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The Impact of Physicians' Reactions to Uncertainty on Patients' Decision Satisfaction

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Abstract

Rationale—Patients' and physicians' response to uncertainty may affect decision outcomes. The purpose of this study was to explore the impact of patients' and physicians' reactions to uncertainty on patients' satisfaction with breast health decisions.

Method—Seventy-five women facing breast cancer prevention or treatment decisions and five surgeons were recruited from a Breast Health Center. Patients' and physicians' anxiety from uncertainty was assessed using the Physicians' Reactions to Uncertainty Scale; wording was slightly modified for patients to ensure the scale was applicable. Patients' decision satisfaction was assessed 1–2 weeks after their appointment. A mixed-effects logistic regression model was used to assess associations between patients' and providers' anxiety from uncertainty and patients' decision satisfaction. A provider-specific random effects term was included in the model to account for correlation among patients treated by the same provider.

Results—Patients' decision satisfaction was associated with physicians' anxiety from uncertainty (beta = 0.92, $p < 0.01$), but not with patients' anxiety from uncertainty (beta = -0.18 , $p > 0.27$).

Conclusions—This study suggests that physicians' reactions to uncertainty may have an effect on decision satisfaction in patients. More research is needed to confirm this relationship and to determine how to help patient-provider dyads to manage the uncertainty that is inherent in most cancer decisions.

Keywords

Shared Decision Making; Reactions to Uncertainty

Introduction

There is an increasing focus on ways health care providers can help patients through preference-sensitive decisions for which there is no standard of care dictating a best course

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of action^{1–2}. Many cancer prevention and treatment decisions involve uncertainty, requiring patients to make difficult tradeoffs between benefits and risks of available options^{3–5}.

Patients' responses to uncertainty vary^{5–7}. Under situations of uncertainty, patients must resolve the tension between the difficult task requiring them to make risk/benefit tradeoffs, and their desire for a "best" choice that may not exist. Little is known about the best ways for providers to help patients cope with this tension to improve decisions and decision satisfaction.

As a result, providers are sometimes hesitant to acknowledge uncertainty to patients^{8–10}. Providers' reluctance to disclose uncertainty may be a natural response to the difficulty of synthesizing medical information and communicating this complexity to patients. However, providers' anxiety about uncertainty can be managed in order to engage in shared decision making¹¹.

One of the primary goals of shared decision making is for providers and patients to engage in an interpersonal transaction to improve responses to uncertainty and enhance decision quality¹². The relationship between patients' and physicians' reactions to uncertainty might be equally as important as individual decision variables during shared decision making^{13–14}. Patient satisfaction might be affected by the way in which providers address uncertainty¹⁵.

The goal of this secondary analysis was to explore the impact of patients' and physicians' anxiety from uncertainty on patients' satisfaction with breast health decisions. We hypothesized that higher anxiety from uncertainty would relate to lower decision satisfaction among patients, but that physicians' anxiety from uncertainty might moderate this relationship. We expected that lower physician anxiety from uncertainty might help patients feel more comfortable with uncertainty, regardless of patients' individual anxiety level.

Method

Women were recruited from a breast health center in Rhode Island. Surgeons identified women who would be facing a decision involving uncertainty, where multiple options would be presented during the consultation. Decisions ranged from breast cancer treatment decisions (e.g. lumpectomy vs. mastectomy for two small but distinct tumors found in the same breast quadrant) to breast cancer prevention decisions (e.g. whether to have a risk reduction mastectomy for multiple areas of atypical hyperplasia, but no current cancer). This study was part of a larger study on the impact of communicating uncertainty on patients' breast health decisions¹⁶.

Recruitment occurred between February and September 2008. A total of 80 women were eligible and approached; 75 consented and participated (94% response rate). There were 5 breast surgeons who treated eligible women in the clinic; all were approached and consented to participate. Patients completed a survey after their appointment that included a trait measure of their reactions to uncertainty. They also completed a follow-up survey about their decision and decision satisfaction by telephone 1–2 weeks later. Patients were paid \$10 for participating. Surgeons completed the same trait measure of reactions to uncertainty at the end of the study. Surgeons received a gift basket at the end of the study for participating. The institutional review boards of the academic institution and affiliated hospitals approved this study.

Measures

Surgeons completed the revised *Physicians' Reaction to Uncertainty Scale*^{17–18} (PRU), a 15 item scale measuring attitudes towards uncertainty in four areas: anxiety from uncertainty,

concern about bad outcomes, reluctance to disclose uncertainty to patients, and reluctance to disclose mistakes to other physicians. We adapted the *anxiety from uncertainty* subscale to assess how patients respond to uncertainty in medicine, using parallel items (Cronbach's alpha= 0.80). For instance, if the item for physicians stated "I usually feel anxious when I am not sure of a diagnosis," we adapted it for patients to state "I usually feel anxious when I am not sure of my diagnosis." Patients' also completed questions about their age, race, ethnicity, education, income, medical history, and numeracy^{19–20}. Approximately one to two weeks after their appointment, patients were asked to rate their *satisfaction with their decision* on a 6 point scale from not at all satisfied (1) to extremely satisfied (6).

