

# Correlation between Disease Uncertainty and Psychological Distress in Hospitalized Patients with Primary Liver Cancer

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**Abstract:** *Objective:* To explore the correlation between disease uncertainty and psychological distress in hospitalized patients with primary liver cancer, providing a basis for clinical nursing interventions. *Methods:* A convenient sampling method was used to select 82 patients with primary liver cancer from a tertiary first-class hospital in Guangzhou from September 2023 to March 2024 as the research subjects. General information questionnaires, the Mishel Uncertainty in Illness Scale-Adult Version (MUIS-A), and the Kessler Psychological Distress Scale (K10) were used for investigation. Pearson correlation analysis and linear regression analysis were performed to explore the relationship between the two. *Results:* The total score of disease uncertainty in hospitalized patients with primary liver cancer was  $(99.20 \pm 8.79)$ , and the total score of psychological distress was  $(22.87 \pm 9.46)$ , both at a medium level. There was a positive correlation between disease uncertainty and psychological distress ( $r = 0.360$ ,  $P < 0.01$ ), and the ambiguity dimension had the strongest correlation with psychological distress ( $r = 0.399$ ,  $P < 0.01$ ). Regression analysis showed that the ambiguity dimension had a significant predictive effect on psychological distress ( $\beta = 0.399$ ,  $P < 0.01$ ). *Conclusion:* There is a close correlation between disease uncertainty and psychological distress in patients with primary liver cancer. In clinical nursing, it is necessary to pay special attention to patients' ambiguity regarding disease symptoms and prognosis. Targeted health education should be carried out to reduce their uncertainty, thereby improving their psychological state.

**Keywords:** Primary liver cancer; Disease uncertainty; Psychological distress; Nursing intervention

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## 1. Introduction

Primary liver cancer is one of the common malignant tumors in China, ranking fourth in incidence. It has a poor prognosis and a high recurrence rate. Patients often face heavy physical and psychological burdens<sup>[1, 2]</sup>. Disease uncertainty refers to an anxious state in which individuals experience due to a lack of clear understanding of

disease symptoms, treatments, and prognoses <sup>[3]</sup>. Psychological distress, on the other hand, refers to negative emotions such as depression and anxiety triggered by the disease <sup>[4]</sup>. Research has shown that disease uncertainty in patients with malignant tumors can exacerbate psychological distress and affect treatment compliance and quality of life <sup>[5]</sup>. However, currently, there are few studies on the relationship between disease uncertainty and psychological distress in patients with primary liver cancer.

This study aimed to analyze the current status and correlation of disease uncertainty and psychological distress in patients with primary liver cancer in a tertiary-level hospital in Guangzhou, providing theoretical support for clinical nursing, helping patients improve their psychological state, and enhancing treatment effectiveness.

## **2. Subjects and methods**

### **2.1. Research subjects**

A convenient sampling method was used to select patients with primary liver cancer hospitalized in a tertiary-level hospital in Guangzhou from September 2023 to March 2024 as the research subjects.

Inclusion criteria: (1) Pathologically diagnosed with primary liver cancer; (2) Informed consent and voluntary participation; (3) Clear consciousness and no communication barriers.

Exclusion criteria: (1) Complicated with mental illness; (2) Critically ill or unstable condition.

A total of 87 questionnaires were distributed, and 82 valid questionnaires were recovered, with a valid recovery rate of 94.2%.

### **2.2. Research tools**

- (1) General Information Questionnaire: It includes gender, age, educational level, marital status, and medical expense payment methods.
- (2) Mishel Uncertainty in Illness Scale-Adult Version (MUIS-A): The Chinese version consists of 33 items, divided into 4 dimensions: complexity, ambiguity, lack of disease information, and unpredictability. It uses a Likert 5-level scoring system, with a total score ranging from 32 to 160. The Cronbach's  $\alpha$  coefficient is 0.625.
- (3) Kessler Psychological Distress Scale (K10): It has 10 items and assesses emotions such as anxiety and depression in the past 4 weeks. The total score ranges from 10 to 50, and the Cronbach's  $\alpha$  coefficient is 0.950.

### **2.3. Data collection and statistical methods**

Anonymous questionnaires were used for data collection, and the data were analyzed by SPSS 26.0. Measurement data were expressed as mean  $\pm$  standard deviation ( $\bar{x} \pm s$ ). The t-test or analysis of variance was used for inter-group comparisons. Pearson's method was used for correlation analysis, and regression analysis was performed with psychological distress as the dependent variable. A  $P$  value  $< 0.05$  was considered statistically significant.

## **3. Results**

### **3.1. General information of the research subjects**

Among the 82 patients, 82.9% (68 cases) were male and 17.1% (14 cases) were female. The age was mainly

between 45–59 years old (50.0%). Most patients (85.4%) had a middle-school education or below, and 91.5% of the patients used medical insurance (**Table 1**).

