nursing methods

The patients in the control group were given routine care in Oncology Department, including routine admission education, nursing during chemotherapy treatment, medication care, daily monitoring and health education according to the doctor's advice.

The patients in the observation group adopted multidisciplinary educational team-based clinical nursing pathway, specifically:

1) The multidisciplinary education management team for malignant tumors was established, and the main personnel included malignant tumor nursing experts, nurses specialized in chemotherapy and radiotherapy, nurses specialized in anesthesia/pain, psychological counselors and liaison officers, who were responsible for contacting oncologists.

2) Common problems in the treatment of cancer patients in departments were summarized, such as side effects, negative emotions, pain, and corresponding strategies were searched by using HowNet, Wanfang and other databases. They should also make corresponding nursing path

tables according to the specific conditions of patients and departments.
3) On the first day of hospitalization, they introduced the situation of the ward, the attending physician and the responsible nurse to the patients, and explained the relevant systems of the ward and the hospital, the matters needing attention in checking and taking samples; They gave health education to patients, explained tumor-related knowledge, asked patients about their recent general situation, medication and treatment, pain management, and evaluated their psychological state and cognitive level of diseases.
4) On the second day of hospitalization, the cancer multidisciplinary education management team would introduce the treatment methods and schemes, possible complications and coping strategies to the patients, and provided counseling for the patients and their families' bad psychological state.
5) During the treatment, they should strengthen communication with patients, find the adverse reactions of patients early and report them to doctors for treatment. Psychotherapy should be given to patients with complications to help them divert their attention and enhance their confidence in overcoming the disease. They should correct the patients' bad behavior in time and ask them to follow the doctor's advice for treatment.
6) One day before leaving the hospital after treatment, they improved the corresponding scale to evaluate the treatment adherence, pain and quality of life of patients during hospitalization. They told patients to take medicine according to the doctor's advice after discharge to avoid missing, taking less or refusing to accept. They also preached the precautions of diet and exercise after discharge, and instructed patients to follow up in outpatient clinic or be hospitalized again according to the doctor's advice.

Observation indicators

The patients' psychological resilience, treatment adherence, pain management and quality of life were evaluated on the day of admission, one day before discharge and two months after discharge.

The psychological resilience of patients was evaluated by Connor-Davidson psychological resilience Scale (Chinese version). The scale mainly evaluates resilience, optimism and strength in psychological resilience, with a total score of 100, and each scale corresponds to 13 items, 4 items and 8 items respectively. The higher the item score, the stronger the patient's psychological resilience (4). The reliability of internal consistency of the scale in the elderly population in our community is as high as 0.921(5).

Treatment adherence: Semi-quantitatively evaluated the treatment compliance of patients with "excellent", "average" and "poor". Excellent: patients always took medicine on time and according to the doctor's advice; General: patients forgot to take medicine, missed medicine and took less medicine, which can be corrected in time after being persuaded by nurses; Poor: the patient did not take the medicine according to the doctor's advice, and there was the behavior of changing the medicine or stopping the medicine without authorization.

Pain management: The patient's pain was evaluated by the revised American Pain Association Patient Outcome Questionnaire (6). The scale included the degree of pain (3 items, each with a score of 0-10, with 0 indicating no pain and 10 indicating the most severe pain), the degree of influence of pain on patients (1 item, with a score of 0-10, with a score of 0 having no influence and 10 having the greatest influence) and the satisfaction of pain management (6 items, each with a score of 1-6, with 1 being very dissatisfied and 6 being very satisfied).

Quality of life: The health questionnaire in Nottingham Health Scale was used to evaluate the quality of life of patients (7), and the five dimensions of activity, socialization, sleep, emotion and energy were evaluated respectively. The total score of each dimension is 100 points, and the higher the score, the worse the quality of the corresponding dimension.