Data Analysis

We fit a mixed effects logistic regression model to explore the impact of patients' and physicians' anxiety from uncertainty scores on patients' decision satisfaction. Decision satisfaction was dichotomized into highly satisfied (>5) vs. otherwise because most patients tended to report values on the higher end of the scale (e.g. ^{3–6}). We asked patients to rate their decision satisfaction after making a decision, but before treatment so the treatment outcome would not bias their reported satisfaction. We expected that most would report high levels of satisfaction soon after a choice was made, and we were interested in examining those who were not fully satisfied at that time. Our primary independent variables (mean of patients' and physicians' anxiety from uncertainty, and the interaction term) were treated as fixed effects. The random effect was the cluster (provider)-specific intercept term which accounted for correlation among patients treated by the same provider. The random effect modeled the variation in patient satisfaction across different provider clusters and the correlation between patient responses within the same provider cluster. Demographics, numeracy, and patients' disease status were explored as possible confounding variables because they could influence satisfaction or anxiety from uncertainty. Tests of significance were performed using the asymptotic normal distributions of the parameter estimators in the mixed effects logistic regression model. SAS version 9.0 and the standard R software were used for analyses.

Results

Table 1 describes the study participants. Participants' age ranged from 26–82 (mean = 51). Each was seen by one of 5 breast surgeons (3 males, 2 females). Most participants were White, Not Hispanic (76%). Approximately half (56%) did not have a college degree. Forty-six (61%) were facing cancer treatment decisions, and 29 (39%) were facing cancer prevention decisions. "Anxiety from uncertainty" subscale scores on the PRU ranged from 10 to 29 for providers (mean = 18, SD = 8.2), and 8 to 36 for patients (mean = 25, SD = 8.4).

Patients' anxiety from uncertainty was not related to decision satisfaction independently of their physicians (beta = -0.19, p>0.27). However, physicians' anxiety from uncertainty was significantly related to patients' decision satisfaction (beta = 0.92, p<0.01). Contrary to what was predicted, physicians' anxiety from uncertainty did not moderate the relationship between patients' anxiety from uncertainty and decision satisfaction (beta = 0.01, p>0.99). Patients' demographic variables, numeracy, and disease status did not impact the relationship between patients' reactions to uncertainty and their decision satisfaction, or the interaction between patients' and physicians' reactions to uncertainty and patients' decision satisfaction.

Discussion

This study examined the impact of patients' and physicians' reactions to uncertainty on female patients' satisfaction with breast cancer prevention and treatment decisions. Patients' anxiety from uncertainty was not independently related to decision satisfaction. Contrary to what was predicted, physicians' anxiety from uncertainty was associated with higher decision satisfaction among patients.

These findings suggest the importance of physicians' attitudes towards uncertainty on patients' decision outcomes. Although we expected the relationship to be in the inverse direction, it is possible that higher levels of physicians' anxiety from uncertainty are related to key behaviors such as the amount of time they spend discussing decisions with patients, or their interpersonal approach to patients' decisions. Physicians might engage in components of shared decision making (e.g. support, values clarification, assessing patients' preferred role in decision making) when they recognize the significance of uncertainty in health decisions to patients. Future studies should explore the behaviors that are affected by physicians' attitudes towards uncertainty in order to develop appropriate recommendations for addressing uncertainty during shared decision making.

Our findings also suggest that physicians should be aware of their own approach to uncertainty and how it might influence patients' responses when engaging in shared decision making. Physicians' comfort with uncertainty might result from prior experiences managing complex medical situations, but patients do not often share expertise with health decisions. It is possible that the dyadic relationship between patients and providers' attitudes and behaviors towards uncertainty influence patients' decision outcomes^{21–24}. Our study was not designed to assess dyad specific attributes or behaviors, but this would be worthwhile to explore in future studies.

This study has several limitations that need to be considered in the context of the findings. The PRU^{17–18} is a valid and reliable measure of physicians' response to uncertainty. There are no comparable measures of patients' reactions to uncertainty in medical settings. We modified the PRU to study the relationship between patients and providers' anxiety from uncertainty, and the scale had good internal consistency. However, developing and validating a patient measure is necessary to continue to study these relationships. Moreover, the PRU scale has been studied as a stable trait measure that might influence decision-making. It is possible that both patients' and providers' anxiety from uncertainty naturally vary based on clinical situations. Future studies could investigate anxiety from uncertainty as state-specific reactions to medical scenarios. Additionally, we assessed decision satisfaction 1–2 weeks after a decision was made to limit the bias of intervention outcomes on patients' satisfaction. We do not know how the relationship between patient and providers' anxiety about uncertainty impacts the decision making process, decision satisfaction or decision regret over time. Next, although we had 75 patients included, and we controlled for the correlation between patient responses within the same provider cluster in the analyses, we had a small number of unique physicians. Future studies could explore the impact of physician differences (e.g. by gender, age, or communication style) on these relationships with a larger number of physicians.

More research is needed to determine how to help patients tolerate and manage the uncertainty that is inherent in most cancer decisions. Given the paucity of research measuring reactions to uncertainty in both members of the patient-physician dyad, and the importance of reactions to uncertainty on decision outcomes, our study results are important for providing insight into future research directions in patient-physician communication and shared decision making.

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Table 1

Characteristics of Women in the Study:

	N (mean)	% (SD)
Age in years (mean, SD)	(51)	(13.3)
Level of formal education		
High School Degree or less	25	35%
Some college or technical training	15	21%
College degree or more	31	44%
Hispanic ethnicity	4	5%
Race		
White, Not Hispanic	57	76%
Other	18	24%
Disease Status		
Current cancer diagnosis	46	61%
No current cancer diagnosis	29	39%
Decision Satisfaction (range: 1–6)		
Highly Satisfied (>5)	41	55%