EDITOR'S CHOICE

Driving Factors of Recommending a Hand Surgery Clinic After Surgery

Jarry T. Porsius, PhD,*†‡ Marloes H. P. ter Stege, MSc,*†‡ Ruud W. Selles, PhD,*† Harm P. Slijper, PhD,‡ Hand-Wrist Study Group

Purpose Since a patient's recommendation of a clinic to others is an important indicator of patient experience, more insight is needed into the underlying factors that motivate such recommendations. This retrospective cohort study assessed the relative contribution of the following: (1) patient-related characteristics, (2) treatment outcome, (3) satisfaction with treatment outcome, and (4) patients' experience with the process of care to patients' recommendation of a specific clinic after elective surgery.

Methods Patients of specialized outpatient hand surgery clinics ($N = 6{,}895$) reported the likelihood of recommending the clinic to friends or family 3−5 months after surgery by filling in the Net Promoter Score. Potential predictors of the Net Promoter Score were preoperative patient characteristics, patient-reported treatment outcomes, satisfaction with treatment outcome, and experience with several health care delivery domains. Linear regression analyses were used to examine the contribution of the predictors.

Results Mean age of the patients was 53 (SD, 14) years, 62.5% were women, and 62.5% were employed. Preoperative patient characteristics explained 1% of the variance in clinic recommendations. An additional 6% was explained by the treatment outcome, 21.6% by satisfaction with treatment outcome, and 33.8% by patients' experience with care delivery (total explained variance was 62.3%). The strongest independent predictors of clinic recommendations were positive experiences with the quality of the facilities and the communication skills of the physician.

Conclusions Patient recommendations are more strongly driven by patients' experience with care delivery than by treatment outcome and patient characteristics.

Clinical relevance In elective surgery, improving patient experiences is pivotal in boosting patient recommendation of the clinic. *(J Hand Surg Am. 2023;■(■):■−■. Copyright © 2023 by the American Society for Surgery of the Hand. All rights reserved. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).)*

Key words Elective surgery, health services, Net Promoter Score, patient experience, surgical outcome.

*From the *Department of Plastic, Reconstructive and Hand Surgery, Erasmus MC, University Medical Center Rotterdam, Rotterdam, the Netherlands; †Department of Rehabilitation Medicine, Erasmus MC, University Medical Center Rotterdam, Rotterdam, the Netherlands; and ‡Hand and Wrist Center, Xpert Clinics, the Netherlands.*

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Corresponding author: Marloes H. P. ter Stege, MSc, Department of Plastic, Reconstructive and Hand Surgery & Department of Rehabilitation Medicine, Erasmus MC University Medical Center Rotterdam, Dr. Molewaterplein 50, Rotterdam 3015 GE, the Netherlands; e-mail: m.terstege@erasmusmc.nl.

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Most metrics for measuring the quality of care focus on the outcomes of surgery, such as complication rates, improvement in pain, functioning and quality of life, and/or patients' satisfaction with the treatment outcome.[1] However, these indicators do not incorporate patients' experiences with the process of care, for example, the quality of the facilities.[2–4] These aspects of care delivery are considered fundamental for the quality of care, as it is increasingly recognized by health care providers who administer patient-reported experience measures (PREMs) and patient-reported outcome measures (PROMs).[3–16] In elective surgery, these process aspects of care may be particularly relevant because patients have more opportunities to choose which facility to attend for their procedure.

An easy-to-administer universal metric to assess the quality of service delivery is the Net Promoter Score (NPS).[17–19] This score is based on a single question assessing the likelihood that a customer would recommend a service or product to friends or family. Various industries have adopted the NPS to benchmark their performance against competitors and improve their profits.[20] The NPS has been introduced in health care, such as the "Friends and Family Test," which has been mandatory in all United Kingdom acute hospitals since 2013.[21] The patient recommendation question is also part of several questionnaires developed by the Consumer Assessment of Healthcare Providers and Systems program in the United States.

