

RESEARCH ARTICLE

# Uncertainty of Disease Diagnosis in Elderly Cancer Patients

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**Abstract: Objectives:** To explore the relationship between sociodemographic (SD) characteristics, level of uncertainty (LU) and cancer diagnosis in the elderly. **Materials and methods:** The National Cancer Corporation conducted a 6-week quantitative, cross-sectional, non-probability related sample study on cancer patients over 60 years old. Merle Mishel uncertainty rating scale was used for data collection. Descriptive statistical analysis was performed using central trend measurement, and correlation analysis was conducted using Pearson correlation, analysis of variance and linear regression model. **Result:** 54.8% of the elderly have high LU. Education level was negatively correlated with LU ( $R = 0.54$ ,  $P = 0.0492$ ). The variance of 28.99% (adjusted  $R^2$ , 35gl) in LU can be explained by education level. There was no statistically significant correlation with other SD characteristics. **Conclusion:** According to the educational characteristics of the elderly in the National Cancer Corporation, a linear regression model was established to predict LU.

**Keywords:** Tumor, Uncertainty, Elderly, Tumor nursing

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## 1. Introduction

In the case of disease, one aspect that accompanies humans is uncertainty. When patients and their families fall into uncertainty, many outstanding problems appear in diagnosis, treatment consequences, prognosis and even fear of death<sup>[1]</sup>.

Mishel delves into the phenomenon of uncertainty and defines it as “the subject cannot determine the significance of disease-related events”. This inability occurs when you have to make decisions, resulting in your inability to assign clear values to goals and events, and to accurately predict the consequences of insufficient information and knowledge<sup>[2]</sup>. This theory allows the evaluation and planning of care when uncertain responses occur. This process is influenced by three factors: cognitive state; the framework of stimulation is related to the consistency and familiarity of the types of symptoms or facts; and social entities that provide structures such as education, social support, authority and credibility<sup>[3]</sup>. This helps patients to establish coping mechanisms and finally realize the adaptation to the disease.

Therefore, nurses can apply uncertainty theory to nursing practice to promote the appropriate response of cancer patients, so as to avoid the binding effect and pressure of uncertainty in the diagnosis of cancer. As long as nurses can provide regular, true and standardized information about the health status of individuals and their families, the degree of uncertainty can be reduced. Similarly, in order to work with patients, nurses must promote emotional expression and identify stressful and maladaptive situations<sup>[4]</sup>. However, it must be emphasized that in the daily care work of providing comprehensive care for patients, we should always

consider this care model, because we are responsible for transmitting the information that patients must receive.

Internationally, there are a variety of research lists on uncertainty, and the results usually support this theoretical method. The severity of symptoms is the variable most related to uncertainty, while the variable of structural provider reduces the level of uncertainty. Similarly, the exploration of uncertainty in the treatment of childhood cancer also makes the uncertainty theory known as the consciousness theory<sup>[5]</sup>.

For example, in patients with diabetes, the uncertainty of patients with type 2 diabetes and the motivation to continue treatment were measured. The results showed that there was a negative correlation between the uncertainty of prognosis and treatment and the intrinsic motivation of treatment. Therefore, patients who show a low degree of uncertainty because they have adapted to their chronic diseases and they have received professional education in their respective control groups<sup>[6]</sup>.

In Chile, the preoperative uncertainty of hospitalized patients was measured, and it was concluded that the preoperative stage was unclear and the lack of information would lead to strong recommendations from patients<sup>[7]</sup>. Other studies have shown that in the face of diseases, especially cancer, in addition to uncertainty, there will be stress conditions, which will eventually affect their quality of life<sup>[8]</sup>.

However, it is well known that this disease can produce uncertain situations, and according to Mishir, care must begin by saving the daily situations that shape people’s health experience in their environment<sup>[9]</sup>.

Fear, uncertainty and even illness are the characteristics of cancer patients and their families.

Elderly people diagnosed with cancer are a highly uncertain group, and nursing professionals must be fully aware of these variables, which include physical and mental health status<sup>[10]</sup>, making them more vulnerable to this phenomenon. In view of the above, based on Michel’s conceptualization, the following research questions are put forward: What is the relationship between sociodemographic characteristics of elderly cancer patients and disease uncertainty?

