

# Surgeons Underestimate Their Patients' Desire for Preoperative Information

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## Abstract

**Background** Provision of adequate patient information may contribute to a “satisfying” surgical treatment. The patient’s views on successful transfer of information concerning operative characteristics may not be in concert with the surgeon’s. The aim of the present study was to determine opinions of both surgeons and patients about issues of surgical information.

**Methods** A group of surgeons ( $n = 24$ ) and surgical patients ( $n = 125$ ) responded to a questionnaire that included 80 topics involving domains of information on disease, physical examination, preoperative period, anesthesia, operation, postoperative period, self care, and general hospital issues. Both groups were asked for their opinion on what they considered important and useful preoperative information for patients. Questions were scored with a visual analog scale. The reliability of the questionnaire was calculated with Cronbach’s alpha.

Differences in opinions between surgeons and patients were analyzed with Student’s *t*-test.

**Results** The Cronbach’s alpha of the questionnaire was high (0.91), indicating its high reliability. Patients scored significantly higher ( $p < 0.001$ ) in most domains, including preoperative period, anaesthesia, operation, postoperative period, self care, and general hospital information. Women demonstrated a significantly higher need for information than men did. These findings were independent of patient age or complexity of operation. In contrast, surgeons thought that their patients desired more extensive information on cause, effect, and prognosis of the disease itself ( $p < 0.001$ ).

**Conclusion** Surgeons generally underestimate their patients’ desire for receiving extensive information prior to a surgical procedure of any complexity. Surgeons should develop strategies to bridge this informational mismatch.

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## Introduction

Medical specialists are highly committed to patient education and consider this an integral part of their profession [1]. These activities are time consuming, as doctors are thought to spend up to 25% of their office time providing information, instructing, and counseling. One may question whether these educational endeavors influence clinical management and patient outcome. However, successful exchange of medical information between a physician and a patient apparently contributes to improved outcome measured in terms of reduced treatment time and hospital stay [2–5]. Diminished medical needs, a higher level of physical and psychological well-being [6], improved risk behavior [2, 5, 7], reduced risk factors [8–10], and less

morbidity and mortality have also been reported to be associated with optimal exchange of information [1, 3, 8–11]. Well-informed patients are found to adopt a more active role in medical decision making and become more compliant with treatment objectives as their awareness and knowledge of treatment goals improve [1, 6, 12–17]. Eventually, higher levels of patient satisfaction are created that may even lead to lowered incidence of malpractice claims [18].

Hence, effective transfer of medical information is crucial in the provision of successful health care. These issues may be less clear when it comes to the surgical territory. A gap may be present between “what surgical patients want to know of their condition or treatment, and what their surgeons think they should know,” as health care providers tend to underestimate patients’ desire for information [12–16, 18–20]. However, there is little information on the quality and quantity of this “informational gap.”

The purpose of this study was to identify the relative importance of various areas of information observed from two different angles, the surgical patient’s perspective and the surgeon’s perspective. We hypothesized that a substantial difference exists between what surgical patients considered important with respect to their condition and treatment as compared to the opinion of their surgeons.

## Methods

The study was conducted in the Máxima Medical Centre (MMC), a teaching hospital serving approximately 350,000 inhabitants in the Eindhoven and Veldhoven region (The Netherlands) between December 2005 and May 2006. Initially, a literature study was conducted aimed at identifying information domains that have been found relevant to surgical patients before an operative procedure. The search strategy used standard sources (PubMed, literature lists of retrieved papers) and predefined key words (patient education, computer based, informed consent, decision making). Only studies that were published in the English language were selected. Topics that were considered important by the authors on subjective grounds were organized into eight domains including disease, examination, preoperative period, anesthesia, operation, postoperative period, self care, and general hospital information. For each domain, questions were composed resulting in an 80-item questionnaire. The answers to each of these 80 questions were quantified using a 100-mm visual analog scale (VAS). Each patient or surgeon was asked to put a mark along this 100-mm scale ranging from “totally irrelevant to be informed on this item” (minimal score = 0) via “neutral” (score = 50) toward “very relevant to be informed on this

item” (maximal score = 100). Characteristics including age, gender, and operative procedure were also tabulated. A first draft of this questionnaire was tested in random groups of patients—13—and educational experts (psychologist—2, patient educator—1, doctors—5) with the aim of improving its readability. It was also tested for face and content validity by the same educational experts. A revised second version of the questionnaire was used for the present study. Patients who were scheduled by their surgeon for a general surgical procedure were informed of the nature of the questionnaire and asked for their consent, after they had given consent for the surgery.

