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Abstract

Patient experience measurement has become a basic requirement for every healthcare provider organization. Yet, when the timing and mode of survey administration are considered, there is skepticism about the usefulness of ‘after-visit’ patient experience surveys to measure satisfaction and identify opportunities to improve service or health care quality. The aim of this observational study was to compare patient satisfaction among those who rated the patient experience at the conclusion of their outpatient appointment while still in the office, to that among those who rated the patient experience up to one month after their outpatient appointment via a mailed survey. Two sampling strategies were used to collect patient experience data from patients of the University of Maryland Family and Community Medicine practice: a postal survey to collect data from patients approximately 30 days after their visit (the After-Visit survey), and a within-visit survey to collect data from patients during their visit (the In-Visit survey). Nineteen survey questions measured comparable constructs between the After-Visit and In-Visit. This study did not find any significant differences between the data sources for any of these questions. The study showed that patient satisfaction could be assessed within a visit or by mail 30 days later without a statistically significant effect on mean responses.

Keywords

Patient satisfaction, patient experience measurement

Introduction

Patient experience measurement has become a basic requirement for every healthcare provider organization. The results of patient experience surveys are often used as indicators of health care quality and tied to pay-for-performance programs such as CMS’ Value-Based Purchasing.¹ Researchers have concluded that patient experience is an inherently meaningful component of the overall success of a clinical practice.²⁻⁴ Furthermore, healthcare organizations have endorsed patient experience measurement as an important component of a data-driven, comprehensive model for improving service and creating long-term value.⁵ Health care organizations use patient experience data to identify best practices and define process improvement opportunities.¹

Even with these assertions, when the timing of survey administration and survey mode are considered, there is skepticism about the usefulness of ‘after-visit’ patient

experience surveys to measure satisfaction and identify opportunities to improve service or health care quality.^{6,7} Specifically, it is suggested that in-visit surveys would provide immediate feedback which allows patients to more accurately recall the experience they had during their appointment,² limiting nonresponse bias and thereby protecting the validity of the data.¹ Timing of surveys has been suggested as a predictor of patient satisfaction ratings in healthcare, with ratings measured longer after a visit tending to show lower satisfaction.⁸⁻¹⁴

The aim of this observational study was to compare patient satisfaction among those who rated the patient experience at the conclusion of their outpatient appointment while still in the office, to that among those who rated the patient experience up to one month after their outpatient appointment via a mailed survey.

Methods

Participants were patients who had a visit to the University of Maryland Family and Community Medicine practice in Baltimore, Maryland, USA. Two sampling strategies were used: a postal survey to collect data from patients approximately 30 days after their visit (the After-Visit survey), and a within-visit survey to collect data from patients during their visit (the In-Visit survey). The current study used After-Visit survey data from patients whose visits occurred from September 1, 2013 to February 28, 2014. The In-Visit survey data was collected from December 1, 2013 to February 21, 2014. The institutional review board at the University of Maryland School of Medicine approved research activities.

For the In-Visit survey, at the beginning of their visit, a medical practice representative gave each patient a paper survey and instructions for completing the survey. Patients were informed that the survey was for research purposes only and that participation was optional. Surveys were given to the parent, guardian, or guarantor of patients under 18 years of age. Patients completed the survey during the medical encounter and placed the completed survey in a marked lock box before leaving the practice site. Each week a member of the University of Maryland's Clinical and Translational Research Informatics Center picked up survey batches from the locked box in the practice.

The After-Visit survey was administered using a mail methodology. Press Ganey Associates, Inc. (South Bend, IN, USA) administered the survey. All methodology and survey instruments for the After-Visit survey are the intellectual property of Press Ganey Associates, Inc.¹⁵ Each week a file that contained patients' names and addresses, along with limited visit information, was extracted from the clinic's practice management system. All patient accounts that had confirmed visit activity the prior week were eligible for the file upload. The upload excluded deceased patients, newborns, patients restricted due to state regulations, and patients requesting no contact. The file was securely transferred to the clinic's survey vendor using secure File Transfer Protocol. After checking for and removing duplicate names and faulty addresses, the vendor's automated system randomly selected approximately 26 patients per week (104 patients per month) to receive a survey. The vendor mailed surveys and postage-paid return envelopes to randomly selected patients. The surveys were sent to the parents or guarantors of patients younger than 18 years. Patients completed the survey and mailed the survey back to the survey vendor. The survey vendor scanned and posted survey data to an online reporting tool for review by the clinic.

