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Concordance between patient satisfaction and the dentist's view: findings from the National Dental Practice-Based Research Network

Joseph L. Riley III¹, Valeria V. Gordan^{2,*}, Susan Hudak-Boss², Jeffery L. Fellows⁴, Brad Rindal⁵, Gregg H. Gilbert⁶, and for the National Dental PBRN Collaborative Group⁷

¹Department of Community Dentistry and Behavioral Sciences, University of Florida College of Dentistry, Gainesville, FL, USA

²Department of Restorative Dental Sciences, Operative Dentistry Division, University of Florida College of Dentistry, Gainesville, FL, USA

⁴Center for Health Research, Kaiser Permanente Northwest, Portland, Oregon, USA

⁵HealthPartners, Minneapolis, Minnesota, USA

⁶Department of Clinical and Community Sciences, School of Dentistry, University of Alabama at Birmingham, Birmingham, AL, USA

⁷The National Dental PBRN Collaborative Group includes practitioner, faculty, and staff investigators who contributed to this activity. A list is at <http://nationaldentalpbrn.org/collaborative-group.php> under the title "Patient satisfaction with dental restorations".

Abstract

Objectives—This study examined the dentist's view of the patient's experience and concordance with the patient's rating of satisfaction.

Methods—Practitioners from 197 practices in the National Dental Practice-Based Research Network recruited consecutively seen patients who had defective restorations that were replaced or repaired. At the end of the treatment visit, the treating dentist and 5,879 patients completed and returned a survey that asked about the patient's satisfaction.

Results—Dentists viewed their patients as satisfied with their treatment experience (89% n=4,719) and that they had been perceived as friendly (97%, n=5,136). Dentists had less strong feelings about whether patients had a preference for the restorative material (43%, n=2,271) or an interest in information about the procedure (33%, n=1,757). Overall, patients were satisfied, and most of the time dentists correctly predicted this. Among patients who were less than satisfied, there was a substantial subset of cases where dentists were not aware.

Conclusion—For improved patient-centered care, patient desires, expectations and perception of the dental care experience need to be assessed by the dentist and then managed or corrected as needed.

Correspondence to: Valeria V. Gordan.

*Corresponding author

Practice implications—By taking a patient-centered approach, dentists should seek to understand how patients evaluate and rate the service provided, thereby enabling themselves to focus on what each patient values most.

Keywords

Access to care; behavioral sciences; community dentistry; consumer satisfaction; dental care utilization; public opinion; dentist-patient relations; patient affect; patient relations; professional-family relations

INTRODUCTION

A number of studies have shown that the quality of the affiliation between dentist and patient is important to patients (1). Additionally, patient satisfaction is increasingly being seen as an essential element in assessing the quality of oral care (1). Nonetheless, patient satisfaction is multifaceted, and constitutes a complex set of objective and subjective elements (1-3). A large part of this relationship involves communication, and studies have consistently reported that the quality of dentist-patient communication is closely related to patient satisfaction (4-9). Studies of the extent to which patients prefer involvement in decision-making is common in medicine (10), but few studies have examined this for the practice of dentistry. Furthermore, research has shown that caregivers are generally poor judges of patient's actual preferences (11,12), in part because patients often are unable or unwilling to express their expectations and desired needs (13,14).

It has been suggested that satisfaction with a dentist can facilitate stress reduction, which may in turn promote additional satisfaction. Consistent with this finding, several studies have highlighted the importance that patients give to dentists' willingness to discuss patients' perceived fear and pain (8,15,16). By inference, when complications occur or when the patient is in pain and experiencing significant anxiety, the dentist should realize that without proper patient management, the patient's overall experience and satisfaction could be negatively influenced. Thus, assessing patient's perception of the dental experience is important to ensure patient's expectations are consistent with the services to be performed. As few studies have examined dental patient satisfaction for specific dental procedures, it is possible that dentists err in their assumptions.