All patients were asked by personnel of the operative planning bureau to fill out the questionnaire and return it by mail. This was done on the day they visited the surgeon for consultation. They were allowed to address the questionnaire anonymously if they desired to do so. All staff surgeons and residents of the department of general surgery of the MMC were also asked to fill out the same questionnaire. The surgeons were asked for their opinion on what they thought patients generally desired to know on specifics of the operative procedure. Operations were classified from very easy (class 1) to complex (class 6) as proposed by a nationally accepted and utilized standard surgical complexity list.

## Statistical analysis

Visual analog scale scores ranged from 0 to 100 and were registered in an Excel database. Results were analyzed with Student’s *t*-test. Predefined subgroup analyses stratified for age (<50 years versus > 50 years) and complexity of operation (class 1–2 versus class 3–6) were performed. Reliability of the questionnaire was measured with Cronbach’s alpha (0 = totally unreliable, 1 = maximally reliable; a Cronbach alpha over 0.7 is acceptable). Cronbach’s alpha increases when the correlations between the items of the questionnaire increase. Cronbach’s alpha can take values between negative infinity and 1. The higher the Cronbach’s alpha, the better the internal consistency of the questionnaire. Data were expressed as mean  $\pm$ SD. A value of  $p < 0.05$  was considered statistically significant.

## Results

The 80-item questionnaire was offered to 201 patients and 29 surgeons. Response rates were 62% (125/201) and 83% (24/29), respectively. The mean patient age was  $54 \pm 15$  years, and mean surgeon age was  $41 \pm 11$  years. Fifty-four percent of the patients were women. Simple (class 1–2) operations were performed in 68% of the cases, and 32% were class 3–6 procedures. These figures were based on 72 patients, as the

**Table 1** Desire for information on various domains judged by patients and surgeons

Domain	Patients <sup>a</sup> (n = 125)	Surgeons <sup>a</sup> (n = 24)	Mean difference (SD)	p Value
1. Disease	78 (17.0)	81 (7.8)	-3.5 (2.2)	0.12
2. Examination	75 (22.6)	69 (12.9)	5.9 (3.3)	0.08
3. Preoperative period	72 (15.1)	60 (11.2)	11.7 (3.2)	<0.001
4. Anesthesia	81 (15.0)	67 (15.3)	13.8 (3.4)	<0.001
5. Operation	79 (13.9)	71 (11.5)	8.3 (3.0)	0.007
6. Postoperative period	76 (15.6)	58 (14.0)	18.1 (3.4)	<0.001
7. Self care	80 (12.5)	61 (16.7)	18.5 (3.0)	<0.001
8. General information	71 (17.0)	52 (16.1)	19.7 (3.9)	<0.001

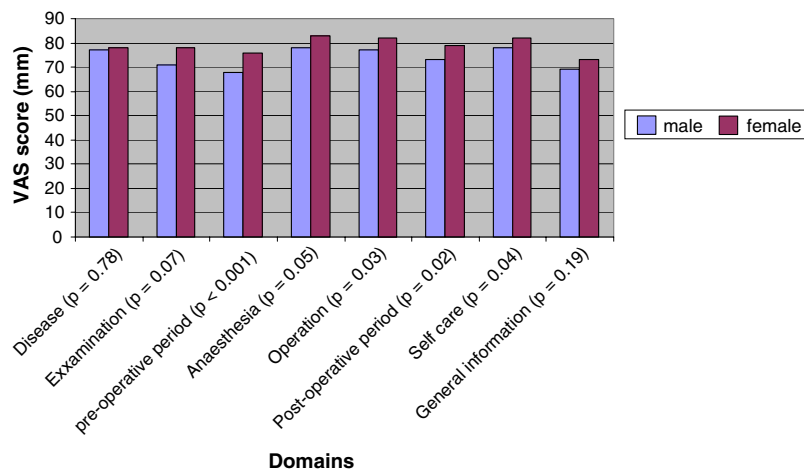
<sup>a</sup> Values are visual analog scale (VAS) scores; range: 0–100 with (SD)

remaining 53 chose to complete the questionnaire anonymously. However, these numbers represent the “surgical mix” of our surgical practice.