To further improve surgical care, it is important to understand how patients' care experiences when receiving elective surgery relate to their recommendations of a clinic to others. Studies in other health care domains suggest that patient experiences with processes of care are related to the NPS and overall patient satisfaction.[22–24] Regarding the predictors of patient recommendations in elective surgery, most research has focused on total hip or knee replacement, with only a single study focusing on hand-wrist surgery.[10,18,25,26] These studies report a similar pattern, where process variables (eg, information received about surgery) as well as outcome variables (eg, satisfaction with outcome of surgery) play a role in recommending a specific health care provider to others.[25] This aligns with the results of a study within hand-wrist surgery, which shows functional outcome and overall satisfaction with hospital experience as a predictor of the NPS.[26]

Until now, studies investigating predictors of patient recommendations in elective surgery lack the inclusion of comprehensive measures of care experiences and treatment outcomes. This limits the ability to assess the relative importance of different process and outcome variables when aiming to understand patients' recommendations of a clinic for elective surgery. Therefore, this study aimed to assess the relative contribution of patient-related characteristics, treatment outcome, satisfaction with treatment outcome, and patient experiences with processes of care in a large sample of patients receiving hand surgery in Dutch outpatient surgery centers. The results may help guide professionals in how to improve patient experience in elective surgery.

MATERIALS AND METHODS

Study design and setting

This retrospective cohort study used routinely collected data and included all patients who received surgical care at Xpert Clinics between 2012 and 2017 and filled out all patient-reported measures used in this study. Xpert Clinics provides specialized insured care in hand/wrist surgery and physical therapy, with 22 hand surgeons and $\geq$150 hand therapists working across 16 locations in the Netherlands. All patients receiving treatment at Xpert Clinics are assigned to a "measurement track" at the start of their treatment, which automatically triggers invitations and reminders for completing questionnaires deemed important for monitoring treatment outcomes. Study data were collected and managed using Generic Medical Survey Tracker (GemsTracker) electronic data capture tools.[27] The GemsTracker is a secure web-based application for distributing questionnaires and forms during medical research and health care quality registries. All patients in this study provided informed consent for using their routinely collected data for research purposes, and all data were anonymized prior to analysis. This study received ethical approval from Erasmus MC, Rotterdam, the Netherlands.

Participants

Participants were patients 18 years and older who received surgical care for a hand or wrist disorder at Xpert Clinics and who filled out a patient satisfaction questionnaire 3–5 months after surgery. In patients undergoing multiple procedures, only the first filled-in questionnaires were included in our analysis. Questionnaire timing depended on the treatment and recovery severity: 3 months after surgery for simple procedures (eg, trigger finger release) and 5 months for complex treatments (eg, arthrodesis). Patients were treated for conditions of the finger (31.8%; eg,

Dupuytren contracture and trigger finger), wrist (30%; eg, Quervain tenosynovitis and ulnar impaction syndrome), nerve (21.6%; eg, carpal tunnel syndrome and cubital tunnel syndrome), and thumb (16.6%; eg, thumb base osteoarthritis and mucoid cyst). All patients received an invitation to fill out this questionnaire by email.

Outcome variable

As an outcome variable, we extracted data on the likelihood that patients would recommend the clinic to others on a 10-point scale (1−10), with higher scores indicating a stronger recommendation. This question was part of a larger patient satisfaction questionnaire that included questions on patient experiences with several domains of health care delivery.

Predictor variables

Preoperative patient characteristics: Information on predictors of a recommendation for a clinic was extracted from the GemsTracker outcome database. Before surgery, patient characteristics included sex, age, occupational status (working vs not working), whether the patient came to the clinic for a second opinion, anesthesia type used during surgery (regional or general vs local), and prior surgical treatment for the same problem (ie, recurrent surgery). In addition, before surgery, patients completed a visual analog scale (VAS) for pain as experienced in the preceding week (0 = no pain and 100 = worst imaginable pain) and their perception of the functioning of the hand (0 = no functionality and 100 = full functionality).