This study reports findings from participants in the National Dental Practice-Based Research Network, a consortium of dental practices and dental organizations focused on improving the scientific basis for clinical decision-making (17). The network was funded in 2012 and builds upon the former regional dental PBRNs, including the "Dental Practice-Based Research Network (DPBRN)" (18), which existed from 2003-2012. At the time of the current study, the network was primarily composed of clinicians from five regions: Alabama/Mississippi; Florida/Georgia; dentists in Minnesota, either employed by HealthPartners (Bloomington, Minn.) or in private practice; Permanente Dental Associates, in cooperation with Kaiser Permanente's Center for Health Research in Portland, Oregon; and dentists from Denmark, Norway and Sweden. The network has a wide representation of practice types, treatment philosophies, and patient populations, including diversity regarding race, ethnicity, geography and rural/urban area of residence of both its practitioners and their

patients. Analyses of these characteristics confirm that network dentists have much in common with dentists at large (19), while also offering substantial diversity in these characteristics (20).

We were unable to find any studies which examined the extent to which dentists understand their patient's views or experiences during a restorative procedure. Making use of the diversity of patient and practitioner characteristics in the network, we sought to build on our earlier report (2) that patient satisfaction comprised three components (interpersonal relationship-comfort factors, material choice-value factors, and sensory-evaluative factors). Therefore, the aim of this study was to examine the dentist's view of the patient's experience and concordance with the patient's rating of satisfaction, using specific areas of a restorative visit that are important to patients. In particular, we focused on the extent to which dentists were aware of patient's viewpoint, when patients did not report being satisfied. The hypothesis that certain practice, patient, and procedure variables as associated with dentists' lack of awareness was also tested.

RESEARCH DESIGN AND METHODS

Network Dentists

Network practitioners were recruited through continuing education courses and/or mass mailings to licensed dentists within the participating regions. As part of the eligibility criteria, all dentists completed (1) an Enrollment Questionnaire describing their demographic and practice characteristics and certain personal characteristics, (2) an Assessment of Caries Diagnosis and Caries Treatment questionnaire, (3) training in human subjects' protection, and (4) attended a network orientation session with the regional coordinator in their practice. This study was approved by the respective Institutional Review Boards of the participating regions.

Recruitment and data collection

The overall project involved collecting data on the restoration procedures, assessing patient satisfaction with the restorative visit, and a longitudinal follow-up of the restorations. Each participating dentist (n=197) recruited consecutive patients with defective restorations that were replaced or repaired restorations in the treatment of permanent teeth. Each subject was given the Satisfaction Survey Form, along with a stamped envelope, and was instructed to complete the survey the next day. The completed satisfaction survey was mailed directly to the network Regional Coordinators to ensure that dentists remained masked to patient satisfaction ratings. Once the patient questionnaire was received, participants were provided \$10 as compensation or a gift bag with the same value. At the end of the dental restorative procedure, the dentist completed a form about the visit that was forwarded to the regional center. Data from this form are the focus of this manuscript.

Measures

The survey development was an iterative process that began by interviewing with 15 patients who had a recent restorative visit and 16 practicing dentists about specific characteristics of tooth restoration visits that are important to patients. The preliminary set of

questions was designed by several experts in restorative dentistry and field-tested using 9 dentists and 39 persons with a restoration-related dental visit within the previous year. The final patient instrument, which consisted of 20 patient-answered items, is described in detail in another publication (2). A dentist version that asked about selected aspects of the treatment and visit was also developed. This study focused on items from the dentist-answered questionnaire, which was designed to assess the dentist view of the patient experiences and is listed on Table 1. In addition, we compared this questionnaire with the following selected subset of patient-answered questions on satisfaction: Overall; how satisfied were you with all aspects of the dental treatment and visit; the friendliness of my dentist; how my dentist gave me a choice between a silver or white filling; how the dental procedure was explained before it was started; how my dentist limited pain during the procedure; and how my dentist tried to limit my fear and anxiety. Response choices were: very satisfied; satisfied; neutral; dissatisfied; very dissatisfied.

Data Analysis

Patient questionnaires with missing items were dropped from further analysis. For the concordance analysis, patient and dentist responses were recoded to “Satisfied” (very satisfied + satisfied) and “Not satisfied” (very dissatisfied + dissatisfied + neutral). Similarly, dentist responses to the agreement categories were recoded as “Agreed” (strongly agree + somewhat agree) and “Did not agree” (neither agree nor disagree + somewhat disagree + strongly disagree).

