

# Expectations in the context of gallbladder and hernia surgery: a descriptive report

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## Abstract

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**Objective** Patients' expectations predict important health outcomes. The goal of this study is to describe the types of expectations that hernia and gallbladder patients have for the outcomes of their surgery and to identify relationships between these expectations and both patient- and surgeon-reported variables.

**Design** Patients ( $N = 143$ ) at an out-patient surgery clinic completed self-report questionnaires before and after a pre-surgical consultation in which they learned they would be scheduled for surgery. After indicating their general expectations for their surgical outcomes (positive or negative), patients reported specific outcome expectations, which were coded into eight categories: functional improvement, symptom relief, quality-of-life improvement, emotional improvement, general health, no effect expected, no response (or unsure) and negative expectations.

**Results** Functional improvement and symptom relief were the most common types of expectations mentioned by patients. A key finding was a significant difference in the pattern of expectations provided by Hispanic versus non-Hispanic patients, as well as between patients across the range of health literacy.

**Conclusions** Patients undergoing hernia and gallbladder surgery have a variety of expectations, and these expectations vary across demographic groups. Patients who are particularly vulnerable to poor physician communication have positive but diffuse expectations.

## Introduction

Patients approach surgery with expectations about their surgical outcomes, including treatment of a condition or set of symptoms, improved functioning and improved quality of life. These expectations are more than passing states and may be particularly consequential for patients preparing to undergo invasive

procedures. Pre-operative expectations predict important post-operative outcomes such as healing time,<sup>1</sup> health-related quality of life and functional improvement,<sup>2</sup> pain relief, surgery-related complications and re-hospitalization.<sup>3</sup>

These expectations are not the same for all patients. Patient expectations may be physical or psychological in nature and can vary as a function of demographic variables or specific

characteristics of the surgery. Regarding demographic differences, women expect more pain than men but report comparatively less pain post-operatively;<sup>4</sup> younger patients expect they will recover more quickly and re-engage in physical activity more quickly than do older patients,<sup>5</sup> and African-American patients have significantly lower expectations for surgical outcomes than White patients.<sup>6</sup> Patients also vary in the number of expectations they hold. A recent study of patients undergoing total joint replacement found an inverse relationship between the number of pre-operative expectations and post-operative satisfaction.<sup>7</sup>

Unmet expectations have severe consequences for patients and health-care providers alike. Patients whose expectations for care are not met report dissatisfaction with their providers, weaker adherence to physician recommendations, less improvement in condition or health status, and more worry and concern about their health than patients whose expectations are met.<sup>8,9</sup>

### **Expectations for gallbladder and hernia surgery**

The goal of our study was to identify the nature of patients' expectations prior to surgery, with a specific focus on gallbladder and hernia surgery. Cholecystectomy, or gallbladder removal, and hernia repair are the most common surgical procedures performed in the abdomen, with approximately 700 000 of each type performed annually in the United States. Both are completed as outpatient laparoscopic procedures, which involve the insertion of a lighted scope attached to a video camera into a small incision in the abdomen. This technique reduces the risk of complications in both types of surgery and patients experience significantly less pain, greater pulmonary function and shorter recovery after laparoscopic procedures compared to more invasive options.<sup>10,11</sup> Inguinal hernia recurrence rates are also significantly lower with laparoscopic procedures versus conventional surgical procedures.<sup>10</sup>

