

## Informational Needs, Health Locus of Control and Uncertainty among Women Hospitalized with Gynecological Diseases

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**Background:** Only a few studies on perceptions of uncertainty in illness have provided empirical evidence for the relationships of informational needs and the health locus of control with uncertainty among hospitalized women with gynecological diseases. The purpose of this study was to test Mishel's Theory of Uncertainty in Illness (1990) among women hospitalized with gynecological diseases.

**Methods:** Taiwan. The convenience sample consisted of 81 hospitalized women with gynecological diseases, who were invited to complete a set of self-administered questionnaires prior to receiving any treatment. Path analysis was used to determine the relationships of informational needs and the health locus of control with uncertainty.

**Results:** The study findings suggested that hospitalized women's information needs are substantial, and they reported lower levels of uncertainty during hospitalization. Women's experience of uncertainty may be elevated by decreasing the informational needs as moderated by the beliefs that their health outcomes are under the control of chance. Three predictors in this model, i.e., informational needs moderated by the interaction of chance control, years of education, and number of treatments explained 30% of the variance of uncertainty of hospitalized women with gynecological diseases.

**Conclusions:** The study findings suggest that healthcare professionals should carefully assess uncertainty levels among female patients with lower education and who believed that their health status depends upon external forces such as fate, luck, or chance.

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**Key words:** uncertainty, informational needs, health locus of control.

Uncertainty is a natural component of all illness experiences and can be seen throughout the process of diagnosis, treatment, and prognosis.<sup>(1,2)</sup> A number of research studies have addressed the perception of uncertainty in different illnesses, including people with cancer,<sup>(3,4)</sup> cardiac diseases,<sup>(5-7)</sup> and chronic diseases.<sup>(8,9)</sup> However, the majority of studies

were conducted in North America and were limited to patients with cancer or chronic disease. Only a few studies have been undertaken to examine the concept of uncertainty among Chinese populations.<sup>(5,10,11)</sup> Moreover, previous research findings have shown that uncertainty levels are higher when a diagnosis is not available or when patients are under-

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going diagnostic procedures.<sup>(12)</sup> Therefore, women with gynecological diseases on diagnostic workup during hospitalization were selected to test the Uncertainty in Illness Theory and further to explain the associations of uncertainty with informational needs and the health locus of control.

In Taiwan, some patients do not want all of the available information or want to face the uncertainties of the different treatment choices offered to them. Since Confucian values emphasize the centrality of the family in the management of life problems, it is a common practice in Taiwan for family members to be informed by the physician about a patient's diagnosis and illness-related situations before the patient is told about his/her condition.<sup>(13)</sup> These culturally influenced attitudes toward illness-related information are reflected in the efforts that Taiwanese patients make to obtain further information or to resist information that is offered to them. Thus, it is important for healthcare professionals to know which patients want to know more about their illness in order to identify an appropriate way of providing information to them.

Associations of educational level and information needs with uncertainty have not been demonstrated by evidence-based studies. According to the Uncertainty in Illness Theory, a person's educational level and the need for information are identified as resources that patients may use to improve knowledge about their illness, thus reducing uncertainty.<sup>(1,2)</sup> With the promotion of patient autonomy, many studies conducted in Western countries have investigated the importance of informational needs of cancer patients and of seeking information as the most-frequent method used to cope with uncertainty.<sup>(14-18)</sup> In an intervention study that sampled men with prostate cancer, the findings indicated that men's level of education and the number of sources of information were significant moderators of the efficacy of the uncertainty management intervention.<sup>(19)</sup> Even though research has indicated that patients have distinct needs for information throughout their illness journeys, a disease diagnosis may invoke uncertainty that can be alleviated by information. There is an urgent need to understand individual educational preparation and its relation to information needs in terms of uncertainty.