As mentioned above, the aim of this study was to

determine whether there is a relationship between the sociodemographic characteristics of elderly cancer patients and their level of uncertainty about the disease.

## 2. Materials and methods

The National Cancer Corporation, a non-governmental organization in Valparaiso, one of Chile’s oldest regions, conducted a quantitative, cross-sectional and related study<sup>[11]</sup>. The census type population included 42 adults aged 60 and over diagnosed with cancer who received outpatient cancer treatment at the institution for 6 weeks and obtained informed consent to participate in the study.

The data were collected using the Merle Mishel Uncertainty Rating Scale, which was constructed and verified by Merle Mishel. It corresponds to the Likert scale and measures the level of uncertainty (LU) through three dimensions: the framework, cognitive ability and source structure of stimuli. The Spanish version of the tool has 29 questions, which are explained as follows: if all the answers are 1, the total score is 29; if it is 2, the total score is 58; if it is 3, the total score is 87; if it is 4, the total score is 116; finally, if it is 5, the total score is 129. The scores in the question are classified as follows: scores 1 and 2 are related to the low uncertainty level, score 3 is related to the conventional uncertainty level, and scores 4 and 5 are related to the high uncertainty level. Therefore, as shown in **Table 1**<sup>[12]</sup>, the scores are low LU <59 (grades 1 and 2), normal LU = 59–87 (grades 3 and 4) and high LU ≥87 (Grades 4 and 5). In questions 6, 7, 10, 12, 21, 22, 25, 27 and 29, the weights are reversed (from 1 to 5). In this study, the reliability of the instrument is Cronbach  $\alpha = 0.98$ .

It was approved by the ethics committee of the University of Valparaiso School of Medicine and the director of the National Cancer Corporation.

After the instrument is completed, statistical analysis is carried out using r3.2.2 programming language. Descriptive analysis was performed using central trend measurement, and the explanatory sociodemographic variables of uncertainty level was conducted using Pearson correlation, analysis of variance and linear regression model.

**Table 1.** The level of uncertainty (LU) is classified according to the cut-off score scale

Uncertainty level	Evaluation entry point	Reply
High	Greater than 87	R 4 = 116 points
Regular	59–87	R 5 = 129 points R 3 = 87 points
Low	Less than 59	R 1 = 29 points R 2 = 58 points

### 3. Result

As shown in **Table 2**, among the participants, women accounted for the highest proportion, accounting for 64.3%, and mainly living in urban areas, while men's lives in rural and urban areas were almost balanced. The ages range from 60 to 82.

The highest level of education was 28.6%, followed by 19.0% in basic education; only 7.1% are illiterate. In terms of marital status, 64.3% were married. Among the cancer types, female breast cancer accounted for 52.4% and male prostate cancer accounted for 31.0%.

**Table 2.** Sociodemographic profile of the elderly participating in the study

Variable	Frequency	Percentage
<b>Gender</b>		
Feminine	27	64.3
Masculine	15	35.7
<b>Marital status</b>		
Single	7	16.7
Married	27	64.3
Apart	3	7.1
Widower	5	11.9
<b>Educational level</b>		
Illiteracy	3	7.1
Basically incomplete	7	16.7
Basically completed	8	19
Incomplete average	3	7.1
Complete average	12	28.6
Technician	2	4.8
Superior	7	16.7
<b>Family status</b>		
Have children	9	21.4
Have a wife / child	12	28.6
Have a wife or	10	23.8
With other family members	2	4.8
Live alone	9	21.4
<b>Place of residence</b>		
Urban	30	71.4
Countryside	12	28.6
<b>Cancer diagnosis</b>		
Cervix	3	7.1
Mom	22	52.4
Prostatic	13	31
Others (brain, colon, myeloma, bladder)	4	9.6
Age	Average 68.64	Medicine 68

About 54.8% of the elderly showed high uncertainty, and 42.9% of the elderly showed regular uncertainty. **Figure 1** shows the dimensions of the uncertainty level. The dimension that contributes the most to the high level is the stimulus framework, because 58.0% of the samples belong to options 4 and 5 in the scores obtained. In the cognitive dimension, 34.9% were in options 4 and 5. In terms of structural sources, 35.4% of older persons belong to programmes 4 and 5.