A binary logistic model, with Generalized Estimating Equations to adjust for clustering within dental practices and restorations within patients, was used to examine practice, patient, and procedure variables as predictors of dentist’s awareness of their patients’ views. Prediction models were tested for when the patient was “Not satisfied”. This model is based on the premise that a “satisfied” patient is the intended outcome and practice changes are not indicated. The dentist’s awareness of the patient who is not satisfied is the case which has implications for improving clinical practice and is therefore, the focus of this manuscript. Details of patients’ satisfaction ratings have already been reported (2). A backward elimination approach was used that removed the least significant index variable from the model in subsequent steps until all remaining variables were significant using $p < 0.10$ for retention (21). Dentists associated with Permanente Dental Associates or HealthPartners were categorized as large group practice model (LGP). Other practices were assigned by regional coordinators to the categories of solo private practice or small group practice (less than four dentists; SGP) or public health practice (PHP). Other variables in the models were: dentist ratings of the negative consequences associated with treatment (complications, pain, or anxiety); whether the treatment was a replacement or repair; whether the treating dentist placed the original restoration; dentist gender; years since dental school graduation; original and new restorative materials; the tooth involved (coded as molar vs. premolar and anterior); number of surfaces involved; whether the patient has dental insurance; patient age; and patient gender.

RESULTS

Network dentists returned completed restorative data forms for 7,286 patients enrolled in this study. The network Regional Coordinators received a total of 5,879 surveys from these patients (compliance rate of 81%). Of these, 90% (n=5,315) had completed all of the survey items and provided the data used for this paper (dentist and patient characteristics are presented in Table 1). This included a total of 8,213 restorations. Patients who failed to complete all items were older (58.6 years, SD=15.6) than completers (52.3, SD=15.4) and more likely to have been seen in a PHP (13%) compared to SGP (8%) or LGP (7%). Additional information related to patient compliance (as well as the study's data collection forms) is available at <http://nationaldentalpbrn.org/peer-reviewed-publications.php> under the title of this article.

The distribution of response choices for each of the dentists' questions is represented in Table 2. Dentists tended to view their patients as satisfied with their treatment experience (89%, n=4,719) and that they had been perceived as friendly (97%, n=5,136). They had less strong feelings about whether patients had a preference for the restorative material to be used (43%, n=2,271) or an interest in information about the procedure (33%, n=1,757). Dentists agreed that the procedure was painful for 11% of the patients (n=604) and that patient was anxious during 18% of the procedures (n=960). They considered that the procedures went without complications 93% of the time (n=4,947).

Awareness when patients are not satisfied

This series of analyses examined agreement between the patient's satisfaction response and dentist's perception of the patient's experience. The data have been combined to create three categories: (1) "Satisfaction" - Patient is satisfied, (2) "Not satisfied-aware" - Dentist correctly identified the patient's concern or desire but the patient is not satisfied, (3) "Not satisfied-unaware" when the dentist misunderstood the patient's view and the patient was dissatisfied. Percentages and number of patients for concordance between dentist's viewpoint and patient's responses are presented in Table 3.

Overall satisfaction—For the "patient satisfaction" question, 4,589 (86%) of the patients rated themselves as satisfied or very satisfied. Of the 726 patients who were not satisfied, dentists were aware for only 42 of the cases (6%) and unaware for 684 (94%) of the cases. None of the patient or dental variables was associated with the dentist's awareness when the patient was not satisfied.

Friendliness of the dentist—On the "friendliness of the dentist" question, 4,861 (91%) of the patients rated themselves as satisfied. Of the 454 patients who were not satisfied with the friendliness of the dentist, only 37 (9%) correctly identified the patients response (awareness), whereas as for 417 (91%) of the patients the dentists incorrectly responded that they had been perceived as friendly. None of the patient or dental variables was associated with the dentist's awareness when the patient was not satisfied with their friendliness.

