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# Assessment of Clinical Oncology Nurses' Recognition and Management of Cancer-Induced Fatigue in Patients: A Questionnaire-Based Study

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## Abstract:

*Objective:* To investigate the status of clinical oncology nurses' identification and management of cancer-induced fatigue in cancer patients. *Methods:* A total of 231 clinical oncology nurses in a hospital were surveyed using a self-compiled questionnaire for the identification and management of cancer-related fatigue. The recognition, management, and influencing factors of cancer-related fatigue were analyzed using percentage calculations and single-factor and multi-factor analyses. *Results:* Clinical oncology nurses demonstrated poor recognition of cancer-induced fatigue. The identification accuracy, ranked from highest to lowest, was as follows: influence of cancer fatigue (98.27%), risk factors (97.84%), clinical manifestations (97.40%), characteristics (94.37%), incidence (89.18%), mitigation measures (61.90%), progression (54.11%), evaluation indexes (16.88%), and diagnostic criteria (8.23%). Management was similarly inadequate, with an average implementation rate of 68.01%, falling short of guideline recommendations. Age and years of experience were identified as influencing factors. *Conclusions:* The identification and management of cancer-related fatigue by clinical oncology nurses require improvement. Hospital administrators should actively respond to guideline recommendations by enhancing the construction of cancer fatigue management systems and emphasizing theoretical and practical education on cancer fatigue for nurses. These measures would facilitate improved patient care and quality of life.

## Keywords:

Tumor
Nurse
Cancer-related fatigue
Management
Symptom management

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# 1. Introduction

According to the latest global cancer burden data from 2020, China recorded 4.57 million new cancer cases and 3 million cancer-related deaths, ranking first worldwide and accounting for 23.7% and 30.0% of global cases and deaths, respectively [1]. Cancer-related fatigue, which is associated with both the disease and its treatment, is a distressing and persistent subjective sensation of physical and psychological exhaustion. It has been recognized as the sixth vital sign in cancer care [2].

In patients newly diagnosed with cancer, the incidence of fatigue symptoms is approximately 40%. Among those undergoing active treatments such as radiotherapy, chemotherapy, and biological therapy, this proportion rises to 62%–85%. Furthermore, even during long-term follow-up, approximately 30% of cancer patients continue to experience moderate to severe fatigue [3,4]. Fatigue is therefore a common and significant symptom in cancer patients and, compared to other symptoms such as pain, nausea, and vomiting, it causes greater disruption to daily life [5].

With the advent of the "human-centered" nursing philosophy and the evolution of the "bio-psycho-social" medical model, cancer care now focuses not only on extending life expectancy but also on improving the quality of life. Clinical oncology nurses, who maintain close contact with patients, play a crucial role in recognizing fatigue states during daily care and implementing timely and effective management strategies. This approach is essential for enhancing the patient's quality of life.

This study investigates the current state of symptom recognition and management of cancer-related fatigue by oncology nurses, aiming to provide a robust foundation for subsequent clinical and management practices.

# 2. Materials and methods

## 2.1. Research object

Convenient sampling was employed to select nurses directly involved in the care of cancer patients at our hospital from October to November 2023 as the study population. Inclusion criteria included nurses with more than six months of experience in cancer nursing who were familiar with cancer-related work. Exclusion criteria included nurses absent during the survey period due to illness, maternity leave, or personal leave.

## 2.2. Survey methods

### 2.2.1. Survey tools

The questionnaire was compiled by three oncology nursing specialists and two experienced clinical care management experts, referencing the Guidelines for Clinical Care of Adult Cancer-Related Fatigue [6] and related literature [7,8]. The questionnaire consisted of three sections:

(1) General information questionnaire: This section collected data on gender, age, highest educational qualification, department, title, and years of professional experience.

(2) Cancer-related fatigue identification questionnaire: This section focused on topics such as the occurrence of cancer-related fatigue, clinical manifestations, risk factors, characteristics, duration, and impact. It contained 10 items, with responses recorded as "yes" or "no." Correct answers were awarded 1 point, while incorrect answers were scored 0. Four items (questions 4, 5, 7, and 8) were reverse-scored. The total possible score was 10 points, with higher scores reflecting better recognition of cancer-related fatigue by nurses. The Cronbach's alpha coefficient for this questionnaire was 0.855, indicating high reliability. Recognition accuracy for cancer-related fatigue was calculated as follows:

$$Cancer-related\ fatigue\ recognition\ accuracy = \left(\frac{Number\ of\ correct\ answers}{Total\ number\ of\ questions}\right) \times 100\%$$

(3) Cancer-related fatigue management questionnaire: This section included three dimensions—symptom screening (4 items), symptom assessment (7 items), and symptom management (10 items)—for a total of 21 items. Responses were recorded as "yes" or "no," with positive answers scored as 1 point and negative answers as 0 points. The total possible score was 21, with higher scores indicating better management of cancer-related fatigue. The Cronbach's alpha coefficient for this questionnaire was 0.867, demonstrating high reliability.