Locus of control is defined as the perception of the causes of specific events as attributed to personal

or external elements and has been a focus of studies of different health behaviors among Chinese populations.<sup>(20-23)</sup> According to the concept of the multidimensional health locus of control, 3 dimensions have been identified.<sup>(24)</sup> Individuals believe that their health status depends upon their behaviors and choices (internal health locus of control); depends upon external forces such as fate, luck, or chance (chance health locus of control); or depends upon powerful others (called powerful others health locus of control).<sup>(24)</sup> As researchers have found that the health locus of control is a significant predictor of the tendency to adopt desirable health-related behaviors, the 3 dimensions of health locus of control may thus reflect Chinese health beliefs for dealing with life stresses.

### The Theoretical Framework

The theoretical framework for this study was developed based on Mishel's Uncertainty in Illness Theory.<sup>(1,2)</sup> In this study, uncertainty was treated as an outcome variable and defined as the inability to determine the meaning of illness-related events.

According to Mishel's theory, 3 major antecedents of uncertainty include the stimulus frame, structure providers, and cognitive capacities.<sup>(1,2)</sup> Components of the stimulus frame include: (1) symptom pattern information relating to physical sensations experienced; (2) event familiarity concerned with the actual healthcare environment; and (3) event congruence affected by the predictability and stability of the stimuli. In this study, 3 variables were used to measure the construct of the stimulus frame in the model: disease characteristics, gynecological history, and number of treatments during hospitalization.

Stimulus frame components are positively affected by structure providers as defined by Mishel<sup>(1,2)</sup> as antecedents to uncertainty and include credible authority, social support, and education. In this study, the health locus of control and years of education were selected as our measures of structure providers. The concept of a multidimensional locus of control was defined as 3 types: internal, chance, and powerful others. In this study, the health locus of control was hypothesized to moderate the effects of informational needs on perceived uncertainty.

Cognitive capacities, the third antecedent to uncertainty, can positively affect the evaluation of

the symptom pattern, event familiarity, and event congruence. The lack of sufficient and/or comprehensible information makes it more difficult for individuals to categorize or structure elements within their illness experience.<sup>(9)</sup> The need for information was used to measure cognitive capacities in the study model, which was determined by the degree of lack of information about a disease-related situation.

In summary, testing the Uncertainty in Illness Theory in Chinese cultures can improve its predictive value in explaining experiences of uncertainty across cultures and also can lead to a more-comprehensive theory with culture-specific constructs. The purpose of the study was to use path analysis to explore the relationships of uncertainty with informational needs and the health locus of control among women with gynecological diseases during hospitalization. Three hypotheses were tested: (1) the health locus of control moderates the effects of informational needs on the perception of uncertainty; (2) informational needs, disease characteristics, the number of treatments, and the past gynecological history predict the perception of uncertainty; and (3) the health locus of control, years of education, disease characteristics, number of treatments, and past gynecological history predict a patient's informational needs.

## METHODS

### Sample and data collection procedures

A cross-sectional correlational design was used in this study. A convenience sample was selected from a gynecological ward at an urban hospital in southern Taiwan. Inclusion criteria were patients (a) who were hospitalized with a diagnosis of gynecological disease, (b) who had received at least 1 treatment (surgery, radiation, or chemotherapy) during hospitalization, and (c) who were able to read and write in Chinese. In total, 81 women met the inclusion criteria and agreed to participate.

Data were collected from April 1998 to May 1999. After verifying the eligibility of patients, potential participants were given a detailed explanation about the study, and written informed consent was obtained prior to data collection. Each eligible patient received a package of self-administered questionnaires upon admission to the hospital. Patients immediately completed the questionnaires and returned them to the research nurses; this process

took approximately 40 min and involved completing 3 questionnaires and a personal data form. All 81 women in this study returned the questionnaires on the first day of admission to the hospital prior to receiving any treatment, such as surgery, chemotherapy, or radiation therapy.

### Measures

Perception of uncertainty (dependent variable) was measured using the Chinese version of Mishel's Uncertainty in Illness Scale (MUIS-C).<sup>(11)</sup> The MUIS-C is a 23-item 5-point Likert scale, which measures 2 dimensions of uncertainty: ambiguity and complexity. A total score is obtained by adding the responses of the 23 items. Support for the reliability of the MUIS-C was reported in a previous study showing a Cronbach's alpha of 0.87. Validity was supported by an *r* value of 0.92 on the content validity index.<sup>(10,11)</sup> In the current study, a Cronbach's alpha of 0.90 was obtained.