Different questionnaires were administered to the After-Visit and In-Visit respondents, owing to intellectual property considerations for the After-Visit survey. The After-Visit survey asked 29 patient satisfaction questions that are considered in the current analysis, and the In-Visit survey asked 23 patient satisfaction questions that are analyzed here, with an overlap in constructs of 19 questions. The patient satisfaction questions were divided into six domains or topics: Scheduling, Arrival, Contact with Care Team, Office and Staff, Overall Satisfaction, and Self-Rated Health. All of the patient satisfaction and self-rated health questions were graded on a five-point Likert scale, with higher scores indicating higher levels of satisfaction or health. For the patient satisfaction questions, the available response options on each survey were: Very Poor, Poor, Fair, Good, and Very Good. For the self-rated health questions, the available response options on each survey were: Poor, Fair, Good, Very Good, and Excellent. Each survey also asked additional questions about sociodemographic characteristics.

Analysis

The psychometric properties were analyzed for each of the two surveys, within each of the six domains. The internal reliability of each domain within each survey was computed, using Cronbach's alpha as the result statistic. The domains were judged to have adequate internal reliability if they returned a Cronbach's alpha of at least 0.7, meaning that the different questions within the same domain were all measuring a similar construct. The analysis calculated the mean scores and standard deviations of the responses to each patient satisfaction and self-rated health question. Mean responses between the two surveys were then compared for the 19 common questions, using Student's t tests. Within each survey, the analysis then measured which sociodemographic factors were associated with overall measures of satisfaction (likelihood of recommending the practice and the quality of the overall experience), using analysis of variance (ANOVA). The associations between overall measures of satisfaction and self-rated health were reported using Pearson's product-moment correlation coefficients (r). All statistical analysis was performed using STATA 12 (College Station, TX, USA). Because of the large number of simultaneous comparisons being made, the threshold to judge statistical significance was set to $\alpha=0.01$ when comparing mean results between the two surveys. The significance level for all other analysis was $\alpha=0.05$.

Results

Sample characteristics

The sample consisted of 50 respondents who replied to the After-Visit survey and 1,112 respondents who returned the In-Visit survey (Table 1). The estimated response rate for the After-Visit survey was 8.2%. Majorities of each sample were black or African-American (72% for the

Table 1. Patient characteristics, After-Visit and In-Visit Samples

After-Visit		In-Visit	
Characteristic	% (n)	Characteristic	n (%) or mean (SD)
Time frame	Sep 2013 -Feb 2014	Time frame	Dec 2013 -Feb 2014
Estimated response rate	8.2%	Number	1112
Number	50	Age, mean (SD)	39.5 (16.7)
Race*		Race	
White	23% (11/47)	White	16% (178/1098)
Black	72% (34)	Black	80% (873)
Asian	0%	Asian	2% (17)
Pacific Islander	0%	Hispanic/Latino**	1% (14)
Amer. Indian/Alaska Native	2% (1)	Other	1% (16)
Other	6% (3)		
Latino**	2% (1/43)		
Highest education		Main insurance	
8 th grade or less	10% (4/39)	Private	40% (420/1046)
Some HS, did not grad.	8% (3)	Medicaid	41% (425)
High school grad/GED	18% (7)	Primary Adult Care	5% (54)
Some college/2-yr degree	46% (18)	Medicare	14% (143)
4-yr college grad	10% (4)	No ins/self-pay	0.4% (4)
More than 4-yr college degree	8% (3)		
Unable to fill out own survey	5% (2/41)	Saw regular doctor/nurse today*	41% (403/976)
Usually see this care provider (CP)	56% (20/36)	Have regular doctor/nurse at Univ. Fam. Med.	72% (775/1071)
How long going to this CP		How long coming to office	
< 6 months	35% (13/37)	First visit	12% (131/1098)
≥6 months, <1 year	11% (4)	<1 year	16% (173)
≥1 year, <3 years	22% (8)	1-5 years	30% (326)
≥3 years, <5 years	14% (5)	>5 years	43% (468)
≥5 years	19% (7)		
		Walk-in	21% (231/1090)
		Scheduled	79% (859)

*Patients able to select more than one race in After-Visit, but not In-Visit survey

**Latino ethnic item asked as a separate question for After-Visit, but not In-Visit survey

After-Visit survey, and 80% for the In-Visit survey). Two respondents to the After-Visit survey utilized assistance in filling out their own survey, whereas assistance was not explicitly provided or recorded for the In-Visit survey. Seventeen of 37 (46%) After-Visit participants with responses answered that they had been going to the health care provider for less than one year, whereas 28% of In-Visit respondents said that they had been going to the health care practice for less than one year; the p-value comparing the two samples is 0.02 (not shown in the table), although it should be noted that questions about providers and practices may not be comparable in construct.