Sociodemographic variables and uncertainty levels

are shown in **Tables 3** and **4**. For the numerical variable age, Pearson correlation was used; for the category variables (gender, diagnosis, education, marital status, residence and family status), analysis of variance was used to determine whether there is functional dependence or correlation with LU. The results showed that only school education could explain 28.99% of LU variance, with a correlation ratio of 0.54 and a significance of  $P = 0.0492$ . Other variables analyzed were not related to LU.

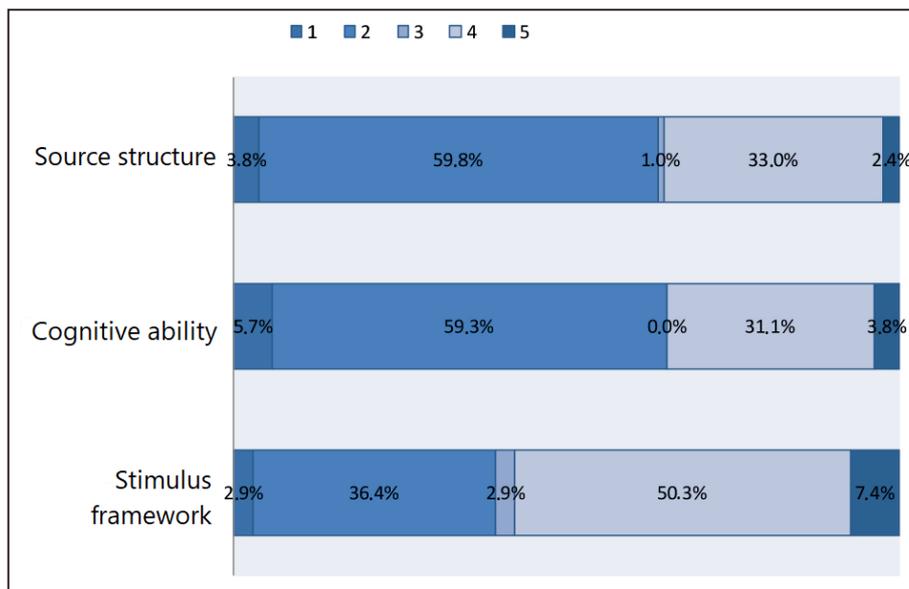


Figure 1. Uncertainty level of size distribution among the elderly belonging to the National Cancer Corporation.

Table 3. The sociodemographic variables of the middle-aged and elderly participants and their relationship with the level of uncertainty

Variable	Residual deviation	standard Freedom	Related reasons	Square goodness of fit	P value
Gender	12.24	40	0.1667	0.02779	0.2914*
Diagnosis	12.84	35	0.2542	0.0646	0.8721*
Age	12.41	40	0.0274	0.0007501	0.8633†
Educational level	11.18	35	0.5384	0.2899	0.0492*
Marital status	11.96	37	0.3764	0.1417	0.2143*
Place of residence	11.88	40	0.2902	0.08423	0.0622*
Family status	12.44	37	0.2672	0.07137	0.5897*

\*Analysis of variance, † Pearson correlation.

Table 4. Linear regression model

	Honorific	Error stop.	T value	P value
To intercept	92.125	3.954	23.299	<2e-16***
Education level: Basically incomplete	0.875	5.788	0.151	0.88071
Education level: Complete average	-4.792	5.105	-0.939	0.35433
Education level: Incomplete average	-5.458	7.572	-0.721	0.47576
Education level: No education	5.542	7.572	0.732	0.46909
Education level: Superior	-16.982	5.788	-2.934	0.00587**
Education level: Technician	-8.125	8.842	-0.919	0.36441

Dependent variable: uncertainty level. Independent variable: education level.