Despite the prevalence of gallbladder and hernia surgeries, the nature of patients'

expectations when facing these procedures remains unclear, which limits any effort to improve outcomes for either patients or health-care providers. It may be important to understand and then intervene to improve patients' expectations regarding hernia and gallbladder surgeries, because such expectations predict important post-operative outcomes, including length of convalescence from work and pain symptoms during recovery.<sup>12-16</sup> The few studies that have examined the relationship between expectations and outcomes in these surgical settings have found that most patients retrospectively report that their pre-operative expectations were met or exceeded.<sup>17-20</sup> However, further research has identified key moderators of the fulfillment of patients' expectations in these contexts, and other research provides contradictory evidence. At least one other study found that close to half of gallbladder patients were dissatisfied with the procedure due to unexpected post-operative symptoms, including flatulent dyspepsia, dull abdominal pain and diarrhoea.<sup>18</sup> Moderators of expectation fulfillment were identified in a study of hernia and gallbladder patients that found expectations were less likely to be met when the patient's pre-operative condition was more severe, when they experienced unexpected side-effects from the surgery, and when they were unaware of how long the healing process would take.<sup>21</sup>

Regarding the nature of patients' expectations for hernia and gallbladder surgery, two studies to date have prompted gallbladder and/or hernia patients to generate specific expectations rather than relying on closed-ended rating scales. The first study asked cholecystectomy patients to provide specific expectations for the surgery and followed up with these patients 2 years after the procedure.<sup>18</sup> The second study asked hernia and gallbladder patients to generate specific expectations before surgery and followed up with them 2 months postoperatively.<sup>21</sup> These studies identified pain relief, avoidance of gallbladder attacks, gallstones, pancreatitis, jaundice, eating normally again, getting back to normal and relief from gastro-

intestinal symptoms like dyspepsia as the most notable expectations of patients facing gallbladder surgery. The most notable expectations of patients facing hernia surgery are a successful operation, getting back to normal, pain relief, removal of lump or bulge and improved physical functioning.

## Overview

The goal of the current research is to describe the specific types of expectations that gallbladder and hernia patients have for their surgeries and to examine the extent to which these expectations differ as a function of demographic characteristics of the patient and how they relate to other patient- and surgeon rated variables.

To some extent, this research provides a partial replication of the studies by Ros and Zambon and Jones *et al.*<sup>18,21</sup> However, our study extends their findings in several ways. First, the patient samples in the previous studies were relatively homogenous compared to the patient sample in the present study. The Jones *et al.* inguinal hernia sample was 99% White and 10% female and the Ros and Zambon's study of Spanish cholecystectomy patients collected data on gender (76% female); however, the paper does not provide any information about patient race or ethnicity or socioeconomic status (SES). Second, these findings are somewhat out-of-date in light of the shift toward laparoscopic procedures. Laparoscopy was not common for gallbladder or hernia surgeries until 1990, 3 years after the publication of the Ros and Zambon article. It was not until 1992 that researchers declared laparoscopic procedures the 'gold standard' for cholecystectomy.<sup>22</sup> Over two decades later, it is reasonable to assume that the types of expectations associated with these treatments may have changed, given the changes in technology and associated risks. Thus, our study provides a unique and current picture of the expectations of patients undergoing hernia or gallbladder surgery, and our patient sample provides the opportunity to examine how these expecta-

tions differ across patients who vary in gender, age, ethnicity and socioeconomic status.

## Methods

Data collection took place between November 2011 and December 2012 at the Riverside County Regional Medical Center (RCRMC) in Moreno Valley, California.

### Physician and patient recruitment

All surgeons in the general surgery clinic at RCRMC consented to participate in the study. Most were approached for consent at grand rounds prior to the start of data collection, and the remaining surgeons gave consent when approached by research assistants (e.g., when they were new to the clinic). A total of eight attending surgeons saw patients during the course of this study. Some surgeons were Spanish-fluent and could thus communicate with all patients in our study, but translational services were also available for use to ensure clear communication with all patients, regardless of English fluency.

Patients were recruited from the same general surgery clinic. Patients were eligible for this study if they were between 18 and 90 years of age and had an appointment for an initial surgical consultation following referral from a primary care physician. No exclusions based on English fluency were necessary; English and Spanish versions of all documents were available. Upon approaching an eligible patient, a researcher provided a description of the study and requested consent. Detailed records of non-participation are only available for the final 2 months of data collection, during which time 82% of patients approached agreed to participate. The most commonly cited reasons for non-consent was a concern over the time commitment, particularly in light of typically long wait times in the clinic.