Psychometric results

The six question domains each demonstrated adequate or nearly adequate levels of internal reliability for the After-Visit sample (Table 2). The “Own Health” domain

produced the lowest internal reliability estimate for the After-Visit sample (Cronbach’s alpha 0.69 for two items), and the “Contact with Care Team” domain returned the highest estimate (0.96 for 11 items). Four of these domains were tested using multiple questions in the In-Visit survey, all of which had high levels of internal reliability. For this sample, the “Scheduling” domain yielded the lowest internal reliability estimate (Cronbach’s alpha 0.79 for three items), and the “Contact with Care team” domain had the highest estimate (0.96 for 10 items).

Comparisons between samples

Five of the six question domains had multiple questions in common between the two surveys. In none of these five domains did the total mean response show a significant difference (Table 3). For two domains, a borderline non-significant difference appeared, with the In-Visit respondents reporting slightly higher levels of satisfaction

Table 2. Internal reliability of each survey domain

Domain	After-Visit	In-Visit
Scheduling , Cronbach's alpha (n of items)	0.77 (3 items)	0.79 (3 items)
Arrival	0.84 (3)	0.83 (5)
Contact with care team	0.96 (11)	0.96 (10)
Office and staff	0.90 (8)	N/A (1 item)
Overall	0.86 (2)	0.93 (3)
Own health	0.69 (2)	N/A (1 item)

Cronbach's alpha coefficients

with Scheduling (8.66 vs. 8.22 combining two questions; $p=0.05$) and Arrival topics (12.52 vs. 11.87 combining three questions; $p=0.08$) than the After-Visit respondents.

Of the nineteen questions that were comparable between the two surveys, none saw a significant difference (at $\alpha=0.01$) in mean responses between surveys. If α were increased to 0.05, only the question "courtesy of registration staff" had a significant difference, with a mean response of 4.33 (SD 0.87) in the After-Visit survey and 4.56 (SD 0.68) for the In-Visit survey.

Correlates to satisfaction

The two samples reported similar means scores on the most general measures of satisfaction (Table 3). After-Visit and In-Visit respondents reported mean scores of 4.50 and 4.55, respectively, for "likelihood of recommending care provider," ($p=0.64$). For "likelihood of recommending practice," the After-Visit respondents' mean score was 4.40 and the In-Visit mean response was 4.50 ($p=0.37$). Only the In-Visit respondents were asked to rate their overall experience, to which their mean response was 4.50.

Age, which was only captured in the In-Visit survey, was positively correlated to "likelihood of recommending practice" and overall experience, with those age 65+ years reporting the highest scores for these questions (Table 4). Health insurance was not statistically related to satisfaction among the In-Visit sample, and neither race nor length of time using the practice or care provider was significantly associated with satisfaction in either sample.

In the In-Visit sample, overall health ratings positively correlated to likelihood of recommending the care provider (Pearson's correlation coefficient (r)=0.15, $p<0.01$) or practice ($r=0.15$, $p<0.01$), as well as to quality of the overall experience ($r=0.16$, $p<0.01$). These relationships for "likelihood of recommending" were also positive, but were not significant, for the After-Visit respondents. Among the After-Visit sample, mental and emotional health ratings were weakly correlated to the likelihood of recommending the care provider ($r=0.26$, $p=0.09$) and the practice ($r=0.31$, $p=0.05$).

Discussion

It has been suggested that in-visit surveys, as opposed to mailed surveys, would provide immediate feedback thereby allowing patients to more accurately recall the experience they had during their appointment.^{2, 16} In addition, the in-visit surveys would provide more survey responses and limit nonresponse bias thereby reducing the threat to validity of the data.¹ This study did not find any significant differences between the data sources, from mailed or in-visit surveys, for any of the 19 questions that were compared.

The only question that had even borderline significance was for "Courtesy of registration staff," for which In-Visit respondents reported slightly higher satisfaction than did After-Visit respondents. This borderline significance is likely attributed to what is known as social desirability bias, the tendency of survey respondents to answer questions in a manner that will be viewed favorably by others since the registration staff gave each patient a survey at the beginning of the visit.¹⁷

While in-visit surveys yielded more responses that included immediate recall of the patient's experience, the data from the mailed survey responses was still valid and useful to identify best practices and define process improvement opportunities. Healthcare organizations should continue to listen to the voice of the patient via patient experience surveys regardless of survey mode.

In addition to the effect of timing, the mode of data collection may have played a part in the results.^{6, 18, 19} For After-Visit surveys, for example, telephone interviews may have promoted higher response rates and different satisfaction reporting patterns compared to the mailed survey used for the current survey;²⁰ however, switching to a different, more expensive mode of collection for the After-Visit survey would have limited generalizability and added an unnecessary variable in the comparison between surveys.