The Informational Needs Questionnaire (INQ) was developed by the primary investigator through a literature review because no instrument was available to assess the specific informational needs of women with gynecological diseases. The questionnaire is a 32-item scale, measuring 4 concerns of informational needs: disease-related, personal, familial, and psychosocial needs. Respondents rated the 32 items on a 5-point Likert scale anchored as 1 being not important to 5 being extremely important. In the current study, Cronbach's alpha was 0.93, which is considered a satisfactory estimate of reliability. The validity was supported by an *r* value of 0.86 on the content validity index.

The health locus of control was measured by the Multidimensional Health Locus of Control (MHLC-Form A) developed by Wallston et al.,<sup>(24)</sup> translated to the Chinese version, and adapted by several studies in Taiwan.<sup>(21,23)</sup> The MHLC scale was used to measure the degree to which individuals believe that health outcomes are under the control of the self (IHLC), powerful others (PHLC), or chance (CHLC). Each dimension is measured by 6 items on a 6-point Likert scale anchored as 1 being strongly agree to 6 being strongly disagree. Cronbach's alpha for the Chinese version of the MHLC-Form A has been reported to have values ranging from 0.67 to 0.76.<sup>(21,23)</sup> In the current study, Cronbach's alphas for the IHLC, CHLC, and PHLC were 0.31, 0.72, and 0.37, respectively.

Because of the poor reliabilities of 2 subscales, IHLC and PHLC, only the CHLC was retained for further analysis.

A personal data form was used to obtain information on the study participants' demographic variables (present age, education, marital status, and employment status) and disease-related variables (medical diagnosis, treatment, and being informed of the diagnosis).

**Analysis**

Path analysis is an extension of the regression model to estimate the magnitude of the associations between the variables hypothesized in the theoretical model. Path analysis requires the usual assumptions of regression. Graphical analysis of scatterplots and histograms of studentized residuals between each independent variable and the dependent variable indicated that the assumptions of linearity and normality were not violated by the analysis. Pearson's product moment correlations using informational needs (the independent variable), the health locus of control (the moderator variable), and perception of uncertainty (the dependent variable) were computed. Hierarchical multiple regression was used to identify the best set of predictors for the perception of uncertainty. A path coefficient is a standardized regression coefficient (beta) showing the direct effect of an independent variable on a dependent variable in the path model. To test individual path coefficients, a standard *t*- or *F*-test is utilized from the regression output. Regression coefficients and R<sup>2</sup> values were considered to be statistically significant at the 5% level ( $p \leq 0.05$ ).

**RESULTS**

**Descriptive statistics for the study sample**

In total, 81 women participated in the study, whose ages ranged from 16 to 68 years with a mean age of 41 years (SD, 11.3). Table 1 depicts the sociodemographic characteristics of the study sample. Of the sample, 48% had less than 9 years of education, 80% were married, and 59% were unemployed. A majority of women (68%) were diagnosed as having benign, non-malignant tumors; 29% were diagnosed as having gynecological diseases, 85% had surgery during their hospitalization, and 83% had been informed about their diagnosis.

**Table 1.** Demographic Characteristics of the Study Participants (N = 81)

Variable	n	Percent of total
Age (range, 16~81) (years)	Mean, SD (41, 11)	
16~20	3	4
21~30	11	14
31~40	18	22
41~50	30	37
51~60	14	17
≥ 61	4	5
Years of education		
< 9 years	39	48
9~12 years	31	38
> 12 years	11	14
Employment status		
Housewife	48	59
Employed	33	41
Marital status		
Single	9	11
Married	65	80
Divorced/Widowed	7	9
Diagnosis		
Cervical cancer	20	25
Ovarian cancer	6	7
Fibroids (myomas)	29	36
Uterine and/or rectal prolapse	9	11
Ovarian cysts	7	9
Endometriosis	4	5
Ectopic	3	4
Pelvic inflammatory disease (PID)	2	3
Informed about diagnosis		
Yes	67	83
No	14	17
Gynecological disease history		
Yes	23	29
No	57	71
Days of hospitalization (range, 1~10)	1.6	1.9

