

## Do Previsit Expectations Correlate With Satisfaction of New Patients Presenting for Evaluation With an Orthopaedic Surgical Practice?

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### Abstract

**Background** Patient satisfaction is associated with increased compliance, improved treatment outcomes, and decreased risk of litigation. Factors such as patient understanding and psychological well-being are recognized influences on satisfaction. Less is known about the relationship between previsit expectations and satisfaction.

**Questions/purposes** (1) Are there correlations among previsit expectations, met expectations, and patient satisfaction? (2) What are the categories of expectations, and which one(s) correlate with satisfaction?

**Methods** Eighty-six new patients presenting to a hand surgery practice of a tertiary referral hospital with 70% direct primary care referrals, mostly with elective concerns, indicated their previsit expectations (Patient Intention

Questionnaire [PIQ]). Immediately after the visit, the same patients rated the degree to which their previsit expectations were met (Expectation Met Questionnaire [EMQ]) and their satisfaction level (Medical Interview Satisfaction Scale). These tools have been used in primary care office settings and claim good psychometric properties, and although they have not been strictly validated for responsiveness and other test parameters, they have good face validity. We then conducted a multivariable backward linear regression to determine whether (1) scores on the PIQ; and (2) scores on the EMQ are associated with satisfaction.

**Results** Satisfaction correlated with met expectations ( $r = 0.36$ ;  $p < 0.001$ ) but not with previsit expectations ( $r = -0.01$ ,  $p = 0.94$ ). We identified five primary categories of previsit expectations that accounted for 50% of the variance in PIQ: (1) “Information and Explanation”; (2) “Emotional and Understanding”; (3) “Emotional Problems”; (4) “Diagnostics”; and (5) “Comforting”. The only category of met expectations that correlated with satisfaction was Information and Explanation ( $r = 0.43$ ;  $p < 0.001$ ).

**Conclusions** Among patients seeing a hand surgeon, met expectations correlate with satisfaction. In particular, patients with met expectations regarding information and explanation were more satisfied with their visit. Efforts to determine the most effective methods for conveying unexpected information warrant investigation.

**Level of Evidence** Level II, prognostic study.

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Each author certifies that his or her institution approved the human protocol for this investigation, that all investigations were conducted in conformity with ethical principles of research, and that informed consent for participation in the study was obtained.

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### Introduction

Patient satisfaction measures are increasingly used to evaluate the quality of medical service [11]. Patient satisfaction is associated with increased compliance, improved

treatment outcomes across a variety of medical settings [22], decreased risk of litigation [10], and patient ratings of the quality of their care. Patient satisfaction is affected by patient understanding of their own health and psychological well-being [9]. Sociodemographic factors can also affect patient satisfaction [5, 7, 8, 14, 24, 27].

It is likely, however, that other factors—as yet unexplored—may influence patient satisfaction with a medical encounter. Met expectations are associated with better patient satisfaction in population surveys and primary care settings [3, 23, 27]. However, the relationship between previsit or preoperative expectations and satisfaction is inconsistent [3, 12]. A study among primary care patients found that previsit expectations (whether they were realistic or unrealistic) were not associated with satisfaction [3]. Research among orthopaedic patients undergoing surgery for lower back pain found that higher previsit expectations of pain relief were associated with lower satisfaction, whereas higher previsit expectations of improved function were associated with higher satisfaction [12]. Because of the inconsistencies across studies in terms of the association between previsit expectations and satisfaction [3, 12] as well as the paucity of research on met expectations outside of primary care settings, we sought to evaluate the relationships among previsit expectations, met expectations, and satisfaction with a hand surgery outpatient visit. Specifically, we aimed to identify (1) patient previsit expectations (level and type) for a hand surgery office visit; and (2) the association of previsit expectations and met expectations with satisfaction.

## Study Questions

This study attempts to answer the following questions: (1) Are there correlations among previsit expectations, met expectations, and patient satisfaction? (2) What are the categories of expectations, and which one(s) correlate with satisfaction?