**Table 1.** General Information of the Research Subjects (n = 82)

Variable	Group	Number of Cases (%)
Gender	Male	68 (82.9)
	Female	14 (17.1)
Age (years)	≤ 44	10 (12.2)
	45–59	41 (50.0)
	≥ 60	31 (37.8)
Educational Level	Primary School or Below	27 (32.9)
	Middle School	43 (52.4)
	Junior College and Above	12 (14.6)
Medical Expense Payment	Self - payment	7 (8.5)
	Medical Insurance	75 (91.5)

### 3.2. Scores of disease uncertainty and psychological distress

The total score of disease uncertainty was ( $99.20 \pm 8.79$ ). The scores of each dimension were as follows: ambiguity ( $38.37 \pm 7.49$ ) > complexity ( $26.74 \pm 3.77$ ) > lack of disease information ( $18.77 \pm 3.98$ ) > unpredictability ( $15.31 \pm 2.60$ ). The total score of psychological distress was ( $22.87 \pm 9.46$ ), and 50% of the patients had moderate to severe psychological distress (**Table 2**).

**Table 2.** Scores of disease uncertainty, its related dimensions, and psychological distress

Variable	Scoring Range	Average Score ()
Total score of the disease uncertainty scale	32–160	$99.20 \pm 8.79$
Complexity	7–35	$26.74 \pm 3.77$
Ambiguity	13–65	$38.37 \pm 7.49$
Lack of disease information	7–35	$18.77 \pm 3.98$
Unpredictability	5–25	$15.31 \pm 2.60$
Total score of the psychological distress scale	10–50	$22.87 \pm 9.46$

### 3.3. Correlation between disease uncertainty and psychological distress

Pearson analysis showed that the total score of disease uncertainty was positively correlated with psychological distress ( $r = 0.360$ ,  $P < 0.01$ ), and the ambiguity dimension had the strongest correlation ( $r = 0.399$ ,  $P < 0.01$ ). Regression analysis further confirmed that the ambiguity dimension could independently predict psychological distress ( $\beta = 0.399$ ,  $P < 0.01$ ) (**Table 3**).

**Table 3.** Regression analysis of psychological distress and the ambiguity dimension

Variable	B	SE	Beta	<i>t</i>	<i>P</i>	95%CI
(Constant)	3.5617	5.060	-	0.704	0.484	-6.509–13.630
Ambiguity	0.503	0.129	0.399	3.887	0.000	0.246–0.761

Note: The regression equation is  $R^2 = 0.159$  ; the adjusted  $R^2 = 0.148$ ;  $F=15.106$ ,  $P < 0.01$ ; D-W value = 1.644.

## 4. Discussion

### 4.1. Current status of disease uncertainty in patients with primary liver cancer

In this study, the total score of disease uncertainty in patients was ( $99.20 \pm 8.79$ ), which was higher than that in the study by Xu *et al.* ( $93.86 \pm 12.19$ ). The ambiguity dimension had the highest score ( $38.37 \pm 7.49$ ), indicating that patients had insufficient understanding of disease symptoms and prognosis<sup>[5]</sup>. In clinical practice, routine health education mainly focuses on the treatment process, and the explanation of symptoms is relatively brief, which is likely to cause confusion among patients. It is recommended that nurses, combined with individual needs, enhance patients' understanding of the disease through graphic materials, case sharing, and other methods.

### 4.2. Current status of psychological distress and influencing factors

Fifty percent of the patients had moderate to severe psychological distress, and the scores of depression-related items (such as fatigue and low mood) were relatively high, which was closely related to the physical symptoms caused by liver cancer and economic pressure<sup>[6]</sup>. Research shows that psychological distress can exacerbate the inflammatory response and affect treatment effectiveness<sup>[7]</sup>. During nursing care, it is necessary to pay attention to patients' emotional changes and cooperate with the psychology department to carry out cognitive-behavioral therapy or group support activities to help patients establish positive coping strategies.

### 4.3. Interaction between disease uncertainty and psychological distress

There was a significant positive correlation between disease uncertainty and psychological distress, especially in the ambiguity dimension. Patients' uncertainty about symptoms can trigger anxiety, and anxiety may inhibit information-seeking behavior, forming a vicious cycle<sup>[8]</sup>. It is recommended that medical staff take the initiative to provide disease knowledge, simplify professional terms using multimedia tools, and encourage patients to ask questions to reduce the information gap.

## 5. Conclusion

The levels of disease uncertainty and psychological distress in patients with primary liver cancer are relatively high, and there is a significant positive correlation between them. Nursing interventions should focus on reducing patients' ambiguity regarding disease symptoms and prognosis. Through systematic health education, psychological counseling, and social support, their psychological state can be improved, ultimately enhancing treatment effectiveness and quality of life.



## Disclosure statement

The authors declare no conflict of interest.

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