Statistical analysis

SPSS 22.0 (IBM Corp., Armonk, NY, USA) was used for data analysis and processing. The meas-

urement data was expressed as mean standard deviation, and the counting data was expressed as rate/percentage. Independent sample Student-*t* test or Chi-square test /Fisher exact probability method were used to compare the observation indexes of the photo group and the observation group. Independent sample Student-t test was used to compare the indexes of the control group and the observation group before intervention, one day before discharge and two months after discharge. Bilateral $P<0.05$ indicates that the difference was statistically significant.

Results

General information of patients

As shown in Table 1, there was no statistical difference between the control group and the observation group in age, sex, course of disease, education level, marital status, annual family income, payment of medical expenses, tumor stage and classification, which was comparable.

Table 1: Comparison of general conditions of patients in control group and observation group

Variable	*Control group (n=41)*	*Observation group (n=41)*	t/χ^2	*P*
Age(yr)	62.5±9.8	64.5±11.4	-0.85	0.40
Gender (male/female)	24/17	22/19	0.20	0.66
Course of disease (month)	8.5±4.1	9.2±5.5	-0.65	0.51
Degree of education				
High school and below (n, %)	31 (75.6)	28 (68.3)	0.54	0.46
University or above (n, %)	10 (24.4)	13 (31.7)		
Marital status				
Unmarried (n, %)	3 (7.3)	2 (4.9)	0.88	0.64
married (n, %)	36 (87.8)	35 (85.4)		
Divorce/widowhood (n, %)	2 (4.9)	4 (9.7)		
Annual household income (ten thousand yuan)				
<5 (n, %)	14 (34.1)	11 (26.8)	3.74	0.15
5-10 (n, %)	18 (43.9)	26 (63.4)		
>10 (n, %)	9 (22.0)	4 (9.8)		
Payment method of medical expenses				
Medical insurance (n, %)	40 (97.6)	39 (95.1)	0.35	0.99
Pay one's own expenses (n, %)	1 (2.4)	2 (4.9)		
Cancer staging	3.4±0.5	3.5±0.5	-0.84	0.40
Cancer classification				
Alimentary canal (n, %)	11 (26.8)	10 (24.4)	1.22	0.75
Respiratory tract (n, %)	19 (46.3)	17 (41.5)		
Urinary/reproductive system (including breast cancer) (n, %)	2 (4.9)	1 (2.4)		
Other (n, %)	9 (22.0)	13 (31.7)		

Psychological resilience comparison between control group and observation group

There was no significant difference in resilience between the two groups at admission, but the total score of resilience and the scores of each dimension in the observation group were significantly higher than those in the control group at the first day before discharge and the second month after discharge (all $P<0.05$) (Table 2).

Table 2: Comparison of psychological resilience and subscale scores between the control group and the observation group at different time points

Variable	*Control group (n=41)*	*Observation group(n=41)*	*t*	*P*
On admission				
Tenacity	37.59±5.22	36.66±4.41	0.87	0.39
Optimism	6.95±3.19	7.41±3.26	-0.65	0.52
Strength	20.49±4.44	19.85±4.26	0.66	0.51
Total score of psychological resilience	65.02±7.07	63.93±6.11	0.75	0.45
1 day before discharge				
Tenacity	40.98±4.77	43.76±5.17	-2.53	0.01
Optimism	8.29±3.02	10.49±3.45	-3.07	0.003
Strength	21.88±3.87	25.49±3.38	-4.50	<0.001
Total score of psychological	71.15±7.53	79.73±7.77	-5.08	<0.001
2 months after discharge				
Tenacity	39.90±4.71	42.88±4.97	-2.78	0.007
Optimism	9.78±2.81	11.07±2.93	-2.04	0.04
Strength	22.17±4.90	25.80±3.21	-3.97	<0.001
Total score of psychological	71.85±6.92	79.76±6. 02	-5.52	<0.001

Comparison of treatment adherence

At the time of admission, there was no significant difference in adherence between the control group and the observation group ($P=0.89$), and the adherence of the observation group was significantly better than that of the control group one day before discharge ($P=0.02$) and two months after discharge ($P<0.001$). The treatment adherence of patients in the control group was better than that at admission one day before discharge, while the adherence of patients in the observation group was significantly better at discharge one day before discharge and two months after discharge (Table 3).