IRB approval was obtained from both the University of California, Riverside and from RCRMC, and informed consent was obtained from all patients prior to proceeding with data

collection. All data were de-identified to ensure patient confidentiality.

#### Patient sample

For the purpose of our research question, we used a subset of the full patient sample ( $N = 370$ ) who anticipated the possibility of either hernia or gallbladder surgery. At the point of recruitment, these patients were not yet scheduled for surgery but had been identified by a primary care physician as possible candidates for hernia or gallbladder surgery and thus referred to the general surgery clinic for further examination. We then further restricted analyses to patients who, at the time they completed the post-consultation questionnaire (i.e., after consultation with the surgeon), believed they would be scheduled for surgery following the appointment. That is, we excluded from our analyses patients who had learned during the appointment that surgery would not be scheduled at that time. These restrictions produced a sample of 143 patients

who understood that they would undergo hernia or gallbladder surgery in the near future. See Table 1 for characteristics of the full sample and the subsamples examined in this study.

#### Procedures

A nurse in charge of scheduling in the clinic identified eligible patients, and trained research assistants approached these patients upon their arrival at the clinic to provide preliminary information about the purpose of the study and request consent. Patients also completed the first questionnaire (pre-consultation questionnaire) at this point. The survey was administered by a trained research assistant using a tablet computer. Patients had the option to interact with the tablet themselves or for the research assistant to read the questions and input the patients' responses. After patients completed the pre-consultation questionnaire, the research assistants escorted the patients either to an exam room (if available) or back to the waiting room. Immediately following the

Characteristics	Full sample ( $n = 143$ )	Hernia ( $n = 92$ )	Gallbladder ( $n = 51$ )
% Female	50%	25%	88%
Mean age (SD)	44.6 (12.5)	46.7 (11.2)	40.7 (13.9)
Education			
Did not complete high school	32%	33%	31%
Completed high school	54%	52%	57%
Completed college	16%	15%	12%
Health insurance			
HMO/PPO	5%	4%	9%
MediCal or MediCare	14%	13%	15%
Local low-income programme	63%	67%	64%
No coverage	18%	17%	13%
Employed	31%	23%	35%
Health literacy (1–10)	7.5 (3.2)	7.5 (3.2)	7.4 (3.3)
Ethnicity: Hispanic/Latino	55%	44%	67%
Race			
White/Caucasian	85%	81%	92%
Black/African-American	10%	14%	6%
Asian	2%	0%	2%
American Indian/Alaska Native	<1%	2%	0%
Native Hawaiian/Pacific Islander	<1%	0%	0%
Other	2%	3%	0%

**Table 1** Sample characteristics (patients)

patient's visit with the surgeon, the research assistant returned, provided the surgeon with a brief questionnaire about the visit and then provided a second questionnaire (post-consultation questionnaire) to the patient using the tablet computers.

## Materials

The analyses presented in this paper address a subset of the questions included in the full study. For brevity, we will only describe the relevant items here. The pre-consultation patient questionnaire acquired demographic information including gender, age, employment status, race and ethnicity, health insurance status and type, and health literacy ('How confident are you filling out medical forms by yourself?' 1 = *not at all*, 10 = *completely*).<sup>23,24</sup>

The post-consultation patient questionnaire established the type of surgery the patient would undergo ('What kind of surgery do you expect to have?'), the expected date of surgery ('When do you expect to have the surgery?'), and general expectations ('How do you expect the surgery to affect your life?' 1 = *make it much better*, 3 = *no effect at all*, 5 = *make it much worse*). The measure of general expectations was developed for the goals of this study due to the frequent use of outcome-specific (i.e., specific to pain, recovery time, etc.) or procedure-specific expectations measures (i.e., specific to breast cancer, bariatric surgery, etc.) in the literature. Although the specific wording of our measure is unique to this study, the general structure of the question as a Likert-type assessment of outcome expectancies is similar to others used in studies of surgical expectations.