Treatment outcome: At 3−5 months after surgery, all patients again completed the VAS pain and VAS function questions. As all treatments at Xpert Clinics focus on reducing pain and increasing function, these postoperative VAS scales were used as a proxy for treatment outcome. The VAS is reliable and valid for measuring pain and hand function.[28]

Patients' experience with health care delivery and satisfaction with treatment outcome: In the patient satisfaction questionnaire, patients rated several aspects of health care delivery according to the Dutch academic grading system (10-point scale; 1 = very poor result and 10 = excellent result). This patient questionnaire assesses experiences across several health care delivery domains.[29]

For the present study, the following five domains were investigated: (1) the physician's communication with patients and perceived competence, assessed with six items (eg, "What do you think of the way the doctor treated you (politeness, etc.?"); (2) the experience with provided treatment information, assessed with three items (eg, "Do you feel you have been well informed about the results, alternatives, and risks of the treatment?"); (3) the perioperative care experience, assessed with four items (eg, "What do you think of the guidance/care provided by the nursing staff?"); (4) the postoperative care experience, assessed with four items (eg, "What do you think of the aftercare provided by the clinic (recovery period, controls, medication, and emergency)?"); and (5) the facility quality, assessed with six items (eg, "What do you think of the hygiene in the clinic?").

Items were averaged to indicate the patient's experience with each domain. Patients also rated their satisfaction with the treatment outcome using the same 10-point scale.

Statistical methods

The internal consistency of the five different patient experience domains was assessed using Cronbach's α. Paired t tests were used to assess whether patients improved in pain and function after surgery. A hierarchical multiple linear regression analysis was performed to assess the contribution of the four different types of predictor variables to clinic recommendations. In this analysis, a set of predictors is entered in a specific sequence to illustrate each set's added amount of explained variance. All preoperative patient characteristics were entered in the first step to establish a starting point. The variables in step 2 (treatment outcomes measured as postoperative pain and function) and step 3 (satisfaction with treatment outcome) were entered to assess their contributions beyond baseline patient status. In the final fourth step, all domains of patients' experience with health care delivery were included because they are less commonly assessed than treatment outcomes. The additional variance explained by each set of predictors was calculated, as were unstandardized and standardized beta coefficients of the individual predictors (categorical predictors were not standardized). The Akaike information criterion is reported for model comparison purposes, with lower numbers indicating better relative model fit. In addition, univariable analyses were run to compare beta coefficients with the multivariable models. A 2-sided $P < .05$ was considered statistically significant. Before conducting the analysis, the assumptions of regression were tested. The assumptions of normality, multicollinearity, homoscedasticity, independence, and linearity were assessed using variance inflation

factor values, scatterplots, and residual plots and by calculating intraclass correlation coefficient values. The patient-reported measures were not normally distributed. However, the model's residuals were normally distributed, and therefore, no adjustments were made. The intraclass correlation coefficient was calculated in a multilevel model with surgeon and patient as the level and in a model with hospital and patient as the level. Both intraclass correlation coefficients were nonsignificant and close to 0 (P = .002 and .003, respectively), indicating no clustering. There was no indication that the assumptions were violated.

RESULTS

Descriptives

Data on predictors and outcomes were extracted for 6,895 patients. The response rate of the patient satisfaction questionnaire was 47%. Table 1 presents the characteristics of the study sample. Patients' pain improved from 47.5 to 21.9 on a 100-point scale (mean difference = 25.6, 95% CI, 24.9−26.4, P < .001) and function improved from 48.4 to 71.5 (mean difference = −23.0, 95% CI, −23.8 to −22.2, P < .001). Experiences with the domains of health care delivery were positive, ranging from an average score of 8.2 to 8.4 (on a 10-point scale).