Table 3: Comparison of treatment adherence between control group and observation group

Variable	*Control group (n=41)*	*Observation group (n=41)*	*χ2*	*P*
Excellent/fair/poor at admission (n)	20/13/8	19/15/7	0.24	0.89
Excellent/fair/poor 1 day before discharge (n)	30/9/2[a]	39/2/0[a]	7.63	0.02
Excellent/fair/poor 2 months after discharge (n)	22/13/6	38/2/1[a]	15.91	<0.001

a, compared with admission, $P<0.05$

Comparison of pain management between control group and observation group

As shown in Table 4, there was no statistical difference in the degree of pain, the influence of pain on patients, the satisfaction of pain management and the score of pain belief between the two groups (P=0.29-0.88). One day before discharge and two months after discharge, the pain outcome scores of patients in the observation group were significantly lower than those in the control group (all P<0.05). The degree of pain, the influence of pain on patients and the score of pain belief in the control group were significantly lower than those in the admission, while all the pain outcome scores in the observation group were lower than those in the admission (all P<0.05).

Table 4: Comparison of pain outcomes between control group and observation group

Variable	*Control group(n=41)*	*Observation group (n=41)*	*t*	*P*
On admission				
Degree of pain	8.1±3.2	8.3±3.4	-0.27	0.79
The degree of influence of pain on patients	4.8±2.8	4.7±3.1	0.15	0.88
Pain management satisfaction	18.9±7.3	17.2±7.2	1.06	0.29
Pain belief	15.5±5.5	14.6±6.7	0.67	0.51
1 day before discharge				
Degree of pain	6.2±2.9[a]	4.6±2.7[a]	2.59	0.01
The degree of influence of pain on patients	2.8±1.5[a]	2.1±1.6[a]	2.04	0.04
Pain management satisfaction	21.8±7.8	25.5±7.0[a]	-2.26	0.03
Pain belief	11.1±4.4[a]	8.1±3.2[a]	3.53	0.001
2 months after discharge				
Degree of pain	6.3±3.3[a]	4.1±2.2[a]	3.55	0.001
The degree of influence of pain on patients	2.6±1.2[a]	1.9±1.1[a]	2.75	0.007
Pain management satisfaction	22.1±6.5	26.2±7.6[a]	-2.63	0.01
Pain belief	10.0±4.2[a]	6.1±5.2[a]	3.74	<0.001

a, compared with admission, P<0.05

Comparison of quality of life between the control group and the observation group

As shown in Table 5, there was no statistical difference in the five dimensions of energy, emotion, sleep, social interaction and activity between the two groups (P=0.08-0.68). One day before discharge and two months after discharge, the scores of energy, emotion, sleep and activity in the observation group were significantly different from those in the control group (all P<0.05). In the control group, the scores of energy, sleep and activity were improved two months after discharge, while in the observation group, the energy, emotion, sleep and activity were significantly improved (all P<0.05).

Table 5: Comparison of quality of life between control group and observation group

Variable	*Control group(n=41)*	*Observation(n=41)*	*t*	*P*
On admission				
Energy	62.3±14.6	64.3±16.3	-0.59	0.56
Emotion	32.1±7.7	35.4±9.3	-1.75	0.08
Sleep	27.7±9.9	28.8±6.5	-0.60	0.55
Social contact	55.6±13.5	53.2±11.7	0.86	0.39
Activity	66.4±19.5	64.6±20.4	0.41	0.68
1 day before discharge				
Energy	57.3±14.4	49.4±14.8[a]	2.45	0.02
Emotion	33.4±7.9	28.8±8.6[a]	2.52	0.01
Sleep	27.2±6.8	21.2±4.7[a]	4.65	<0.001
Social contact	54.5±12.9	55.3±12.0	-0.29	0.77
Activity	64.1±18.4	54.2±17.6[a]	2.49	0.02
2 months after discharge				
Energy	49.3±12.6[a]	43.1±11.1[a]	2.36	0.02
Emotion	30.2±7.0	25.4±9.2[a]	2.66	0.009
Sleep	21.1±6.4[a]	17.8±4.8[ab]	2.64	0.01
Social contact	50.1±11.4	51.4±10.3	-0.54	0.59
Activity	56.4±16.7[a]	47.2±15.5[a]	2.59	0.01

a, $P < 0.05$ compared with admission; b, compared with one day before discharge, $P<0.05$