## Patients and Methods

### Study Design and Setting

This was an observational cross-sectional study. Between September 2012 and December 9, 2012, adult, English-speaking patients presenting to the practice of one of three orthopaedic hand surgeons (JJ, CM, DCR) for an initial evaluation were invited to enroll under a protocol approved by our Human Research Committee. The study was described in detail and the treating physician/study staff obtained informed consent.

### Participants/Study Subjects

One hundred two patients were enrolled in the study. Of these, six were excluded as a result of lack of English proficiency, three declined participation after enrollment, and seven patients did not complete the second part of the questionnaire after their medical appointment, most claiming lack of time. Analyses were done on a final sample of 86 patients (Table 1).

### Variables, Outcome Measures, Data Sources, and Bias

Before the medical encounter with the hand specialist, patients completed the Patient Intentions Questionnaire (PIQ) [20] and a demographics and medical profile questionnaire. After the encounter patients, completed the Expectations Met Questionnaire (EMQ) [25] and the Medical Interview Satisfaction Scale (MISS) [13, 18, 26].

### Measures

The PIQ [20] consists of 34 equally weighted statements measuring a patient's previsit expectations and specific goals for a primary care medical visit [25]. Examples include: "I want my GP [general practitioner] to understand the problem"; "I want the GP to explain my emotional problems." All items in the PIQ were scored on a 3-point Likert scale (agree, uncertain, or disagree). We modified the term "GP" to "doctor" in the PIQ questions to match the study setting (Appendix 1 [Supplemental materials are available with the online version of CORR<sup>®</sup>]). The PIQ score represents the percentage of expectations endorsed before the visit divided by the total potential previsit expectations.

The EMQ [25] consists of the same 34 statements on the PIQ aimed to determine if a patient's expectations were met after the visit. For example, "The doctor understood the problem"; "The doctor explained my emotional problems." Comparable with the PIQ, all items in the EMQ were scored on a 3-point Likert scale (agree, uncertain, or disagree). The EMQ was scored as percentage of met expectation per item in the PIQ as initially endorsed by the patient.

The results of the PIQ and EMQ were divided into three groups according to low previsit and met expectation (0%–35%), moderately and uncertain previsit and met expectation (36%–80%), and highly previsit and met expectation (81%–100%), consistent with previously developed methodology [27].

The MISS [13, 18, 26] includes 21 items measuring satisfaction with a medical encounter (eg, "The doctor seemed to take my problems seriously"). All items were scored on a

7-point Likert scale from very unsatisfied to completely satisfied. In the digital version of the MISS, question 6 (“The doctor seemed to be interested in me as a person”) was constantly skipped for all patients as a result of a mistake in how the questionnaire was adapted from the paper-based questionnaire. This question was part of the Rapport subscale, which is comprised of seven other similar questions, which represent this aspect of the visit well (eg, “The doctor seemed warm and friendly to me” and “The doctor seemed to take my problems seriously”). A mean satisfaction index score was calculated by dividing the total satisfaction score by the total number of answered questions.

The primary measures used in this study have good psychometric properties as evidenced by internal consistency reliability  $\alpha$  between 0.84 and 0.97 [27] as well as validation in patients with back pain [6] and in primary care [13, 23, 27].

#### Statistical Analysis, Study Size

An a priori power analyses indicated that a sample of 84 patients total would provide 80% statistical power with  $\alpha = 0.05$  for a moderate effect size of 0.5 based on an analysis of variance (ANOVA).

Continuous data were presented as means when normally distributed. When data were not normally distributed, we reported the median with interquartile range. Mean imputation was used to account for missing values. Four patients skipped one question in the PIQ and four patients skipped one question in the EMQ. One patient missed one question in the MISS questionnaire.

To determine the categories of desired expectations on the PIQ, we performed a factor analysis with the help of the statistical orthogonal principal component analysis through the Varimax rotation. A question was related to a specific factor if there was a loading of minimal 0.40 or more. This method was used and validated in prior research [27].