**Factors related to uncertainty: results of hypothesis testing**

The first hypothesis was that the health locus of control moderates the effect of informational needs on perceptions of uncertainty. In order to test for moderation, regression of the dependent variable, uncertainty, on the informational needs revealed a non-significant beta. Evidence for a moderating effect would have been indicated by a significant beta for the interaction term in predicting uncertainty and the interaction variable. The interaction of chance control and informational needs did have a

significant beta coefficient and the  $R^2$  change score in the regression analysis was significant, showing moderating effects of chance control on informational needs. Thus, the first hypothesis was supported (Table 2, Fig. 1).

The second hypothesis, that informational needs, disease characteristics, number of treatments, and past gynecological history predict the perception of uncertainty, was partially supported. The 3 predictors in this model explained 26% of the variance of uncertainty, including informational needs moderated by the interaction of chance control which explained 16% of the variance, and years of education and number of treatments which explained an additional 5% each (Table 2).

The third hypothesis was partially supported. The history of gynecological procedures was significantly related to higher scores for informational needs (Table 2). The regression analyses of informational needs and years of education were significant at block 1 entry but later it became non-significant when the history of gynecological disease was entered at block 2. Ten percent of the explained variance was attributed to informational needs, the history of gynecological disease explained 7%, and years of education explained an additional 2%.

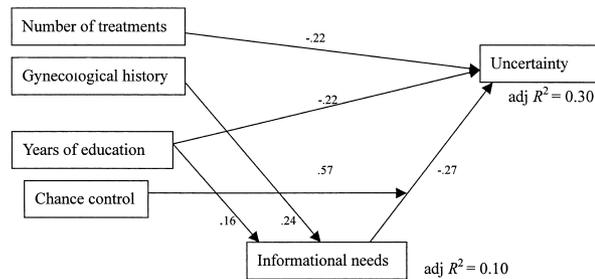
## DISCUSSION

The results of this study showed that women reported lower levels of uncertainty during hospitalization than previous studies among patients with cardiac diseases.<sup>(5,10)</sup> The path modeling based on Mishel's Uncertainty in Illness Theory (1990) accounted for 26% of the variance of uncertainty experienced among women during hospitalization. The study findings contribute to the Uncertainty in Illness Theory. First, educational level and complexity of treatment had direct effects on uncertainty.

Second, study findings support the indirect influence on health of changes in the control of informational needs and the response to perceived uncertainty.

Research findings showed that years of education and complexity of treatment were directly related to reported experiences of uncertainty among hospitalized women. This finding provides support for the association between educational level and uncertainty in which educational level is identified as a resource that patients may use to reduce uncertainty.<sup>(1,12)</sup> The number of treatments as a proxy for the complexity of the treatment was associated with the level of uncertainty of women during hospitalization, which is also consistent with Mishel's theoretical construction.<sup>(1,3)</sup>

In response to the common belief that Taiwanese patients have different preferences for being informed of illness-related information, the present study findings provide important insights to explain the relationships of uncertainty with informational needs and the health locus of control. The study showed that not all patients have the same needs for information about their illnesses. The evidence from the present study does not support the association between a desire for information and a higher level of uncertainty.<sup>(25)</sup> Nevertheless, the



**Fig. 1** Path analysis model of uncertainty with the health locus of control and informational needs among gynecological patients.