The implementation rate of cancer-related fatigue management was calculated as follows:

$$Cancer-related\ fatigue\ management\ implementation\ rate = \left(\frac{Number\ of\ yesresponses}{Total\ number\ of\ questions}\right) \times 100\%$$

#### 2.2.2. Data collection methods

Data were collected using the "Questionnaire Star" electronic platform. Tumor nursing managers in the hospital distributed the QR code for the electronic questionnaire to all unit nurses, inviting them to complete the survey. The questionnaire was completed anonymously, with assurances of privacy protection and informed consent obtained from participants. If the completeness of the questionnaire responses reached only 20% of the total questions and did not provide sufficient data to support analysis, those responses were excluded during data analysis.

### 2.3. Statistical methods

The collected data were analyzed using SPSS 21.0 statistical software. General data were expressed as frequency and percentage, while measurement data were represented by mean and standard deviation. Univariate analysis was conducted using independent sample t-tests or ANOVA, and multivariate analysis was performed through regression analysis. A *P*-value of $< 0.05$ was considered statistically significant.

## 3. Results

### 3.1. General information

A total of 238 nurses participated in the survey. Based on the exclusion criteria, 231 questionnaires were deemed valid. The majority of respondents were female (97.40%), aged 26–35 years (63.64%), and held undergraduate degrees (93.94%). Slightly more participants were surgical nurses (58.01%) than internal medicine nurses (41.99%). Most nurses (53.68%) had been in practice for more than five years, and a similar proportion held the title of nurse (53.68%).

### 3.2. Status quo of identification and management of cancer-related fatigue

The clinical oncology nurses exhibited varying levels of recognition of cancer-related fatigue, with an average score of 8.28 ± 1.41. Recognition accuracy ranged as follows, from highest to lowest: impact of cancer-related fatigue (98.27%), risk factors (97.84%), clinical manifestations (97.40%), characteristics (94.37%), incidence (89.18%), mitigation measures (61.90%), progression (54.11%), evaluation indicators (16.88%), and diagnostic criteria (8.23%) (**Table 1**).

The management of cancer-related fatigue was not optimal, with an average score of 14.73 ± 6.17 and an implementation rate of 68.01%. Implementation rates for each dimension were as follows: symptom screening (60.93%), symptom assessment (67.41%), symptom management (individual) (88.87%), and symptom management (department) (54.81%). Detailed implementation rates for each item are presented in **Table 2**.

### 3.3. Factors affecting the identification and management of cancer-related fatigue

#### 3.3.1. Single-factor analysis

Univariate analysis identified four variables significantly associated with cancer-related fatigue recognition ($P < 0.05$) and five variables significantly associated with management ($P < 0.05$). Results are summarized in **Table 3**.

#### 3.3.2. Multi-factor analysis

Multiple regression analysis was conducted, with cancer-related fatigue recognition and management as dependent variables and significant general data variables as independent variables. **Table 4** outlines variable assignments and **Table 5** presents the results.

**Table 1.** Recognition of cancer-related fatigue among clinical oncology nurses ($n$ = 231)

| Item | | Response [$n$ (%)] | Recognition accuracy rank |
|---|---|---|---|
| 1. Fatigue is a common symptom of cancer and cancer treatment. | Yes | 206 (89.18) | 5 |
| | No | 25 (10.82) | |
| 2. Fatigue symptoms include lack of energy, weakness, laziness, poor concentration, and memory loss. | Yes | 225 (97.40) | 3 |
| | No | 6 (2.60) | |
| 3. Causes include direct effects of cancer, treatments, comorbidities, and psychosocial factors. | Yes | 226 (97.84) | 2 |
| | No | 5 (2.16) | |
| 4. Diagnostic criteria include fatigue lasting over one week. | Yes | 212 (91.77) | 10 |
| | No | 19 (8.23) | |
| 5. Fatigue, being multifactorial, cannot be measured. | Yes | 192 (83.12) | 9 |
| | No | 39 (16.88) | |
| 6. Cancer-related fatigue is faster, more severe, and less predictable than general fatigue. | Yes | 218 (94.37) | 4 |
| | No | 13 (5.63) | |
| 7. Cancer-related fatigue can be alleviated with regular rest. | Yes | 88 (38.10) | 7 |
| | No | 143 (61.90) | |
| 8. Cancer-related fatigue resolves after treatment completion. | Yes | 106 (45.89) | 8 |
| | No | 125 (54.11) | |
| 9. Fatigue trajectories align with disease or treatment progression. | Yes | 213 (92.21) | 6 |
| | No | 18 (7.79) | |
| 10. Fatigue affects physical, mental, psychological, and emotional aspects. | Yes | 227 (98.27) | 1 |
| | No | 4 (1.73) | |