TABLE 1. Characteristics of the Study Population (n = 6,895)

Preoperative Characteristics	Sample Statistics
Female sex, n (%)	4,307 (62.5)
Age (y), mean (SD)	53.2 (14.21)
Working, n (%)	4,309 (62.5)
Second opinion, n (%)	1,023 (14.8)
Regional or general anesthetics used during surgery, n (%)	3,761 (54.5)
Recurrent surgery, n (%)	776 (11.3)
Baseline VAS pain, mean (SD), 0−100	47.5 (27.45)
Baseline VAS function, mean (SD), 0−100	48.4 (26.32)
Treatment outcome	
Postoperative VAS pain, mean (SD), 0−100	21.9 (23.54)
Postoperative VAS function, mean (SD), 0−100	71.5 (27.19)
Postoperative satisfaction	
Satisfaction with treatment outcome, mean (SD), 1−10	7.7 (1.68)
Patient experience with health care delivery	
Physician communication and competence, mean (SD), 1−10	8.2 (1.07)
Treatment information, mean (SD), 1−10	8.2 (1.05)
Perioperative care, mean (SD), 1−10	8.4 (1.01)
Postoperative care, mean (SD), 1−10	8.2 (1.08)
Quality of facilities, mean (SD), 1−10	8.3 (0.85)
Outcome	
Patient's recommendation of clinic to others, mean (SD), 1−10	8.7 (1.19)

Internal consistency

The items of the five different domains all had good internal consistency as follows: (1) the way the physician communicated with patients and the perceived competence (Cronbach's $\alpha = 0.95$); (2) the experience with provided treatment information (Cronbach's $\alpha = 0.88$); (3) the perioperative care experience (Cronbach's $\alpha = 0.82$); (4) the postoperative care experience (Cronbach's $\alpha = 0.90$); and (5) the quality of the facility (Cronbach's $\alpha = 0.87$).

Driving factors of clinic recommendations

Table 2 presents the outcome of the hierarchical linear regression analysis and the univariable models, whereas Table 3 shows all steps in the analysis to calculate the amount of explained variance for each set of predictors. A relatively small amount of variance in clinic recommendations was explained by preoperative characteristics (1%) and by treatment outcome in terms of pain and hand function after surgery (6%). The largest part of the likelihood that a patient would recommend the clinic was satisfaction with treatment outcome (21.6%) and patients' experience (33.8%) (Fig. 1), which is in line with the large reductions in the Akaike information criterion (Table 3) after including these sets of predictors.

Individual predictors of clinic recommendations

Within the set of preoperative characteristics (model 1, Table 3), visiting the clinic for a second opinion, undergoing surgery with a regional/general anesthetic, and reporting more preoperative pain were all significantly (P < .01) associated with stronger patient recommendations. In the final model (Table 2), these variables remained significant (P < .01) predictors, reflecting independent associations with the outcome; however, the strength of association with baseline pain was reduced.

Treatment outcome was positively related to clinic recommendations (model 2, Table 3). Reduction in pain by 0.008 points and improvement in function by 0.005 points (measured on a 100-point VAS) were

TABLE 2. Beta Coefficients of Univariable and Multivariable Linear Regression Models Predicting the Likelihood of Recommending a Clinic to Others After Surgery ($N = 6{,}985$)