**Table 2.** Regression Analysis Results for Each Model Variable ( $N = 81$ )

Dependent variable	Predictor variables	Beta	$R^2$ change	Model adjusted $R^2$	$F$ value	$p$ value
Uncertainty	Chance control* Informational needs	0.40	0.16	0.30	12.19	< 0.001
	Years of education	-0.22	0.05			
	Number of treatment	-0.22	0.05			
Informational needs	Gynecological history	0.24	0.07	0.10	5.17	0.005
	Years of education	0.16	0.02			

health locus of control played an important role in moderating the relationship between uncertainty and informational needs. The present study is the first to examine the role of the health locus of control and its relationship to informational needs and illness uncertainty. As expected, the health locus of control had moderating effects through informational needs on the perception of uncertainty. For women who had higher levels of uncertainty, their education levels were relatively lower and their beliefs that chance/fate controlled their health outcomes decreased their desire for information. Health professionals are recognized as being important resources for reducing patients' uncertainty by providing information and promoting confidence in clinical judgments.<sup>(12,15)</sup> In order to provide sensitive care to patients, knowledge of patients' information needs and what factors determine their preferences for information may assist health professionals in tailoring their care to meet patients' needs and decrease their uncertainty during hospitalization.

The study has several limitations. First, the major weakness of this study was that other important variables which might influence the informational needs among women with gynecological diseases were not included in the theoretical model. The factors affecting patients' needs for information seem to be very complex. That is, further studies with qualitative methods are needed to explore informational needs among women who are undergoing treatment or diagnostic procedures during hospitalization. It is important to understand Chinese cultural aspects of health belief effects on a person's information-seeking behaviors. Additional research is needed to examine the reasons for not seeking information and factors influencing informational needs among Taiwanese women during hospitalization. The measurement reliability of the Multidimensional Health Locus of Control (MHLC-Form A) was also a limitation of this study. The MHLC needs to be further tested in Chinese cultures. Another instrument limitation is the validity of a new questionnaire, the Informational Needs Questionnaire (INQ), developed by the primary investigator. Additional research is needed to further examine the validity and reliability of the new instrument when applied to other populations of different diseases or age groups. A final limitation was the small non-random sample with data collected in only 1 hospital. Thus, the findings might

not apply to centers outside this geographical area, and generalizations of the findings are also limited.

The present study was conducted to test the relationships of uncertainty with informational needs and the health locus of control. Three hypotheses were tested using the Uncertainty in Illness Theory with a hospitalized sample of 81 women with gynecological diseases. Findings from the study suggest that hospitalized women's information needs are substantial, and they reported lower levels of uncertainty during hospitalization than Chinese patients with cardiac diseases. The results of hypothesis testing showed that women's experiences of uncertainty can be elevated by decreasing informational needs moderated by the beliefs that their health outcomes are under the control of chance. The 3 predictors in this model, i.e., informational needs moderated by the interaction of chance control, years of education, and number of treatments, explained 30% of the variance of uncertainty among hospitalized women. A past history of gynecological disease and years of education explained 10% of the variance of informational needs. The study findings suggest that healthcare professionals should carefully assess uncertainty levels among patients with lower education and who believe that chance controls their health outcomes.

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# 婦科住院病人之疾病不確定感、訊息需求及健康控制歸因

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**背景：** 僅有少數疾病不確定感的相關研究對於婦科住院病人其不確定感、訊息需求及健康控制歸因之相關提供實証資料。本研究目的為測試 Mishel 疾病不確定感理論運用於影響婦科住院病人之不確定感之相關因素。

**方法：** 本研究設計為描述性相關研究，以立意取樣的方式，在南部一所醫學中心的婦科病房，共有 81 位住院接受婦科相關疾病治療之患者參與本研究，研究對象在住院後尚未接受任何治療前接受結構式問卷調查。將所得的資料以因徑分析描述婦科住院病人其不確定感、訊息需求及健康控制歸因之相關性。

**結果：** 本研究發現婦科住院病人有中等程度之訊息需求且有輕度的不確定感。當婦科住院病人認為自己的健康歸因於命運時，會降低其訊息需求的程度，進而其不確定感受會增強。個人健康控制歸因與訊息需求的交互作用、教育程度與治療的項目，可用來解釋婦科住院病人不確定感 30% 的總變異量。

**結論：** 本研究結果建議健康專業人員應謹慎評估婦科住院病人的不確定感，特別是教育水準較低及相信個人健康歸因於命運的女性病患。  
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**關鍵字：** 不確定感，訊息需求，健康控制歸因。

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