In Table 1 VAS-scores of patients and surgeons are displayed with respect to the eight domains covered by the items (disease, examination, preoperative period,

anesthesia, operation, postoperative period, self care, and general hospital information). Overall, the mean information relevance score among patients was 75 ± 2), and this score was 63 (±2) among surgeons (*p* < 0.01). In the patient group, women scored significantly higher on the information relevance score than men did (Fig. 1). In

**Fig. 1** Desire for information on various domains judged by males and females



Domain	Male* (46%)	Female* (50%)	Mean difference (SD)	p-value
1. Disease	77 (15.7)	78 (18.7)	-0.89(3.2)	0.78
2. Examination	71 (24.6)	78 (20.4)	-7.60 (4.2)	0.071
3. Pre-operative period	68 (16.0)	76 (13.4)	-8.3 (2.8)	< 0.005
4. Anaesthesia	78 (15.6)	83 (12.9)	-5.4 (2.7)	0.050
5. Operation	77 (12.1)	82 (13.5)	-5.3 (2.4)	0.031
6. Post-operative period	73 (15.8)	79 (13.4)	-6.3 (2.8)	0.024
7. Self care	78 (12.5)	82 (11.5)	-4.7 (2.2)	0.038
8. General information	69 (15.1)	73 (18.1)	-4.3 (3.3)	0.19

\*Values are VAS-scores, range 0-100 with (SD)

**Table 2** Desire for information on general aspects of disease judged by patients and surgeons

Disease	Patients: mean score <sup>a</sup>	Surgeons: mean score	<i>p</i> Value
Cause	74 (25.3)	86 (7.8)	<0.001
Effect	83 (18.6)	88 (6.9)	0.01
Symptoms	79 (22.6)	79 (17.3)	0.90
Change in symptoms	82 (21.5)	84 (10.0)	0.46
Changed symptomatology after recurrence	85 (15.9)	87 (7.2)	0.36
Prognosis	81 (23.6)	90 (7.0)	0.001
Anatomy	61 (32.7)	56 (24.4)	0.36

<sup>a</sup> Values are VAS scores; range: 0–100 with (SD)

contrast, age (age < 50 years versus age ≥ 50 years) and complexity of operation (class 1–2 versus class 3–6) did not differ in the patient group.

The overall Cronbach’s alpha for this questionnaire was 0.91 (varying from 0.82 for domain preoperative period to 0.93 for domain examination). All domains are briefly discussed in the paragraphs that follow.

Information on disease (symptomatology, prognosis, etc)

The results show (Table 2) that surgeons thought that their patients desired more extensive information on cause, effect, and prognosis of the disease. The need for information on symptomatology associated with the disorder was judged important by both groups equally. Anatomical considerations related to the disorder were deemed less important by both patients and their surgeons.

Information on preoperative examination/work-up

Patients generally tended to judge information on specifics related to preoperative work-up more important compared to their surgeons (*p* = 0.08 ns; Table 1). Methods of examination scored significantly higher in the patient group (74 ± 24.7 versus 66 ± 16.6; *p* = 0.04) (Table 3).

Preoperative period

There was a significant difference in scores on receiving details on the preoperative period in favor of the patients (72 ± 15.1 versus 60 ± 11.2; *p* < 0.001) (Table 1). Issues

**Table 3** Desire for information on general aspects of examination/work-up judged by patients and surgeons

<sup>a</sup> Values are VAS scores; range: 0–100 with (SD)

Examination	Patients: mean score <sup>a</sup>	Surgeons; mean score <sup>a</sup>	<i>p</i> Value
Type of examination	75 (24.3)	69 (14.6)	0.18
Reason for a examination	75 (24.1)	72 (16.3)	0.41
Method of examining	74 (24.7)	66 (16.6)	0.04