The questionnaire also included an open-ended question regarding the patient's specific expectations for the surgery ('In what specific ways do you expect the surgery to affect your life?'; adapted from Iverson *et al.*, 1998).<sup>25</sup> Patients did not receive the open-ended prompt if they responded 'no effect at all' to the closed-ended expectation question.

Patients' responses to the open-ended question were coded into seven categories: quality

of life, psychological effects, symptoms, function, general health, no effect expected or no response (or unsure). This novel coding scheme was developed for use with this data set. Three expert judges (graduate students who were experts in research on surgical expectations) categorized the 143 responses into the categories above. Interjudge agreement was moderate to high on average ( $M = 0.78$ ,  $SD = 0.10$ ) and the intraclass correlation coefficients ranged from 0.64 (quality of life and general health) to 0.86 (no effect expected). Patients' responses occasionally included more than one expectation (55 patients reported more than one), each of which was coded separately and the total number of expectations from each patient noted. After the development of this coding scheme, an eighth category was added to represent the few ( $n = 9$ ) negative expectations that originally fell into other categories to remove the potential confound of rating valence from the original categories that were only focused on improvement.

The surgeon's questionnaire confirmed the type of surgery for which the patient would be scheduled and provided ratings of the patient's current health (1 = *extremely sick*, 7 = *extremely healthy*), severity of the patient's health condition (1 = *very mild*, 7 = *very severe*) and expected outcome of surgery (1 = *little or no improvement in quality of life*, 7 = *drastic improvement in quality of life*).

## Results

### Expectations for surgical outcomes

On average, patients expected the surgery to make their lives better ( $M = 1.53$ ,  $SD = 0.87$ ; responses below the midpoint of three indicate expected improvement). If patients expected any change as a result of the surgery, they responded to the open-ended question about specific expectations for their surgical outcomes. Patients' expectations fell into eight distinct categories: improvements in quality of life and general well-being (e.g., 'make life easier in general'), emotional improvement (e.g., 'more

relaxed, no anxiety'), symptom relief (e.g., 'no more pain,' 'won't feel sick all the time'), functional improvement (e.g., 'make it easier to walk,' 'able to take a job'), general health (e.g., 'make me well again'), negative effects (e.g., 'might hurt at first', 'swelling damage to nerves and loss of arm use'), no effect expected (e.g., 'not much', 'feel the same') or no response (or unsure; e.g., 'not sure').

A majority of the 143 patients expected a reduction or elimination of unpleasant physical symptoms ( $n = 69$ ), followed by improvements in physical functioning ( $n = 49$ ), improvements in general well-being and quality of life ( $n = 29$ ), improvements in general health ( $n = 17$ ) or no effect at all ( $n = 11$ ). A small number of patients expected reductions in anxiety or other specific emotions ( $n = 6$ ) or negative effects from the surgery ( $n = 3$ ). Because so few patients mentioned negative effects from the surgery, we will not examine those expectations further. Eight patients did not know what to expect from the surgery or did not provide a response to the open-ended prompt. Hernia and gallbladder patients differed somewhat in the frequency of three types of expectations: Proportionately more hernia than gallbladder patients expected improvements in quality of life (23.9% vs. 13.7%) and functioning (45.7% vs. 13.7%), whereas proportionately more gallbladder patients expected improved in symptoms than did hernia patients (68.5% vs. 37.0%; see Table 2 for full frequency information).