	Patient's Postoperative Recommendation of Clinic to Family or Friends (1−10)			
	Univariable Models*		Final Multivariable Model†	
Predictors	B (95% CI)	β	B (95% CI)	β
Patient characteristics				
Female (reference: male)	0.063 (0.005 to 0.121)	0.05‡	0.076 (0.038 to 0.114)	0.06§
Age	−0.004 (−0.006 to −0.002)	−0.05§	−0.004 (−0.005 to −0.002)	−0.04§
Working (reference: not working)	0.025 (−0.033 to 0.083)	0.02	0.020 (−0.020 to 0.060)	0.02
Second opinion (reference: no second opinion)	0.181 (0.102 to 0.260)	0.15§	0.130 (0.080 to 0.181)	0.11§
Regional/general anesthetics (reference: local anesthetics)	0.097 (0.040 to 0.153)	0.08§	0.103 (0.066 to 0.139)	0.09§
Recurrent surgery	−0.019 (−0.108 to 0.070)	−0.02	−0.026 (−0.082 to 0.029)	−0.02
Baseline VAS pain (0−100)	0.003 (0.002 to 0.004)	0.07§	0.001 (0.000 to 0.002)	0.03§
Baseline VAS function (0−100)	−0.001 (−0.002 to 0.000)	−0.03‡	0.000 (−0.001 to 0.000)	−0.01
Treatment outcome				
Postoperative VAS pain (0−100)	−0.009 (−0.010 to −0.008)	−0.18§	0.000 (−0.001 to 0.001)	−0.01
Postoperative VAS function (0−100)	0.008 (0.007 to 0.009)	0.18§	0.000 (−0.001 to 0.000)	−0.01
Postoperative satisfaction-				
Satisfaction with treatment outcome (1−10)	0.366 (0.352 to 0.381)	0.52§	0.121 (0.106 to 0.135)	0.17§
Patient experience with healthcare delivery				
Physician communication and competence (1−10)	0.753 (0.734 to 0.773)	0.68§	0.209 (0.182 to 0.236)	0.19§
Treatment information (1−10)	0.770 (0.750 to 0.789)	0.68§	0.142 (0.112 to 0.172)	0.13§
Perioperative care (1−10)	0.633 (0.609 to 0.656)	0.54§	0.069 (0.047 to 0.092)	0.06§
Postoperative care (1−10)	0.735 (0.715 to 0.754)	0.66§	0.145 (0.118 to 0.172)	0.13§
Quality of facilities (1−10)	0.954 (0.930 to 0.978)	0.68§	0.404 (0.373 to 0.436)	0.29§

B, unstandardized beta coefficient; β, standardized beta coefficient (for categorical predictors only the outcome was standardized).

*The univariable model examines the association between the recommendations of the clinic at each variable without controlling for the effects of the other variables in the model. For instance, the results show that when you are a woman, the recommendation score is 0.063 points higher when compared with males (unstandardized beta coefficient). The standardized coefficients can be interpreted as follows: with a one SD increase in treatment information (equivalent to a 1.05 increase on this 10-point scale, see SD in Table 1), the recommendation will be 0.68 SD higher (equivalent to a 0.81 increase on this 10-point scale, see SD in Table 1). In the multivariable model, each coefficient describes the independent contribution of that predictor. For instance, when you have a second opinion, the recommendation score increases with 0.130 independent of all other factors.

†In the final multivariable model, all predictors listed in the table were simultaneously entered, Table 3 also shows beta coefficients from the preceding models.

‡$P < .05$.

§$P < .01$.

associated with a 1-point increase in the likelihood of recommending a clinic (on a 10-point scale). The seemingly small numbers (eg, −0.008 for pain and 0.005 for improved function) are largely due to scale differences and the substantial variation in VAS score (SD, approximately 25). Therefore, we recommend focusing on standardized betas, which confirm these small effects (−0.17 for pain and 0.12 for function).

After including satisfaction with the treatment outcomes, these effects of treatment outcomes were reduced (eg, a reduction of −0.17 to 0.03 for pain, see model 3, Table 3), suggesting shared variance between treatment outcomes, satisfaction with outcomes, and patient recommendations. As satisfaction with the outcome was measured on a different scale than that used to report pain and function, it is useful to compare the standardized beta coefficients. One SD increase in satisfaction with the outcome was associated with a 0.54 SD increase in recommending the clinic, which is much higher than the standardized

TABLE 3. Beta Coefficients and Explained Variance of Hierarchical Linear Regression Models Predicting the Likelihood of Recommending a Clinic to Others After Surgery