**Table 4** Desire for information on general aspects of preoperative period judged by patients and surgeons

Preoperative period	Patients: mean score <sup>a</sup>	Surgeons: mean score <sup>a</sup>	<i>p</i> Value
Preoperative restrictions	74 (25.1)	66 (19.0)	0.16
Home preparation	76 (23.5)	62 (18.0)	0.002
Patient’s own role	78 (23.0)	75 (12.2)	0.34
Preoperative restrictions	86 (14.4)	80 (10.5)	0.04
Preoperative medication	79 (24.0)	78 (10.8)	0.78
Medication at day of operation	80 (24.2)	76 (16.0)	0.41
Where to leave clothes /jewelry	54 (33.1)	36 (21.2)	0.001
Clothes during hospital stay	55 (33.2)	31 (20.6)	<0.001
Hospital policy	63 (28.7)	48 (21.0)	0.004
Hospital facilities	61 (24.0)	47 (21.6)	0.01
Last meal/drink	82 (16.9)	64 (23.9)	0.001

<sup>a</sup> Values are VAS scores; range: 0–100 with (SD)

on home preparation, preoperative restrictions, lockers for clothes/jewelery, attire during hospital stay, hospital policy and facilities, and last meal/drink were judged significantly more important by patients than by surgeons (Table 4).

Anesthesia

Receiving details on anesthesia was deemed more important by patients (81 ± 15.0) compared to what their surgeons thought (67 ± 15.3; *p* < 0.001; Tables 1 and 5).

Operation

There was a significantly higher overall mean score in patients (79 ± 13.9 versus 71 ± 1.5; *p* < 0.007, Table 1) concerning information on operation. Questions on specifics of procedure, operation time, location of operation room, waiting list, contact with family immediately post-operatively, and complication rate scored significantly higher in the patient group (Table 6).

Postoperative period

Patients demonstrated significantly higher overall mean scores than the surgeons on items related to the postoperative period (76 ± 15.6 versus 58 ± 14.0; *p* < 0.001; Table 1). Mean scores on questions concerning complaints, sensations, diet, personal hygiene, physical handicaps,

**Table 5** Desire for information on general aspects of anaesthesia judged by patients and surgeons

Anaesthesia	Patients: mean score <sup>a</sup>	Surgeons: mean score <sup>a</sup>	<i>p</i> Value
Type of anaesthesia	86 (14.5)	76 (16.8)	<b>0.003</b>
Procedure	79 (21.3)	72 (18.7)	0.10
Anaesthesia variations	81 (19.4)	68 (20.5)	<b>0.004</b>
Complications	85 (15.3)	76 (18.0)	<b>0.009</b>
Sensations during anaesthesia	78 (25.7)	60 (25.5)	<b>0.002</b>
Awareness	76 (25.6)	64 (25.8)	<b>0.04</b>
Tension relief	79 (23.8)	54 (21.1)	<b>&lt;0.001</b>

<sup>a</sup> Values are VAS-scores; range: 0–100 with (SD)

**Table 6** Desire for information on general aspects of operation judged by patients and surgeons

Operation	Patients: mean score <sup>a</sup>	Surgeons: mean score <sup>a</sup>	<i>p</i> Value
Various operations	78 (20.6)	71 (18.2)	0.12
Which operation	86 (13.1)	85 (9.8)	0.83
Why this operation	80 (20.3)	82 (15.1)	0.60
Experts opinion	84 (15.4)	80 (12.4)	0.20
Procedure	82 (19.3)	66 (23.0)	<b>0.004</b>
Operation time	73 (23.9)	56 (21.5)	<b>0.001</b>
Surgeon	73 (25.1)	69 (20.5)	0.47
Location OR	72 (26.6)	57 (26.7)	<b>0.01</b>
Preoperation consultation	68 (26.3)	69 (22.4)	0.88
Complications	85 (15.3)	80 (11.9)	0.09
Consequences/ complications	86 (15.3)	80 (12.1)	0.08
Complications chance	82 (20.4)	68 (18.1)	<b>0.002</b>
Notice family post OR	77 (23.7)	65 (22.0)	<b>0.02</b>
Waiting list	81 (19.6)	64 (22.1)	<b>&lt;0.001</b>

<sup>a</sup> Values are VAS-scores; range: 0–100 with (SD)

home wound care, outpatient control, and permission to drive a vehicle were judged significantly more important by the patient group than by the surgeons (Table 7).

### Self care

All answers to questions in the domain of self care indicated that patients considered these items more important than surgeons ( $80 \pm 12.5$  versus  $61 \pm 16.7$ ;  $p < 0.001$ ) (Tables 1 and 8).