#### Relationships between demographic variables and expectations

We conducted chi-square goodness of fit tests to examine relationships between categorical demographic variables (gender, ethnicity, race, employment status, insurance status) and the mention (or lack of mention) of specific expectations. We conducted bivariate correlation analyses to examine relationships between continuous demographic variables (age, health literacy and education) and expectations. When examining relationships with specific expectation categories, we correlated the continuous

**Table 2** Expectation frequencies by surgery type

Expectations	Hernia ( $n = 92$ )	Gallbladder ( $n = 51$ )
General expectations (1–5)	1.30 (0.61)	1.27 (0.75)
Total number of expectations	1.58 (0.87)	1.41 (0.83)
Specific expectations		
Quality of life	22 (24%)	7 (14%)
Emotional improvements	4 (<1%)	2 (4%)
Symptom relief	34 (37%)	35 (69%)
Functional improvements	42 (46%)	7 (14%)
General health	11 (12%)	6 (12%)
No effect	6 (7%)	5 (10%)
Unsure (or no response)	4 (4%)	4 (8%)
Negative effect	6 (7%)	3 (6%)

Percentages represent the proportion of patients from the hernia and gallbladder samples who provided an expectation in the given category.

predictor variable with the code for each expectation category (1 = patient mentioned an expectation in this category, 0 = patient did not mention this category). In cases of missing data, participants with incomplete data for a given analysis were not included in that analysis.

#### Gender

Male ( $M = 1.21$ ,  $SD = 0.61$ ) and female patients ( $M = 1.47$ ,  $SD = 0.69$ ) did not differ significantly in their general expectations for the outcomes of surgery (i.e., whether the surgery would make their lives better or worse),  $t(141) = 1.52$ ,  $P = 0.13$ ,  $r_{es} = 0.13$ . However, female patients were more likely than male patients to mention symptom reduction (60% vs. 37%),  $\chi^2(1, N = 143) = 7.53$ ,  $P = 0.006$ ,  $\phi_c = 0.23$ , whereas male patients were more likely than female patients to mention improvements in functioning (43% vs. 25%),  $\chi^2(1, N = 143) = 4.94$ ,  $P = 0.03$ ,  $\phi_c = 0.19$ . However, this trend may be explained by the fact that more men ( $n = 69$ ) than women ( $n = 23$ ) were seen for hernias, for which functional limitations and discomfort are primary complaints, and more women ( $n = 45$ ) than men ( $n = 6$ ) were seen for gallbladder problems, for which pain, nausea and acid reflux are major symptoms. This difference disappeared when we

examined hernia and gallbladder patients separately; and there were no other significant gender differences in expectation type,  $t_s < 0.74$ ,  $P_s > 0.46$ .

#### *Ethnicity*

We did not examine race as a predictor because the vast majority (84.4%) of patients were White/Caucasian (Hispanic and non-Hispanic combined), whereas the sample was split almost evenly between Hispanic and non-Hispanic patients. Hispanic patients had marginally more positive general expectations for the outcomes of surgery ( $M = 1.19$ ,  $SD = 0.56$ ) than non-Hispanic patients ( $M = 1.40$ ,  $SD = 0.73$ ),  $t(141) = -1.86$ ,  $P = 0.07$ ,  $r_{es} = 0.15$ . However, non-Hispanic patients were more likely to mention expectations for functional improvements (49% vs. 20%),  $\chi^2(1, N = 143) = 13.34$ ,  $P < 0.001$ ,  $\phi_c = 0.31$ , and marginally more likely to mention emotional improvements (7% vs. 1%),  $\chi^2(1, N = 143) = 3.09$ ,  $P = 0.08$ ,  $\phi_c = 0.15$ , whereas Hispanic patients were more likely to expect no effect from the surgery (12% vs. 3%),  $\chi^2(1, N = 143) = 4.32$ ,  $P = 0.04$ ,  $\phi_c = 0.17$ , or to be unsure of the outcome or provide no response (10% vs. 1%),  $\chi^2(1, N = 143) = 4.34$ ,  $P = 0.04$ ,  $\phi_c = 0.17$ . Overall, Hispanic patients ( $M = 1.27$ ,  $SD = 0.71$ ) provided significantly fewer specific expectations than did non-Hispanic patients ( $M = 1.78$ ,  $SD = 0.92$ ),  $t(141) = 3.74$ ,  $P < 0.001$ ,  $r_{es} = 0.30$ .