**Table 2.** Management of cancer-related fatigue by clinical oncology nurses ($n$ = 231)

| Item | | Symptom management implementation rate [$n$ (%)] |
|---|---|---|
| Symptom screening | Initial visit | 134 (58.01) |
| | During treatment | 142 (61.47) |
| | Follow-up period | 142 (61.47) |
| | When clinically necessary | 145 (62.77) |
| Symptom assessment | Patient self-assessment | 116 (50.22) |
| | Medical team evaluation | 186 (80.52) |
| | History evaluation | 143 (61.90) |
| | Evaluation frequency | 152 (65.80) |
| | Choice of tools | 160 (69.26) |
| | Assessment of relevant factors | 169 (73.16) |
| | Assessment of treatable factors | 164 (71.00) |
| Symptom management (individual) | Daily attention to patient fatigue | 168 (72.73) |
| | Communicate about fatigue | 193 (83.55) |
| | Health guidance for patients/families | 192 (83.12) |
| | Provision of nursing interventions | 186 (80.52) |
| | Timely communication with doctors | 195 (84.42) |
| Symptom management (department) | Management by guidelines | 145 (62.77) |
| | Evaluation norms and processes | 128 (55.41) |
| | Clinical management pathway | 117 (50.65) |
| | Structured intervention | 119 (51.52) |
| | Education and training on fatigue | 124 (53.68) |

**Table 3.** Single-factor analysis of cancer-related fatigue recognition and management

| Item | | Number of people [*n* (%)] | Symptom recognition | Symptom management |
|---|---|---|---|---|
| Gender | Male | 6 (2.60) | 7.50 ± 1.87 | 14.69±6.27 |
| | Female | 225 (97.40) | 8.30 ± 1.39 | 16.33±7.42 |
| | Test value | | 1.043 | 0.631 |
| | *P* | | 0.344 | 0.528 |
| Age (years) | ≤ 25 | 22 (9.52) | 8.86 ± 1.04 | 17.41 ± 4.73 |
| | 26–30 | 75 (32.47) | 8.36 ± 1.26 | 16.11 ± 6.09 |
| | 31–35 | 72 (31.17) | 8.35 ± 1.46 | 14.22 ± 6.46 |
| | 36–40 | 40 (17.32) | 8.18 ± 1.11 | 13.55 ± 6.22 |
| | ≥ 40 | 22 (9.52) | 7.41 ± 2.09 | 11.18 ± 6.00 |
| | Test value | | 3.331 | 4.358 |
| | *P* | | 0.011 | 0.002 |
| Highest educational degree | Junior college | 13 (6.06) | 8.62 ± 1.39 | 14.57 ± 6.32 |
| | Bachelor's degree or above | 218 (93.94) | 8.76 ± 1.41 | 18.23 ± 3.88 |
| | Test value | | 0.523 | 3.620 |
| | *P* | | 0.594 | 0.028 |
| Department | Internal medicine | 97 (41.99) | 8.42 ± 1.29 | 15.05 ± 6.00 |
| | Surgery | 134 (58.01) | 8.18 ± 1.49 | 14.50 ± 6.50 |
| | Test value | | 1.328 | 0.657 |
| | *P* | | 0.015 | 0.021 |
| Position title | Nurse | 50 (21.65) | 7.33 ± 1.51 | 14.36 ± 5.63 |
| | Nurse practitioner | 124 (53.68) | 8.88 ± 0.99 | 16.49 ± 7.23 |
| | Supervisor nurse | 57 (24.67) | 8.28 ± 1.41 | 15.38 ± 5.25 |
| | Test value | | 2.088 | 2.312 |
| | *P* | | 0.026 | 0.021 |
| Working years | ≤ 1 year | 52 (22.51) | 8.33 ± 1.13 | 16.27±5.21 |
| | 1–3 years | 26 (11.26) | 8.42 ± 1.27 | 16.31 ± 5.54 |
| | 3–5 years | 29 (12.55) | 7.97 ± 1.27 | 15.97 ± 5.61 |
| | ≥ 5 years | 124 (53.68) | 8.31 ± 1.41 | 13.47 ± 6.77 |
| | Test value | | 0.601 | 3.753 |
| | *P* | | 0.025 | 0.012 |

**Table 4.** Assignment of argument variables

| Independent variable | Assignment mode |
|---|---|
| Age (years) | ≤ 25 = 1; 26–30 = 2; 31–35 = 3; 36–40 = 4; ≥ 40 = 5 |
| Highest educational degree | College = 1; Bachelor degree or above = 2 |
| Department | Internal medicine = 1; Surgery = 2 |
| Position title | Nurse = 1; Nurse practitioner = 2; Supervisor nurse = 3 |
| Working years | ≤ 1 year = 1; 1–3 years = 2; 3–5 years = 3; ≥ 5 years = 4 |