We used the Spearman correlations to test for correlation between continuous variables. The strength of the correlation was interpreted by the following guidelines: small strength ( $r = 0.10$ – $0.29$ ), medium strength ( $r = 0.30$ – $0.49$ ), and large strength ( $r = 0.50$ – $1.0$ ) [4]. We used ANOVA to test for differences in satisfaction by categories of expectations met and by type of expectation on the PIQ. We conducted a multivariable backward linear regression to determine whether (1) score on the PIQ; and (2) score on the EMQ were associated with satisfaction. We included all variables with  $p < 0.10$  in bivariate analysis.

**Table 1.** Patients’ demographics (n = 86)

Demographic	Mean	SD	Range
Age (years)	44	16	19–77
Education	16	3	10–22
Overall health (SD)	8	2	2–10
		Number	Percent
Sex			
Men		43	50
Women		43	50
Race			
White		72	84
Black		4	5
Asian		4	5
American Indian or Alaskan Native		0	0
More than one race		1	1
Other or unknown		5	6
Diagnosis			
Acute injuries		48	56
Nonspecific arm pain		7	8
Carpal tunnel syndrome		1	1
Ganglion		5	6
Dequervain		4	5
Trigger finger		4	5
Dupuytren		2	2
Osteoarthritis		1	1
Other		14	16
Work status			
Working full-time		56	65
Working part-time		8	9
Homemaker		0	0
Retired		9	10
Unemployed, able to work		5	6
Unemployed, unable to work		5	6
Workers compensation		1	1
Currently on sick leave		1	1
Marital status			
Single		33	39
Living with partner		3	3
Married		43	50
Separated/divorced		6	7
Widowed		1	1
Physician			
Surgeon 1		3	4
Surgeon 2		77	90
Surgeon 3		6	7

**Table 2.** Desired and met expectations divided by categories\*

Category	Factor desired (%)	Factor desired and met (%)	Factor desired and not met (%)	Factor not desired and met (%)	Factor not desired and not met (%)	Total (%)
Factor 1 (Information and Explanation)	96	83	13	3	1	100
Factor 2 (Emotional and Understanding)	38	26	11	26	37	100
Factor 3 (Emotional Problems)	5.5	2	3	9	86	100
Factor 4 (Diagnostics)	61	33	27	20	19	100
Factor 5 (Comforting)	74	51	23	14	12	100

\* Mean percentage of patients reporting their expectation as being met and not met by factor.

## Results

### Correlations Among Previsit Expectations, Met Expectations, and Patient Satisfaction

Satisfaction correlated with met expectations ( $r = 0.36$ ,  $p < 0.001$ ) but not with previsit expectations ( $r = -0.01$ ,  $p = 0.94$ ). The best linear regression model for greater satisfaction included met expectations alone and explained 27% of the variance. Four (5%) patients had low previsit expectations, 74 (86%) moderate previsit expectations, and eight (9%) had high previsit expectations. The degree of met expectations was low in four patients (5%), moderate in 33 (38%), and high in 49 (57%). Preliminary bivariate analysis identified differences in satisfaction in patients with low, moderate, and high met expectations.

### Categories of Expectations and Correlations With Satisfaction

Factor analysis identified five primary categories of previsit expectation that accounted for 50% of the variance in PIQ: (1) "Information and Explanation"; (2) "Emotional and Understanding"; (3) "Emotional Problems"; (4) "Diagnostics"; and (5) "Comforting". Cronbach's  $\alpha$  ranged from 0.76 to 0.90 indicating overall good to excellent reliability for all factors. Patients' goals for the visit with the hand surgeon focused more on "Information and Explanation", "Comforting", and "Diagnostics" than on "Emotional Understanding" and "Emotional Problems" (Table 2). The only category of met expectations that correlated with satisfaction was "Information and Explanation" ( $r = 0.43$ ;  $p < 0.001$ ) (Table 3). Interestingly, among the previsit expectation categories, the category "Information and Explanation" was highly met, whereas the other four factors were met to a moderate or low extent.