### General hospital information

Answers to questions concerning the domain “general (hospital) information” indicated that the patient group deemed these items more important than the surgeons, with

**Table 7** Desire for information on general aspects of postoperative period judged by patients and surgeons

Postoperative period	Patients: mean score <sup>a</sup>	Surgeons: mean score <sup>a</sup>	<i>p</i> Value
Location post OR	68 (26.4)	49 (24.9)	<b>0.001</b>
Complaints after OR	78 (22.4)	62 (16.9)	<b>0.001</b>
Sensations after OR	71 (25.7)	54 (21.5)	<b>0.003</b>
Diet	79 (23.4)	50 (20.9)	<b>&lt;0.001</b>
Personal hygiene	75 (24.3)	43 (21.6)	<b>&lt;0.001</b>
Physical handicaps	84 (17.9)	67 (17.7)	<b>&lt;0.001</b>
Home wound care	87 (15.3)	68 (19.7)	<b>&lt;0.001</b>
Allowed to drive	72 (31.9)	58 (25.5)	<b>0.05</b>
Outpatient department control	84 (19.2)	60 (20.7)	<b>&lt;0.001</b>
Location outpatient department	74 (22.5)	51 (22.2)	<b>&lt;0.001</b>
Resume work	65 (30.3)	66 (18.9)	0.93
Total rehabilitation	72 (26.0)	63 (21.4)	0.16

<sup>a</sup> Values are VAS scores; range: 0–100 with (SD)

**Table 8** Desire for information on general aspects of self care judged by patients and surgeons

Self care	Patients: mean score <sup>a</sup>	Surgeons: mean score <sup>a</sup>	<i>p</i> Value
When to contact	81 (18.0)	72 (19.6)	<b>0.03</b>
Wound healing	78 (21.4)	56 (20.0)	<b>&lt;0.001</b>
Self care complaints	83 (16.3)	61 (21.7)	<b>&lt;0.001</b>
Contribution rehabilitation	86 (13.5)	66 (22.5)	<b>&lt;0.001</b>
Relieve pain and discomfort	85 (16.3)	60 (23.3)	<b>&lt;0.001</b>
Activity restrictions	88 (13.1)	62 (23.3)	<b>&lt;0.001</b>
Rehabilitation program	79 (23.4)	64 (21.5)	<b>&lt;0.001</b>
Home care management	79 (23.9)	64 (20.4)	<b>0.006</b>
Cessation treatment	83 (19.3)	68 (19.6)	<b>0.003</b>
Addresses patient support ea.	55 (28.7)	41 (23.6)	<b>0.03</b>

<sup>a</sup> Values are VAS scores; range: 0–100 with (SD)

the exception of a question on internet pages for patient support groups (Table 9).

### Discussion

The present study confirms the supposition that surgical patients, even in a “semi-rural” environment, are interested in all domains of the hospital admission process. In the present study striking differences in opinions were observed in the domains of postoperative period and self care, as patients judged these issues approximately 25% more important compared to their surgeons. On the other hand, our surgeons are convinced that their patients are predominantly focused on aspects belonging to domains of disease, examination, and operation.



**Table 9** Desire for information on general aspects judged by patients and surgeons

General	Patients: mean score <sup>a</sup>	Surgeons: mean score <sup>a</sup>	<i>p</i> Value
Emergency	79 (20.4)	68 (19.8)	<b>0.02</b>
Medications	74 (23.5)	56 (21.8)	<b>0.001</b>
Side effects	77 (23.5)	53 (21.0)	<b>&lt;0.001</b>
Adjust current medications	74 (26.39)	58 (20.52)	<b>0.008</b>
General hospital policy	61 (26.0)	42 (22.9)	<b>0.002</b>
Personnel staff function	63 (28.3)	40 (21.9)	<b>&lt;0.001</b>
Personnel responsibilities	64 (29.1)	49 (28.3)	<b>0.02</b>
Who to turn to	79 (21.9)	58 (20.6)	<b>&lt;0.001</b>
Internet pages	56 (31.6)	47 (28.0)	0.22
Telephone numbers	71 (24.7)	57 (18.3)	<b>0.004</b>
Informed consent	69 (27.0)	47 (30.6)	<b>&lt;0.001</b>
Right to information	70 (26.8)	45 (26.3)	<b>&lt;0.001</b>
Complaints/claims	67 (27.2)	38 (26.2)	<b>&lt;0.001</b>
Medical record	76 (22.8)	46 (29.6)	<b>&lt;0.001</b>
Finances	74 (25.8)	58 (26.5)	<b>0.006</b>
Information plan changes	86 (16.3)	68 (25.0)	<b>0.002</b>