Discussion

Psychological resilience is very important for reducing anxiety and depression of cancer survivors and improving mental health. A recent meta-analysis (8) showed that the psychological resilience of cancer patients was not only affected by the disease itself, but also closely related to the self-efficacy of patients and external support. Therefore, this provided a potential opportunity for cancer patients to intervene psychologically to improve treatment adherence and quality of life. In this study, the psychological resilience of patients in the intervention group was significantly enhanced and could be maintained at 2 months after discharge, which reflected the positive role of medical staff in the mental health of such patients.

Treatment adherence means that patients receive corresponding treatment according to the doctor's advice or prescription. Treatment adherence is very important to improve the clinical symptoms and prognosis of cancer patients (9). Meta-analysis found that the main risk factors of poor treatment adherence of breast cancer patients were tamoxifen use, depression, smoking and old age (10). Another study found that the side effects of treatment and patients' own beliefs had great influence on treatment adherence, and adherence was directly related to prognosis (11). In this study, we found that both routine nursing and multidisciplinary educational team-based clinical nursing pathway can improve patients' treatment adherence, and the adherence of patients in the control group decreased significantly two months after discharge, while the adherence of patients in the observation group was still high two months after discharge, suggesting that multidisciplinary educational team-based clinical nursing pathway had a long effect on improving patients' adherence.

Pain is often a key factor affecting the mood and quality of life of cancer patients, and adequate

analgesia is a necessary factor to improve the quality of life of cancer patients. However, the lack of analgesia leads to patients' anxiety, depression and other negative emotions in clinic. Cross-sectional survey showed that up to 69% of cancer patients had moderate to severe persistent pain complicated with anxiety, which affected their quality of life (12). In this study, the degree of pain of patients belonged to low-medium level, while the influence of pain on patients belonged to medium level. Yeager et al. found that recent chemotherapy, changes in pain degree, fear of side effects of treatment and other factors affect the dosage of painkillers taken by patients (13). The pain outcome of patients in the control group and the observation group improved after intervention, but the pain outcome score of the observation group was different from that of the control group one day before discharge and two months after discharge. We suspected that this may be related to the fact that anesthesia/pain nurses in multidisciplinary education management teams were more professional in pain management, and their education and treatment were more targeted. The results of meta-analysis (14) suggested that the education management led by pain specialist nurses could significantly improve the pain outcome of cancer patients, which was consistent with the results of this study.

This study also found that compared with conventional nursing, the multidisciplinary educational team-based clinical nursing pathway could improve the quality of life of cancer patients more effectively and for a long time. Cancer diagnosis itself, its corresponding treatment and side effects significantly affect patients' energy, emotion, sleep, social interaction and activities. Common factors affecting the quality of life of cancer patients included medical payment, education level, treatment effect and side effects (15). In addition, whether the patients could get the corresponding information, family and social psychological support also had obvious influence on the quality of life of patients (16). Multidisciplinary education management team includes psychological counselors, who can give timely feedback and guidance to patients' psychological problems in treatment, and help patients build confidence and positive life concepts. It had been proved that multidisciplinary psychological and social support was helpful to improve the prognosis of breast cancer patients (17). Randomized clinical trials (18) also found that multidisciplinary comprehensive management could reduce the dosage of sleeping pills for patients with cancer and improve their sleep quality.

Conclusion

Compared with routine nursing, the clinical nursing path based on multidisciplinary education management team can improve the psychological resilience, treatment adherence, pain management and quality of life of cancer patients, and has certain clinical application value.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflicts of Interest

The authors declare that there is no conflict of interest.

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