**Table 3.** Correlation of percentage of met expectations with satisfaction

	Patient satisfaction (MISS)	
	Pearson rho	95% CI
Percentage of met expectations		
Factor 1 (Information and Explanation)	0.43	0.238–0.587 ( $p < 0.01$ )
Factor 2 (Emotional and Understanding)	0.15	–0.059 to 0.355 ( $p = 0.15$ )
Factor 3 (Emotional Problems)	0.04	–0.174 to 0.249 ( $p = 0.72$ )
Factor 4 (Diagnostics)	0.04	–0.173 to 0.250 ( $p = 0.71$ )
Factor 5 (Comforting)	0.19	–0.021 to 0.388 ( $p = 0.07$ )

MISS = Medical Interview Satisfaction Scale; CI = confidence interval.

## Discussion

Patient satisfaction is an important measure, because it is associated with increased compliance, improved treatment outcomes, and decreased risk of litigation. Many factors play into satisfaction, including patient's understanding of their own health and patient's rating of the quality of their care and perhaps expectations. We therefore investigated how previsit and met expectations affect satisfaction and looked for categories of expectations that influence satisfaction. We found that high previsit expectations did not correlate with satisfaction with a hand surgery outpatient visit but met expectations did. Patients had the highest expectations about information and explanation followed by diagnostics and comforting, both of which were endorsed more than emotional support.

This study should be considered in light of its shortcomings. One limitation of this study is that the PIQ was developed for primary care practice. Little is known about the repeatability, responsiveness, and the floor/ceiling effects. The clinical situation in a primary care practice may be different when a patient is rating their primary

doctor with whom they are quite familiar as opposed to a specialist they have never met. Nevertheless, the high Cronbach  $\alpha$  values give us confidence in the methodology described by Williams et al [23] using the factor analysis, which is also a reliable method in other settings including orthopaedic practices. Additional validation of these questionnaires in an orthopaedic practice is merited. Another limitation is the absence of question 6 from the MISS, but we think there is sufficient overlap with other questions evaluating rapport that this probably has little or no effect on the results.

In our study, there was no association between level of previsit expectations and patient satisfaction. The association between previsit expectations and satisfaction appears to depend on setting, patient population, and type of previsit expectations [3, 12, 21]. The fact that the majority of patients in this sample had moderate previsit expectations (few had low or high expectations) may have limited our ability to test the association of previsit expectations and satisfaction. The finding that met expectations correlate with satisfaction in patients with upper extremity illness is consistent with prior studies in other populations [3, 23, 27]. For instance, satisfaction and expectations were strongly correlated in studies of patients undergoing THA [16, 17]. This may be a foregone conclusion because measures of met expectations and measures of patient satisfaction may be assessing the same construct. Future research should replicate these findings with a larger sample of patients, perhaps with one or more diagnoses associated with a greater rate of high expectations.

As one might expect, the previsit expectations reported by patients undergoing hand surgery focused more on “Information and Explanation”, “Comforting”, and “Diagnostics” than on “Emotional Understanding” and “Emotional Problems”. The only category of previsit expectation that correlated with satisfaction was “Information and Explanation”. As a result, attempts to improve patient satisfaction might focus on establishing appropriate previsit expectations perhaps by corresponding directly with the primary care doctor (“curbside consult”), providing evidenced-based information in an understandable and meaningful form (eg, decision aids) before the visit, and even previsit triage and education.

It has been more difficult to determine factors associated with patient satisfaction than factors associated with other aspects of the illness experience such as symptoms and disability. Collective research suggests that satisfaction relates to factors like patient understanding, depression, pain intensity [1, 15, 19] as well as effective communication [2], but there is not a strong relationship with previsit expectations. Given the sense of many physicians that previsit expectations do seem to lead to disappointment, future research regarding previsit expectations might

benefit from a focus on a specific paradigm where unrealistically high expectations are common while accounting for psychological factors, effective communication skills, time spent waiting for the doctor, and time spent with the doctor.

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