Patients' satisfaction is an increasingly important objective for health services. This trend reflects the reality that the choice and success of many treatments are based on subjective patient-defined criteria; that patient satisfaction is an element of health status itself, with satisfied patients reporting greater compliance, well-being, and treatment outcomes; that health care is increasingly embracing principles of consumerism and autonomy, that health care is becoming increasingly privatized and economically competitive, with satisfied patients both remaining with and recommending their provider, and that a satisfied patient is the best defense against malpractice lawsuits.

The dominant theoretical model of satisfaction involves meeting patient expectations, that is, minimizing the expectation-outcome discrepancy. This conception of satisfaction has been variously reported as its actual definition or its primary causal factor. Suggested mechanisms for this effect include cognitive dissonance, patient conditioning, memory and symptom reporting, and anxiety.

However, the importance of expectation-outcome congruence has not always borne out empirically, with the actual (perceived) outcome or expectations alone via the placebo effect or expectations alone, with the placebo effect, accounting for most of a patient's satisfaction in some studies. Additionally, the extent to which patients feel adequately informed about their illness has been frequently demonstrated as an important and independent determinant of patient satisfaction.

Cataract surgery has increased 400% during the last 10 years to become the most common surgical procedure in the developed world, exceeding 1.6 million operations in the United States alone because of an aging population and dramatic expansion of indications following improvements in technology. Visual acuity is no longer considered a useful

**Expectations and Outcomes in Cataract Surgery**

**A Prospective Test of 2 Models of Satisfaction**

Chet K. Pager, BMed (Hons), DipEd, MA

**Objectives:** To document patients' preoperative expectations for postoperative outcomes. To measure the relative contribution of patient understanding, expectations, outcome, and expectation-outcome discrepancy in determining patient satisfaction.

**Methods:** One hundred twenty-one patients were surveyed just before and 1 month after cataract surgery regarding their understanding of the procedure, satisfaction with their vision, and both current and expected visual function for each of the items on the Visual Function Index (VF-14).

**Results:** Sixty percent of patients expected to achieve a perfect VF-14 score. The average expected VF-14 score was 96.1, compared with an achieved VF-14 score of just 89.8. The most unrealistic expectations involved driving at night, reading small print, and doing fine handiwork. Surprisingly, improvement in visual function was not correlated with satisfaction in vision. While patient understanding, expectations, and achieved VF-14 score did correlate with satisfaction, when controlling for other factors, only achievement-expectation discrepancy was independently predictive.

**Conclusions:** This study provides support for the expectation-outcome discrepancy model of patient satisfaction. Further, it highlights the highly unrealistic expectations harbored by patients with cataract and emphasizes the importance for physicians to control their patients' expectations. Controlling patient expectations may be more effective than improving patients' postoperative outcome in terms of maximizing patient satisfaction.

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measure of need for surgery,33,34 with patient concern, lifestyle, and subjective reports of function being the primary factors for referral.35,36 Furthermore, cataract surgery is predominantly delivered through the private health care sector,31 where patient satisfaction is of particular consequence.

However, patient satisfaction has rarely been considered in cataract surgery,34,37 and no studies have addressed the role of the hypothesized determinants of patient satisfaction. The objectives of this study are first, to document patients’ preoperative expectations for postoperative outcomes and second, to measure the relative contribution of patient understanding, expectations, outcome, and expectation-outcome discrepancy in determining patient satisfaction.

**METHODS**

**PATIENTS**

One hundred sixty consecutive patients undergoing day-stay cataract surgery at Sydney Private Hospital, Sydney, Australia, were invited to participate in this study when first registering at the hospital for their surgery. Sydney Private Hospital is the largest private provider of cataract surgery in New South Wales and serves a large cross-section of patients from throughout metropolitan Sydney. Institutional review board and hospital approval were obtained.

**PROCEDURE AND MEASURES**

After obtaining informed consent, the patient’s age, sex, visual acuity, and current visual function were recorded by a research interviewer, along with the amount of information the patient had already received regarding this surgery. Visual function was measured using the Visual Function Index (VF-14),38,39 a widely used scale based on trouble conducting common binocular activities, with final score ranging from 0 (no visual ability) to 100 (no visual disability). Patients were then asked to rate their expected postoperative functional outcome for each of the 14 items on the VF-14 scale. As part of a related investigation, patients were shown a short video describing either the anatomy of cataract or the procedures experienced during the cataract surgery itself. Neither video concerned the postoperative eye, with a mean (SD) preoperative VF-14 score of 84.7 (14.8) and postoperative VF-14 score of 89.8 (16.4). There were no preoperative or postoperative differences on any measure based on video content (Mann-Whitney U and t tests not shown). The basic preoperative and postoperative characteristics of these patients are presented in Table 1. The mean (SD) age was 73.8 (9.2) years, 91 (64.5%) patients were female, 55 (39.0%) patients had previous cataract surgery, and the median visual acuity was 6/18 in the operative and 6/10 in the nonoperative eye, with a mean (SD) preoperative VF-14 score of 84.7 (14.8) and postoperative VF-14 score of 89.8 (16.4). There were no preoperative or postoperative differences on any measure based on video content (Mann-Whitney U and t tests not shown).

**DATA ANALYSIS**

The visual analog scale markings were converted into a scale of 0 to 10, and all data were double entered and verified using an Excel spreadsheet, then converted into SPSS for Windows version 11 (SPSS Inc, Chicago, Ill) for further analysis. Spearman rank correlations were used to measure the relationship between overall satisfaction and aspects of expected or achieved visual function (each item of the VF-14 is recorded on a 5-point ordinal scale). A multiple regression was used to measure the isolated contribution of postoperative function, improvement, and expectation-outcome discrepancy toward predicting satisfaction, while controlling for the other factors. Finally, both Mann-Whitney U and 2-tailed, independent-sample t tests were used to ensure that the preoperative video content had no influence on any of the measured outcomes.