	Patient's Postoperative Recommendation of Clinic to Family or Friends (1−10)							
	Model 1		Model 2		Model 3		Model 4	
Predictors	B* (95% CI)	β*	B* (95% CI)	β*	B* (95% CI)	β*	B* (95% CI)	β*
Step 1: patient characteristics								
Female (reference: male)	0.007 (−0.055 to 0.069)	0.01	0.001 (−0.059 to 0.061)	0.00	0.031 (−0.022 to 0.084)	0.03	0.076 (0.038 to 0.114)	0.06†
Age	−0.002 (−0.004 to 0.000)	−0.02	−0.002 (−0.005 to 0.000)	−0.03‡	−0.002 (−0.004 to 0.000)	−0.02	−0.004 (−0.005 to −0.002)	−0.04†
Working (reference: not working)	−0.020 (−0.084 to 0.044)	−0.02	−0.033 (−0.095 to 0.029)	−0.03	−0.021 (−0.075 to 0.033)	−0.02	0.020 (−0.020 to 0.060)	0.02
Second opinion (ref. no second opinion)	0.137 (0.055 to 0.219)	0.12†	0.168 (0.089 to 0.247)	0.14†	0.159 (0.090 to 0.229)	0.13†	0.130 (0.080 to 0.181)	0.11†
Regional/general anesthetics (reference: local anesthetics)	0.079 (0.020 to 0.137)	0.07†	0.149 (0.091 to 0.206)	0.13†	0.156 (0.105 to 0.206)	0.13†	0.103 (0.066 to 0.139)	0.09†
Recurrent surgery	−0.049 (−0.139 to 0.041)	−0.04	−0.036 (−0.123 to 0.052)	−0.03	−0.036 (−0.112 to 0.041)	−0.03	−0.026 (−0.082 to 0.029)	−0.02
Baseline VAS pain (0−100)	0.003 (0.002 to 0.004)	0.07†	0.006 (0.005 to 0.007)	0.13†	0.003 (0.002 to 0.004)	0.07†	0.001 (0.000 to 0.002)	0.03†
Baseline VAS function (0−100)	0.000 (−0.001 to 0.002)	0.01	−0.001 (−0.002 to 0.000)	−0.02	0.000 (−0.001 to 0.001)	−0.01	0.000 (−0.001 to 0.000)	−0.01
Step 2: treatment outcome								
Postoperative VAS pain (0−100)			−0.008 (−0.010 to −0.007)	−0.17†	0.002 (0.000 to 0.003)	0.03‡	0.000 (−0.001 to 0.001)	−0.01
Postoperative VAS function (0−100)			0.005 (0.004 to 0.007)	0.12†	0.000 (−0.002 to 0.001)	−0.01	0.000 (−0.001 to 0.000)	−0.01
Step 3: postoperative satisfaction								
Satisfaction with treatment outcome (1−10)					0.386 (0.370 to 0.403)	0.54†	0.121 (0.106 to 0.135)	0.17†

(Continued)

TABLE 3. Beta Coefficients and Explained Variance of Hierarchical Linear Regression Models Predicting the Likelihood of Recommending a Clinic to Others After Surgery (Continued)

	Patient's Postoperative Recommendation of Clinic to Family or Friends (1−10)							
	Model 1		Model 2		Model 3		Model 4	
Predictors	B* (95% CI)	β*	B* (95% CI)	β*	B* (95% CI)	β*	B* (95% CI)	β*
Step 4: patient experience with healthcare delivery								
Physician communication and competence (1−10)							0.209 (0.182 to 0.236)	0.19†
Treatment information (1−10)							0.142 (0.112 to 0.172)	0.13†
Perioperative care (1−10)							0.069 (0.047 to 0.092)	0.06†
Postoperative care (1−10)							0.145 (0.118 to 0.172)	0.13†
Quality of facilities (1−10)							0.404 (0.373 to 0.436)	0.29†
R^2§	0.009‖		0.069‖		0.285‖		0.623‖	
AIC¶	2,367		1,942		125		−4,281	

AIC, Akaike information criterion.