#### *Health literacy*

We would first note that health literacy differed by patients' ethnicity,  $t(142) = 2.93$ ,  $P = 0.004$ ,  $r_{es} = 0.24$ , such that Hispanic patients had poorer health literacy on average. We suspect that the cause of this relationship is their mutual relationship with socioeconomic status within the population from which our sample was drawn. However, we examined these variables separately because they are conceptually distinct.

Health literacy was not significantly correlated with general expectations,  $r(143) = -0.02$ ,  $P = 0.85$ . However, patients with better health literacy were less likely to list emotional

improvements,  $r(143) = -0.20$ ,  $P = 0.01$ , and were more likely to list functional improvements,  $r(143) = 0.24$ ,  $P = 0.003$ . Patients with better health literacy also were marginally less likely to mention improvements in symptoms,  $r(143) = -0.16$ ,  $P = 0.05$ .

#### *Age*

Age was not significantly correlated with general expectations,  $r(143) = -0.11$ ,  $P = 0.19$ . However, older patients were marginally more likely to expect improvements in quality of life,  $r(143) = 0.15$ ,  $P = 0.08$ . Age was not significantly correlated with any other specific expectation, all  $r_s < 0.13$ ,  $P_s > 0.11$ .

#### *Education*

Educational attainment was not significantly correlated with general expectations,  $r(143) = -0.004$ ,  $P = 0.96$ , or with any specific expectation categories.

#### *Employment status*

Unemployed patients had more positive general expectations for the outcomes of surgery ( $M = 1.21$ ,  $SD = 0.51$ ) than employed patients ( $M = 1.51$ ,  $SD = 0.91$ ),  $t(139) = 2.52$ ,  $P = 0.01$ ,  $r_{es} = 0.21$ . Employment status was not significantly associated with any other specific expectation category, all  $\chi^2_s < 2.12$ ,  $P_s > 0.14$ .

#### Surgeons' ratings

##### *Surgeon-rated health status*

Surgeons' ratings of patients' health were unrelated to patients' general expectations,  $r(141) = 0.07$ ,  $P = 0.40$ , but higher ratings were marginally associated with fewer expectations for emotional improvement,  $r(141) = -0.16$ ,  $P = 0.06$ . Surgeon-rated health status was not related to any other specific expectations,  $r_s < 0.16$ ,  $P_s > 0.13$ .

##### *Surgeon-rated condition severity*

Patients with more severe health conditions, according to their surgeon, were less likely to report expectations for emotional improvements,  $r(140) = -0.18$ ,  $P = 0.04$ . Surgeon-rated

condition severity was not related to general expectations or to any other specific expectations,  $r_s < 0.09$ ,  $P_s > 0.31$ .

#### *Surgeon's expectations for surgical outcomes*

Patients' general expectations for improvement were not associated with their surgeon's expectations for their surgical outcomes,  $r(134) = -0.03$ ,  $P = 0.69$ . However, surgeons' expectations were negatively associated with patients' expectations for emotional improvement,  $r(134) = -0.28$ ,  $P = 0.001$ , and for symptom relief,  $r(134) = -.19$ ,  $P = 0.03$ . Surprisingly, patients whose surgeons had more positive expectations listed *fewer* total expectations,  $r(134) = -.17$ ,  $P = 0.05$ . Surgeons' expectations for surgical outcomes were not related to any other specific expectation,  $r_s < 0.11$ ,  $P_s > 0.21$ .