Information about the procedure—On the "information about the procedure" question, 3,701 (70%) of the 5,315 patients rated themselves as satisfied. Of the 1,614 patients who

were not satisfied, dentists perceived 947 (59%) of the patients as having an interest in information about the restorative procedure and 667 (41%) as not having an interest. Among patients who were not satisfied, dentists were more likely to know that the patient was interested in information about the restorative procedure if the dentist was using a private practice model (OR = 0.8, 95% CI: 0.6-0.9); the dentist had not placed the original restoration (OR = 1.3, 95% CI: 1.1-1.5); the dentist was female (OR = 1.7, 95% CI: 1.2-2.4); when multiple surfaces were involved (OR = 1.2, 95% CI: 1.1-1.3); when the restoration was in a molar tooth (OR = 1.2, 95% CI: 1.1-1.4); and there were complications (OR = 1.4, 95% CI: 1.1-1.6).

Restoration material choice—On the “material choice” question, 3,396 (64%) of the 5,315 patients rated themselves as satisfied. Of the 1,919 patients who were not satisfied, dentists perceived 736 (38%) of the patients as having a strong preference for the restorative material and 1,183 (62%) as not having a strong preference. Among patients who were not satisfied, dentists were more likely to know that that material choice was important if: the dentist was female (OR = 1.3, 95% CI: 1.2-1.5); the patient was female (OR = 1.4, 95% CI: 1.1-1.7); the procedure was a replacement (OR = 1.3, 95% CI: 1.1-1.7); and there were complications (OR = 1.4, 95% CI: 1.1-1.6). Dentists were less likely to be aware if the replacement material was a composite (OR = 0.2, 95% CI: 0.1-0.3).

DISCUSSION

A number of studies have documented patient ratings of satisfaction with their dentist, with dental care in general, or with their last dental visit. Little information has been collected on dentists’ view of their patients’ experiences or overall satisfaction. We found that dentists believe their patients see them as very friendly and satisfied. However, when patients were not satisfied, dentists were seldom aware. There were also large discrepancies between patients’ lack of satisfaction for several domains of communication and dentists’ awareness of their patients’ desires, suggesting that some dentists need to better assess their patients’ expectations for a treatment visit.

Regardless of patients’ viewpoints, if they are satisfied, we presume that their desires and expectations were acceptably met. Even if the dentist is not aware of the patient’s needs, yet meets or exceeds them, we will arbitrarily define this as a desired outcome. Therefore, the focus of this paper is on the dentists’ view of the patients’ experience during the restorative visit when the patient is not satisfied. The dentist can be either “aware” or “unaware” that the issue is important and that the patient failed to be satisfied. It can be argued that a dentist who is aware of a patient’s lack of satisfaction, but does not address it – lacks the skills, time, or interest to rectify the situation. Nothing can be done when a dentist is not aware, regardless of the dentist’s intention. Thus, the dentist needs to do a better job of “reading” the patient’s expectations and desires for treatment (22). Little attention has been paid to this distinction.

Overall satisfaction

Overall, patients were very satisfied, and most of the time dentists correctly predicted this. Among patients who were less than satisfied, there was a substantial subset of cases (94%)

where dentists were not aware. This measure asked about overall satisfaction with all aspects of the treatment and visit; consequently, we do not know the specific nature of the dissatisfaction. Dental patients seek not only technical competence in a dentist, but also interpersonal skills to reduce their anxiety, and ultimately, to be satisfied with the visit (23,24). Experiencing anxiety during dental treatment is a common problem (25) and fear of pain is one of the most commonly cited factors associated with dental anxiety (26). Based on dentists' reports, approximately 18% of patients in this study experienced anxiety, and for 12%, the procedure was painful. Surprisingly, pain and anxiety as reported by the dentists were not associated with patient report of overall satisfaction. We speculate that because patients understand the potential for negative experiences during dental treatment (i.e., painful), and because of other overriding positive factors, such as a high level rapport and trust, patients were satisfied.

Relationship factors

Studies of patient-physician encounters have generally supported that patient-caregiver pairs were more frequently found to be similar in affiliation than on other dimensions, with both groups showing friendliness and cooperation, including greater nonverbal "interaction synchrony" (10). In our study, patients overwhelmingly reported that their dentists were very friendly (2). Ross and Duff (27) also found that in general dentists were friendly but that when patients were not satisfied with the dentist's friendliness, the dentists often misinterpreted the patient's preferences for treatment. Dentists in our study also perceived themselves as friendly, agreeing with the friendliness statement following 97% of the restorative visits. As with the global satisfactions rating, when patients were not satisfied, dentists seldom appeared to be aware. None of the practice, patient, and procedure variables were associated with accurately predicting dentist's awareness of patient's lack of satisfaction with their friendliness.