**RESULTS**

One hundred sixty patients were approached, and 141 (88%) agreed to participate. Of these, 121 (85%) returned their 1-month questionnaire. There were no differences in preoperative characteristics between these 121 patients and those who were lost to follow-up (Mann-Whitney U and t tests not shown). The basic preoperative and postoperative characteristics of these patients are presented in Table 1. The mean (SD) age was 73.8 (9.2) years, 91 (64.5%) patients were female, 55 (39.0%) patients had previous cataract surgery, and the median visual acuity was 6/18 in the operative and 6/10 in the nonoperative eye, with a mean (SD) preoperative VF-14 score of 84.7 (14.8) and postoperative VF-14 score of 89.8 (16.4). There were no preoperative or postoperative differences on any measure based on video content (Mann-Whitney U and t tests not shown).

**PREOPERATIVE EXPECTATIONS**

Patients had very high expectations for postoperative function, expecting to achieve a mean (SD) VF-14 score of 96.1 (10.3), representing near-perfect vision and an 11-point expected gain. Eighty-four patients (60%) expected to achieve a perfect VF-14 score of 100. Only 18 patients did not expect at least some VF-14 improvement, 12 because their preoperative VF-14 score was already 100; the other 6 had preoperative VF-14 scores higher than 90 and expected the same VF-14 score postoperatively.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Preoperative</th>
<th>1 mo Postoperative</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of patients</td>
<td>141</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Age, mean (SD), y</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>No. of women (%)</td>
<td>91 (64.5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of patients</td>
<td>55 (39.0%)</td>
<td></td>
<td></td>
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<tr>
<td>with previous cataract (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median visual acuity (1st, 3rd quartiles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operative eye</td>
<td>6/18 (12, 36)</td>
<td>6/6 (6, 9)</td>
<td>&lt;.001†</td>
</tr>
<tr>
<td>Nonoperative eye</td>
<td>6/10 (6, 15)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VF-14 score, mean (SD)</td>
<td>84.7 (14.8)</td>
<td>89.8 (16.4)</td>
<td>&lt;.001†</td>
</tr>
<tr>
<td>Overall satisfaction‡</td>
<td>8.0 (2.0)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Patient Characteristics

Abbreviation: VF-14, Visual Function Index.
*Wilcoxon signed rank test.
†Two-tailed, paired, sample t test.
‡Satisfaction rated 0 to 10 (highest).
patients' actual outcomes were the furthest from what they expected. The average expectation-outcome discrepancy was 6.3 points, with 80 patients (66%) failing to equal or exceed their expectations at 1-month follow-up.

Table 2 presents for each item of the VF-14 scale the expected amount of improvement and the expectation-outcome discrepancy. Driving at night, reading small print, doing fine handwork, and reading a newspaper or book are the items for which patients expected the greatest degree of improvement and for which, not unexpectedly, patients’ actual outcomes were the furthest from what they expected. The average expectation-outcome discrepancy was 6.3 points, with 80 patients (66%) failing to equal or exceed their expectations at 1-month follow-up.

Table 3 presents the correlations between patient satisfaction and either actual outcome or expectation-outcome discrepancy for each item on the VF-14 scale. Actual outcome and satisfaction were significantly correlated with 11 VF-14 items and more strongly than the 6 VF-14 items for which expectation-outcome discrepancy and satisfaction were correlated.

Table 4 presents the correlations between patient satisfaction and overall expected improvement, actual improvement, actual outcome, and expectation-outcome discrepancy. Actual outcome was marginally better correlated than achievement-outcome discrepancy (0.32 vs 0.28), and the degree of improvement was not significantly related to patient satisfaction at all.

Table 5 presents a multiple regression of the significant predictors of patient satisfaction. When controlling for each other, only the expectation-outcome discrepancy was a significant independent determinant of patient satisfaction (standardized β = −0.30; P = .04). Multiple regressions with other configurations of predictor variables consistently returned expectation-outcome discrepancy as the only independently predictive factor of patient satisfaction.

**PATIENT INFORMATION**

Before the operation, the majority of patients (115 [81%]) felt at the time of operation that they “learned as much as I wanted to know” and only 19 (13%) felt that they’d like to have been told more. At 1 month, the first group’s mean (SD) overall satisfaction was 8.0 (2.0), which was not significantly different from the second group’s satisfaction of 7.9 (2.0) by Mann-Whitney U test, nor were preoperative information and 1-month postoperative satisfaction significantly correlated. However, the patients’ responses to
admonished postoperative questionnaires may affect the scores obtained, although this difference was consistent across all patients and should not affect the findings of this study. Furthermore, the VF-14 in particular has been extensively validated and found to be both stable and reliable across a wide range of contexts. This study did not investigate the changing trajectory of patient expectations across time prior to surgery, nor the impact on satisfaction on the tiny minority who experienced operative complications. Further research into these subsidiary questions could provide a more nuanced view of the relationship between expectations, outcome, and satisfaction.

To provide the highest level of satisfaction, health care professionals must control their patients’ expectations and understanding of treatment, and the close relationship between accurate patient expectations and adequate informed consent cannot be ignored. In fact, to improve patient satisfaction, health care professionals would be advised to pay more attention to patient understanding and expectations, even at the expense of improving patient outcome. In this study, the degree of improvement in visual function was not significantly correlated with patient satisfaction at all.

This study highlights the particular areas where greater attention to informing patients’ preoperative expectations would be warranted, as well as important rationales for doing so. Finally, this study strongly supports the proposition that perceived patient understanding and expectation-outcome discrepancy are important factors in overall patient satisfaction.

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REFERENCES