<sup>a</sup> Values are VAS scores; range: 0–100 with (SD)

The results of this study show that surgeons underestimated their patients' need for extensive and adequate provision of preoperative information. Surgeons routinely fail to meet their clients' hunger for information and apparently misperceive the process of information transfer [6, 12–17]. One study concluded that doctors underestimate their patients' desire for information in 65% of their encounters [18]. Surgical patients in an interviewed group of 60 patients were also found to have a selective informational desire as they appeared more interested in specifics of the operation and recovery (43.3% each) than in operative risks (33.3%) [21]. Another study including patients receiving hip surgery demonstrated that they were eager to know almost all aspects of their operation, in contrast to what their doctors thought [22].

Different patient characteristics determine this desire for preoperative information. Gender apparently plays a role, as women visit doctors more often, require more emotional support, ask more questions, and are engaged in more verbal behavior with health care providers compared to men [18, 13]. This higher need for information associated with female gender is anticipated by their doctors, as women usually receive more doctor time and more levels of explanations [18]. The present study confirms this gender difference, as women surgical patients scored significantly higher than their male counterparts in all domains except issues related to the domains disease, examination, and general information (all of which were scored higher by women, but not significantly). Informational needs were not related to the patient's age.

One would assume that complex surgery a priori requires more explanation, and patients scheduled to undergo class 3–6 operations would demand more information than patients undergoing simple class 1–2 surgery, because the topic is more complex and complications more severe. However, our results do not confirm this assumption. In contrast, patients that were scheduled to undergo a class 1–2 operation scored higher in the “self-care” domain than the class 3–6 patients. This apparent contradiction may be explained by the fact that class 1–2 patients are quickly discharged (most of the time on the day of operation) and immediately have to rely on themselves to cope with daily demands. Interpretation of these results must be performed with caution, however, as our patients were allowed to answer questions regarding the operative procedure anonymously, and only 58% of the patients ( $n = 72$ ) reported their operative procedure on the questionnaire. We have no indications that patients who are scheduled for more complex operations have greater informational needs as compared to patients who are scheduled for simpler operative procedures.

Current care providers intend to use the most effective ways to adequately deliver sets of required information that patients can reproduce at any time. Unfortunately, patients appear to remember only few items of all the information that is transferred by their doctors. Their level of knowledge quickly deteriorates from the initial consultation on, despite supportive measures, including information booklets. It may even be argued that patients are insufficiently informed to properly consent to a standard “informed consent procedure” [24, 25]. Improving patient information using alternative strategies may have an impact on these issues and may also have legal consequences.

How can results of the present study be transferred to daily surgical practice? Time restraints as well as lack of skills in basic communication are common in a surgical practice and contribute to suboptimal transfer of information. It is clear from this and other studies that major improvements have to be made in patient education. Interactive computer programs may contribute to solving these problems. One study evaluating the efficacy of a video film on inguinal hernia repair demonstrated improved patient understanding, higher satisfaction, and reduced doctors' time [24]. Moreover, interactive computer programs appear capable of drastically improving knowledge retention from 20% to 80% and may thus be a great improvement for informed consent procedures [26]. A computer program does have the time to discuss all important domains to any extent a patient chooses without ever forgetting important information [27]. A computer program has the potential of aiding in educating patients on specific issues related to the scheduled operative procedure and it buys time for surgeons to answer specific questions.

A recent trial comparing patient education by a doctor or a computer program concluded that doctors indeed can be replaced by a computer program [28]. Patients learned more by using the computer program and were also equally satisfied with either education they received. Modern surgical practice can be improved by using interactive computer programs in patient education.

One may question whether the design of the present study is optimal. For instance, conclusions were drawn on the basis of comparisons of VAS scores. A recent study concluded that an alternative verbal rating score (VRS) may perform better compared to a VAS system [29]. Irrespective of the design, the present study demonstrates that improvements in patient education in general are needed and probably attainable. Future research on the efficacy of computer techniques as an alternative for patient education is warranted.

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