Communication

One of the more interesting findings from this study involved direct communication between dentist and patient – the level of information provided about the procedure before it was started and having input about the restorative material choice. Ratings of satisfaction among dental patients were considerably lower for these questions than the others. In addition, although the percentages for dentists' lack of awareness were lower than for the satisfaction or friendliness variables, misunderstanding their patient's level of interest occurred at a higher frequency for the dentist-patient communication behaviors. Our finding is consistent with studies that have compared patients' views of ideal and actual behaviors of dentists (28-30). In these studies, the largest discrepancies fell into the 'communicative and informative' factor. The authors speculate that because dentists are so familiar with the procedures, they forget the importance of explaining them to patients.

Network dentists rated patient interest in information as relatively low, with only 34% agreeing with the statement that the patient was interested in information about the procedure. Dentist's misinterpretation of the patient's interest could explain why satisfaction was relatively low. It is surprising that when patients were not satisfied, dentists more often than not, knew that the patient had an interest in information (i.e., they were aware). This

would support the assumption that dentists either did a poor job in communicating or made a conscious decision not to provide more details or provide a review of the details already covered.

When the restorative procedure involved complications, dentists were more likely to be aware of patient's interest in information. Similarly, awareness by dentists was more likely if the procedure involved multiple surfaces or was performed on a molar tooth, both situations which make for a more complicated case. Consequently, in situations of higher risk, dentists appear to take greater care to review what may occur than in simpler procedures. Lack of awareness of the need for information was also associated with the dentist having placed the original restoration. One possibility is that with long-time patients, dentists presume that the patients "just trust them" and no explanation is needed (31).

Patients were least satisfied with having a choice regarding the restoration material. To compound this, dentists often had no knowledge of patients' lack of satisfaction. Awareness was associated with the procedure being a replacement and if there were complications. As discussed above, dentists may be more likely to cover restorative materials in pre-treatment discussions for more complex cases. Dentists were less aware of the interest in a material choice when the original restorative material was an amalgam, but awareness was not associated with the choice of replacement material. It should be noted that amalgam was not the main restorative material used when repair or replacement took place and dentists were significantly more likely to replace the restorative material when the material in the original restoration was amalgam (32).

There was an interesting finding related to the gender of the dentist. A male dentist was less likely to be aware than female dentists of the importance for both procedural information and discussion of material choice. There are two possible explanations, which are not mutually exclusive. The first is related to gender differences in health care provider communication patterns. Research indicates that women providers generally conduct longer consultations, give more information, and are more explicitly reassuring and encouraging than are male clinicians (33-35). Secondly, studies show that patients, regardless of gender, often vary their responses depending on the clinician's gender (36,37). In addition, the gender make-up of the patient-provider dyad may influence overall patient satisfaction (38). A patient gender difference effect also occurred, but only for the material choice variable, as dentists were less likely to be aware when the patient was male. There is evidence that health care providers may provide more information and support to female patients, not because of presumptions about the health needs of women, but because female patients more openly express their feelings, concerns, and questions (39).

Patients involved in decisions

Findings from research among physicians indicate little agreement between patients' and physicians' perceptions of the physician-patient relationship (33,40,41). Dentists report that they are aware of patients' preferences in treatment decision (42,43); however, our results suggest that often they are not. Several reviews indicate that patients vary in the extent to which they want to be involved in their health care, with some patients wishing to become active in treatment decision-making, while others prefer to adopt a passive role (44-46).

Neufeld et al (47) found that increasing patients' knowledge of available options increased their willingness to participate in treatment decisions, but when a mismatch occurred – it involved patients who enacted less-active roles than they preferred (10). It is possible that the patients in our study, just as have been documented by other studies, failed to match their desire for information and participation with their overt behavior (13,48).