## Discussion

The goal of the current study was to explore the types of expectations that hernia and gallbladder patients have for their surgeries, with a focus on how these expectations vary across a diverse patient sample. Expectations, whether met or unmet, have important consequences for patients' health, well-being, and satisfaction with health-care providers,<sup>8,9</sup> and our findings provide insights that health-care providers and researchers can use to improve patient outcomes in ethnically- and socioeconomically-diverse patient populations.

Patients in this study generated a variety of specific expectations related to the outcomes of their surgery. Overall, the most common expectations were for functional improvements, symptom relief and improved quality of life. These frequencies differed somewhat by surgery type: Hernia patients tended to mention functional improvements most frequently, followed by symptom relief and then quality of life, whereas gallbladder patients tended to mention symptom relief most frequently, followed by quality of life and functional improvements. These findings are consistent with previous research that identified symptom relief,

especially pain, and quality of life improvements as key expectations for gallbladder patients, and functional improvements, pain relief and quality of life improvements as key expectations for hernia patients.<sup>18,21</sup> An important difference between our study and these previous studies is that we coded each patient's response into specific expectation types, as opposed to providing a full list of patient's responses or focusing solely on patient's symptoms.<sup>18,21</sup> This aggregation strategy allowed us to examine relationships between both general and specific expectations and other variables of interest.

#### Variability in patients' expectations

A general pattern arose from our comparisons across demographic groups: Hispanic patients and patients who had lower health literacy tended to have more positive expectations for their surgical outcomes while also reporting fewer specific expectations, most notably in the categories of functional and emotional improvements. This pattern suggests that patients who are able to communicate clearly with their physicians may have different expectations than patients who must overcome barriers due either to language or understanding of health terminology. Perhaps most interesting is the conflict between the valence of patients' expectations and their ability to elucidate specific expectations regarding their surgery. That is, the same patients who were unsure about what exactly to expect also tended to have particularly positive expectations about their outcomes.

Physician–patient communication is a key component of treatment success,<sup>26</sup> and particularly in a surgical context, the complexity of interventions and associated technological advances can make it difficult for patients to understand the procedure without significant effort on the part of the physician. In addition, surgical consultations are rife with uncertainty about surgical outcomes, the timing of surgery and recovery time, among other uncertainties. The diversity of our sample provided a unique opportunity to compare the expectations of

patients with whom physicians are likely to have more or less difficulty communicating due to language barriers and deficits in health literacy. Our findings suggest, albeit tentatively, that surgeons may be doing a poor job of communicating reasonable expectations, particularly to these vulnerable groups. Surgeons' and patients' general expectations for the surgery were unrelated, and vulnerable patients had difficulty articulating specific expectations that presumably surgeons would want to communicate in anticipation of surgery. Of course, it is also possible that surgeons are doing their best to communicate to patients in this context, and patients simply fail to understand or correctly interpret the information surgeons convey. In either case, we suggest that the flow of communication between surgeons and vulnerable patients could be improved.

#### Limitations and future directions

This study examined patient expectations at an outpatient surgery clinic during an initial pre-surgical consultation for either hernia or gallbladder surgery. The diverse patient population at the clinic allowed us to investigate a number of unique differences in patient expectations as a function of ethnicity and health literacy, most notably. However, the generalizability of our findings may be limited to patient populations that are similarly diverse and may not be applicable to settings in which few or no patients are socioeconomically vulnerable.

Furthermore, although we were unable to examine the relationship between expectations and patients' actual surgical outcomes, our findings make a unique contribution to the existing literature by both identifying the most common expectations of patients undergoing these surgeries and comparing these expectations across demographic groups. This study can serve as a starting point from which to target patients who may be particularly vulnerable to misunderstanding (or missing altogether) the reasonable expectations they should have about their surgeries. Future research should focus on delving further into the experiences of

populations at risk for unmet expectations (e.g., Hispanic patients or patients with low health literacy) as they await surgery to uncover the reasons why their expectations are different on average from non-Hispanic patients and patients with high health literacy.

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