*The beta coefficients (B) of continuous variables should be interpreted as follows: with one unit (one point or 1 year) increase in the predictor variable, the recommendation score changes by an amount equal to the coefficient value. For instance, in model 1 a 1-year increase in age results in a 0.002 lower recommendation score. Similarly, for categorical variables the B is the change in recommendation score when switching to the nonreference condition. For the standardized coefficients (β) change in recommendation score is expressed in SDs to make it possible to compare the relative influence of the different predictors within the model. For instance, with a one SD increase in age (equivalent to an increase of 14.21 years, see SD in Table 1), the recommendation score will decrease by 0.02 SD (equivalent to a decrease of 0.02 points, see SD in Table 1).

†$P < .01$.

‡$P < .05$.

§The R^2 score of 0.069 in model 2 indicates that approximately 6.9% of the variance in the recommendation score is explained by the variables included in this model. Please note that each of the models is a multivariable model, in which the β coefficient describes the influence on the recommendation score independent of the other predictors.

‖F change significant at $P < .001$.

¶Akaike information criterion (lower numbers indicate better model fit), B = unstandardized beta coefficient, β = standardized beta coefficient (for categorical predictors only the outcome was standardized).

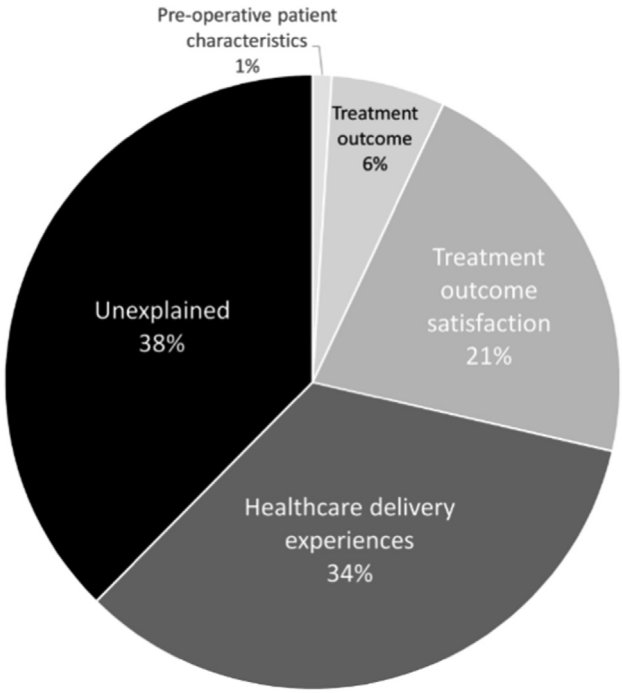

FIGURE 1: Increase in explained variance (R^2 change) of clinic recommendations after each step in the hierarchical multiple linear regression models.

beta coefficients for pain (0.03) or function (0.01), suggesting a more important role for treatment satisfaction.

In the final model (Table 2), all health care delivery domains contributed significantly ($P < .01$) to clinic recommendations, with the effect of satisfaction with treatment outcomes greatly reduced. Standardized beta coefficients indicated that the strongest independent associations with clinic recommendations were obtained for positive patient experiences with the quality of the clinic's facilities and positive experiences with physician communication skills and perceived competence.

DISCUSSION

This study evaluated factors driving recommending a clinic after elective hand surgery, finding that recommendations were more strongly driven by patients' experience with care than by treatment outcomes and patient characteristics.