CONCLUSION

The primary finding of this study was that when dental patients are not satisfied, dentists are often unaware. This was most common for patients' desire for greater communication and, surprisingly, most often occurred during less-complicated restorative procedures. The main implication is that for improved patient-centered care, patient desires, expectations and perception of dental care experience need to be determined by the dentist and then managed or corrected as needed, for all cases. To reach a mutual understanding of the nature of the problem and its solutions, dynamic communication during dental visits should take place. It appears that for some dentist-patient dyads, this does not occur.

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Table 1

Descriptores of the study: 195 dentists and 5,315 patients.

Variable	Mean (SD) or % (n)
Dentists characteristics (n=195)	
Gender (male)	70% (n=137)
Years since dental school graduation	22.4 (SD=10.5)
Percent of time spent on non-implant restorative care (missing=12)	60% (SD=20)
Practice model used by dentist	
SGP	57% (n=110)
LGP	37% (n=72)
PHS	7% (n=13)
Practices by region	
Alabama/Mississippi	20% (n=39)
Florida/Georgia	23% (n=44)
Permanente Dental Associates	21% (n=40)
HealthPartners and practitioners in Minnesota	18% (n=36)
Scandinavia (Denmark, Norway, Sweden)	18% (n=36)
Patients characteristics (n=5,315)	
Patient gender (male)	42% (n=2,206)
Patient age	52.4 (SD=15.5)
Race/ethnicity (missing = 102)	
Hispanic	12% (605)
White	80% (n=4,176)
Black	5% (n=261)
Other	3% (n=176)
Patients seen in each practice model	
SGP	61% (n=3,248)
LGP	35% (n=1,807)
PHS	5% (n=260)
Number of restorations per patient (total restorations = 8213)	
Single restoration	77% (n=4,064)
Two restorations	18% (n=941)
Three restorations	4% (n=224)
Four restorations	2% (n=86)
Percent patients with dental insurance	22% (n=1175)

Table 2

Dentist viewpoint of the patient's experience.

	Strongly agree % (n)	Somewhat agree % (n)	Neither agree nor disagree % (n)	Somewhat disagree % (n)	Strongly disagree % (n)
Overall satisfaction with all aspects of the dental treatment and visit ^(a)	32% (1,721)	56% (2,998)	11% (559)	<1% (36)	<1% (1)
The patient perceived me as friendly ^(b)	55% (2,900)	42% (2,236)	3% (161)	<1% (9)	<1% (9)
The patient had a strong preference for the restoration material I used today ^(b)	17% (916)	26% (1,355)	42% (2,225)	9% (465)	7% (354)
The patient was interested in information about the restorative procedure ^(b)	7% (367)	26% (1,390)	47% (2,486)	14% (768)	6% (304)
The filling procedure was painful for the patient today ^(b)	<1% (46)	11% (558)	10% (540)	28% (1,506)	50% (2,665)
The patient was anxious during the restorative procedure today ^(b)	4% (215)	14% (745)	16% (822)	25% (1,328)	42% (2,205)
The restoration procedure went without complications ^(b)	67% (3,559)	26% (1,388)	3% (167)	3% (160)	<1% (41)

^(a) Response choices were: Very satisfied; Satisfied; Neutral, Dissatisfied, Very dissatisfied.^(b) Response choices were: Strongly agree, Somewhat agree, Neither agree or disagree, Somewhat disagree, Strongly disagree

Table 3

Concordance between dentist’s viewpoint and patient’s responses.

	Patient is Satisfied % (n)	Patient is not satisfied	
		Agreement Dentist aware (a)	Disagreement Dentist not aware (b)
Overall satisfaction	86% (4,589)	1% (42)	13% (684)
Friendliness	90% (4,861)	1% (37)	9% (417)
Explain the procedure	70% (3,701)	18% (947)	13% (667)
Material choice	64% (3,396)	14% (736)	23% (1,183)

(a) Dentist’s response is congruent with patient’s viewpoint (i.e., patient was not satisfied with friendliness and dentist indicated patient did not perceive him or her as friendly).

(b) Dentist’s response is not congruent with patient’s viewpoint (i.e., patient was not satisfied with friendliness and dentist indicated patient did perceive him or her as friendly).