Code meaning: \*\*\* 0.001 \*\* 0.01

Taking education level as the explanatory variable of LU, a linear regression model was established (Table 4). The model takes the comprehensive class of basic education as a reference case. The prediction model showed that the average value was not equal to 92125 (not high). If the subjects received higher education, it decreased by 16982 points, with a total of 75143 (abnormal). If other characteristics (such as diagnosis or family status) are added to the model, the adjusted R<sup>2</sup> value will not increase, so the linear model that can best

represent AI or LU is considered to be based only on education.

#### 4. Discussion and conclusion

A high level of uncertainty is found in the sample, which can be expected if cancer is considered to have a negative impact on individuals and families, destroy harmony, and have a great confusion about what will happen in the future<sup>[13]</sup>. It is worth noting that the most common cancers in the sample are female breast cancer and male

prostate cancer, which is related to national statistics emphasizing these malignant diseases<sup>[14]</sup>.

The main uncertainty about the level of stimulation in the elderly is the main factor. It is worth noting that at this level, the scores of indicators such as symptom type, familiarity and consistency with disease-related facts are very high, which indicates that people generally lack understanding of cancer diagnosis and their health status<sup>[15]</sup>.

Similarly, it is important to pay attention to the behavior of uncertainty level in the structural source dimension. 35.4% of the elderly rank in options 4 and 5. If this dimension is considered to measure the aspects of information management and nursing, the level of uncertainty reached will be a key point of nursing work. Nursing work is responsible for dealing with these aspects to reduce the level of uncertainty of patients. This in turn shows that structural suppliers play a key role in reducing uncertainty. For such patients, health workers must support, educate, and report, that is, represent a meaningful connection to reduce their uncertainty<sup>[16]</sup>. In the sample of elderly people in the study, according to the answers to the values of health team participation, there is a lack of connection between them and health team. This reality must be translated into a challenge for professionals to apply this theory to support nursing practice so that we can reflect and recognize our weaknesses in cancer geriatric care<sup>[17]</sup>. Good nursing assessment of doubts, concerns and disease knowledge is important to promote health care<sup>[18]</sup>. It needs to be understood that it interacts with a person, who has a series of dimensions that need to be handled as a whole<sup>[19]</sup>.

The performance of cancer uncertainty leads to insufficient evaluation of stress status. The assumption of applying this theory first leads us to identify the first sign of this uncertainty. Secondly, it shows us the implementation of a care plan aimed at eliminating this situation and helping individuals and families better cope with the disease.

The credibility of older persons needs to be strengthened through honesty, reliability and the provision of graded and adequate information. It is helpful for patients to have a correct understanding of their health status. Nurses/nurse professionals must be representatives of patients, i.e. not only managers of indications, drug management or administration, but also, above all, those who can establish a therapeutic relationship from the beginning of the disease, as interpreters and rights defenders<sup>[20]</sup>.

There is a correlation between education level and uncertainty level, which can be seen from the higher education level shows lower uncertainty level. This confirms the recommendations of the Michel model<sup>[21,22]</sup>. The education of patients helps to improve their health

status, which must be generated in the diagnosis stage and maintained during treatment, because most patients were treated in the outpatient clinic<sup>[23]</sup>.

Similarly, 64.3% of the married elderly can be seen as helping to reduce their uncertainty, because a large number of them have stable partners to deal with the disease. However, this has not been confirmed when analyzing the relationship between the two variables. However, there is evidence to support Michel's approach, who believes that social support and support networks can reduce uncertainty<sup>[12]</sup>. If the elderly is accompanied by a stable partner or family, their uncertainty will be reduced. In contrast, older people who did not have significant partners or individuals to support them in difficult times showed greater uncertainty.

Mishel's theory has become a tool to provide theoretical support for professional nurses/nurses to formulate interventions, so as to become a guide for daily work and provide care for the elderly with cancer with knowledge and humanistic spirit<sup>[24]</sup>. Care must be provided in a comprehensive manner and based on theoretical concepts that guide the evaluation, planning, implementation and evaluation of care<sup>[25]</sup>. This theory greatly helps to improve the understanding of the necessity of the relationship between nurses and their background, so as to understand, analyze and reflect on the implementation of new nursing interventions<sup>[26]</sup>.

## Conflict of interest

The authors declare that they have no conflict of interest.

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