Like previous studies, we found an association between satisfaction with treatment outcome and recommendations.[22–25] Satisfaction with surgical outcome played a larger role in our study than treatment outcome. This may reflect that other unmeasured outcomes of surgery were more important for patient recommendations. Our findings align with studies demonstrating that patient satisfaction with treatment outcome depends on the extent to which pretreatment expectations are met, distinguishing it from the treatment outcome.[30–35] The initial small effects of treatment outcomes were greatly reduced after considering satisfaction with outcome. This implies that there is an effect on recommending the clinic only when postoperative results in pain and functioning align with the patient's expectations (ie, higher satisfaction with treatment outcome). Experiences with the care process, regardless of postoperative results and satisfaction with those results, were more strongly associated with recommending an elective surgery clinic and, overall, explained more variance. This is consistent with other studies demonstrating the importance of service quality for patient loyalty.[36–38] In particular, in the present study, the perceived quality of the facility and positive experiences with the surgeon's communication skills were important factors. Previous meta-analyses have shown the importance of physicians' communication skills and empathy for treatment outcomes.[39–41] This aligns with a prospective study where positive experiences with the process of care (measured with the same questionnaire as used in the present study) explained up to 12% of the variance in surgical outcomes for Dupuytren disease, as measured with PROMs.[29] The present study suggests that such experiences with the process of surgical care are even more important in explaining patient recommendations because the explained variance of those variables in the present study was 34%.

Discussion continues about the usefulness of patient recommendations for improving the quality of care. Some critics highlight challenges in comparing patient recommendations across clinics due to case-mix differences.[42,43] Others questioned the validity and actionability of using a single recommendation question.[22,24] Although we observed preoperative patient characteristics influencing patient recommendations in outpatient surgery, it only accounted for 1% of the explained variance. In our sample, patient recommendations largely reflected patient-reported surgical outcomes and patient experiences with health care delivery. Both aspects are considered hallmarks of quality of care.[44] Although not directly actionable, a lower patient recommendation score would be a valid indicator for taking action to improve the patient experience.

The main strengths of this study are the large sample of elective surgical patients and the large set

of preoperative and postoperative predictors. However, we acknowledge several limitations. First, generalizing the findings should be done cautiously. The study exclusively includes surgical patients, whereas many hand/wrist clinic patients receive nonsurgical treatment. The choice between surgical and nonsurgical treatment can potentially influence the patient's experience and recommendation. Additionally, variations in health care systems, such as the universal health coverage in the Netherlands compared to many countries where patients pay directly for some or all of the costs of elective surgery, may influence the applicability of these findings. Treatment outcomes and care delivery probably play a larger role in clinic endorsements in countries in the latter scenario.

Second, in our final model, 38% of the variance in recommendations remained unexplained. Future studies could include more postoperative outcomes and patient characteristics, like operative infection rates and preoperative patient expectations, that may influence clinic recommendations. More comprehensive PROMs may explain more variance than the single VAS scores we used. However, we chose the VAS measurement for its general usability across diverse treatments in this study. Future studies could explore whether treatment outcome plays a greater role in recommendations for specific surgeries. In addition, the measurement properties (apart from the internal consistency) of the PREM questionnaire used in this study to assess patient experience with health care delivery are currently unknown. We observed a narrow range across all health care delivery domains, indicating limited responsiveness. The Friends and Family Test demonstrated ceiling effects (27%) and responses clustered at the highest end of the scale, indicating reduced sensitivity. Using a validated PREM might have led to different findings. Third, no data were available if the anesthesia plan was changed on the day of surgery, which could influence the patient experience.

Fourth, the response rate was 47% and may be subject to responder bias. Finally, because the present study is observational, no definitive conclusions can be drawn regarding causality. To this end, experimental studies are required that focus on improving patient experiences.

The clinical implications of our findings are clear: improving patient loyalty and patient experience requires a holistic approach. This implies that it is not only the results of treatment that are important, but also the conditions under which these results were achieved. Factors include proper surgical explanations, respectful treatment by staff, clinic accessibility, a safe environment, and postoperative rehabilitation.

Health care is a dynamic and rapidly growing public service market that is currently facing increasing competition and considerable changes, especially in the face of hospital privatization.[36,45] Mapping the patient's journey, administering PREMs and PROMs, and monitoring NPS, can provide valuable insights to improve the patient's experience.[16,46–48] Our findings suggest that acting on such measures might increase patient loyalty.

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