**Table 5.** Multi-factor analysis of the status quo of recognition and management of cancer-related fatigue

| Variable | Partial regression coefficient | Standard error | Normalized regression coefficient | *t* | *P* |
|---|---|---|---|---|---|
| Recognition of cancer-related fatigue | | | | | |
| Constant term | 9.008 | 0.249 | - | 6.108 | 0.000 |
| Age | 3.145 | 0.203 | 0.082 | 0.257 | 0.002 |
| Working years | 2.584 | 1.133 | 0.135 | 1.534 | 0.023 |
| Management of cancer-related fatigue | | | | | |
| Constant term | 20.612 | 1.315 | - | 15.676 | 0.000 |
| Age | 3.543 | 0.366 | 0.230 | 1.298 | 0.000 |
| Working years | 2.244 | 0.327 | 0.146 | 0.734 | 0.026 |

# 4. Discussion

## 4.1. Clinical cancer nurses' recognition and management of cancer-related fatigue

Clinical oncology nurses demonstrate a strong understanding of the influence, risk factors, clinical manifestations, characteristics, and incidence of cancer-related fatigue. This level of understanding may be attributed to their frequent and prolonged contact with patients, leading to a deeper awareness of patients' physical and emotional conditions. However, their ability to identify mitigation measures, progression status, evaluation tools, and diagnostic criteria—elements requiring more specialized knowledge—remains inadequate. This gap may stem from the reliance on clinical practice guidelines for cancer-related fatigue that are predominantly derived from international studies [2], while evidence-based guidelines tailored to China are still limited. As a result, the application of such guidelines in frontline clinical practice has not yet achieved widespread adoption.

In the absence of standardized nursing protocols, clinical oncology nurses often rely on their personal care experiences or general knowledge to alleviate patients' distress. Consequently, symptoms of cancer-related fatigue may not be effectively addressed, posing a potential risk to patients' comfort and safety. Previous studies have primarily focused on nurses managing specific disease types or those with specialized training, such as in gynecological oncology, which limits direct comparisons with this study [9,10]. Nonetheless, the findings indicate that clinical oncology nurses require further training to enhance their recognition of cancer-related fatigue, thereby improving patients' quality of life and ensuring safer nursing practices.

The management of cancer-related fatigue among clinical oncology nurses is similarly suboptimal. Screening and assessment of fatigue symptoms are not comprehensively implemented according to recommended guidelines [2]. While individual nurses exhibit a more proactive approach to addressing fatigue symptoms, departmental management efforts remain inadequate. The absence of institutionalized processes and quality control measures limits the ability to meet patient needs effectively. These findings suggest that clinical managers should prioritize the standardization of fatigue management practices by developing training programs and supporting the implementation of evidence-based diagnosis and treatment protocols to deliver higher-quality patient care.

## 4.2. Analysis of factors influencing the identification and management of cancer-related fatigue

Cancer-related fatigue is a prevalent condition among cancer patients, manifesting as disruptions in physiological functions, diminished social behaviors, and intensified role conflicts, all of which severely affect patients' physical and psychological well-being. Patients experiencing these symptoms also demonstrate significant informational and emotional needs [12]. This

study identified a low recognition rate of cancer-related fatigue among clinical oncology nurses and analyzed contributing factors.

The findings suggest that nurses' recognition of fatigue symptoms improves with age, years of work experience, professional competence, and clinical teaching involvement. These factors equip nurses with the knowledge and skills required to identify and manage fatigue symptoms effectively [11]. Similarly, the management of cancer-related fatigue is influenced by age and work experience. Nurses with more extensive experience are better positioned to provide timely and effective care, supported by advanced technical expertise and emotional maturity.

## 5. Conclusion

In conclusion, the study underscores the need to prioritize cancer-related fatigue management by establishing comprehensive fatigue management mechanisms and improving nurses' recognition rates. A combination of institutional framework development and targeted nurse training can facilitate systematic and practical learning on cancer-related fatigue. Such initiatives are expected to enhance symptom recognition and reduce pathological fatigue in patients, ultimately promoting their comfort.

This study employed convenience sampling and relied on subjective questionnaire responses, which may limit the representation of cancer-related fatigue management practices in the region. The findings' comprehensiveness and objectivity require further validation. Future research should explore specific aspects of cancer-related fatigue management, such as nutritional and sleep interventions, in accordance with clinical guidelines. Such research can contribute to the refinement of clinical procedures, ensuring improved patient safety and care quality.

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The authors declare no conflict of interest.

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