Mean responses to questions measuring similar constructs were directly compared between the In-Visit and After-Visit surveys. However, due to a need to respect the intellectual property represented by the After-Visit survey

Table 3. Comparison of responses to satisfaction survey questions between After-Visit and In-Visit respondents.

Question	After-Visit	In-Visit	p-value ^t
Number	49	1065	
	Mean (SD)		
A. Scheduling (2 common items)	8.22 (1.71)	8.66 (1.51)	0.05
A1. Ease of making appointment	4.00 (1.15)	4.25 (0.96)	0.09
A2. Convenience of office hours	4.25 (0.79)	4.41 (0.75)	0.14
A3. Ease of getting office staff on phone	3.65 (1.18)	NC	
A4. Courtesy of staff making appt	NC	4.56 (0.68)	
B. Arrival (3 common items)	11.87 (2.81)	12.52 (2.26)	0.08
B1. Courtesy of registration staff	4.33 (0.87)	4.56 (0.68)	0.03
B2. Waiting time	3.88 (1.11)	3.95 (0.99)	0.60
B3. Staff kept you informed of delays	3.79 (1.12)	4.00 (1.03)	0.20
B4. Registration process	NC	4.60 (0.62)	
B5. Comfort of waiting room	NC	4.16 (0.78)	
C. Contact with care team (10 common items)	45.05 (6.05)	45.37 (5.95)	0.73
C1. Courtesy of MAs	4.42 (0.79)	4.41 (0.74)	0.93
C2. Concern MAs showed	4.28 (0.83)	4.35 (0.75)	0.57
C3. Time CP spent with you	4.43 (0.76)	4.47 (0.72)	0.67
C4. Concern CP showed	4.49 (0.71)	4.58 (0.66)	0.36
C5. Friendliness of CP	4.55 (0.61)	4.61 (0.63)	0.53
C6. Confidence in CP	4.49 (0.77)	4.59 (0.65)	0.31
C7. Follow-up information provided by CP	4.43 (0.71)	4.57 (0.65)	0.14
C8. Explanation by CP	4.47 (0.74)	4.56 (0.68)	0.35
C9. CP involved you in decisions	4.47 (0.78)	4.54 (0.70)	0.47
C10. CP used words you could understand	4.51 (0.74)	4.61 (0.63)	0.26
C11. Medication information provided by CP	4.41 (0.75)	NC	
D. Office and staff			
D1. Staff worked together	4.38 (0.70)	4.50 (0.68)	0.24
D2. Staff ensured safety	4.54 (0.62)	NC	
D3. Staff's sensitivity for concerns	4.31 (0.77)	NC	
D4. Staff's respect for privacy	4.35 (0.76)	NC	
D5. Cleanliness of practice	4.38 (0.73)	NC	
D6. Clarity of bill	4.23 (0.92)	NC	
D7. Billing questions resolved	4.18 (1.06)	NC	
D8. Ease of parking	3.34 (1.35)	NC	
E. Overall (2 common items)	8.90 (1.47)	9.05 (1.39)	0.47
E1. Would recommend CP	4.50 (0.81)	4.55 (0.71)	0.64
E2. Would recommend practice	4.40 (0.76)	4.50 (0.74)	0.37
E3. Overall rating of experience	NC	4.50 (0.69)	
F. Own health			
F1. Rate own health overall	3.09 (0.95)	3.41 (1.09)	0.06
F2. Rate own mental/emotional health	3.33 (1.20)	NC	

^tStudent's t test

SD: standard deviation. NC: Not collected. CP: care provider. MA: medical assistant

For all questions, except "Own Health" domain, the options were: 1-Very poor, 2-Poor, 3-Fair, 4-Good, 5-Very good

For "Own Health" domain, the options were: 1-Poor, 2: Fair, 3-Good, 4-Very good, 5-Excellent

tools, the questions could not be identical between the surveys. The researchers can therefore not rule out that differences in questions and interpretations could have led to latent differences in responses.

The In-Visit survey method was able to quickly attain appreciable numbers of respondents, whereas the After-Visit survey suffered from a low response rate. The study did not attempt to correct for the low response rate of the After-Visit Survey, nor did the design phase of the study

attempt to artificially prevent the expected bias resulting from low response. The study's research question involved measuring and comparing the bias inherent in the two survey approaches. The low numbers in the After-Visit survey sample necessitated a somewhat wider window for data collection in that arm of the study in order to produce sufficient power for analysis. Still, the variances for the After-Visit survey mean responses remained quite high compared to those of the In-Visit survey.

Table 4. Correlates to overall satisfaction

Characteristic	Would recommend practice						Overall experience		
	After-Visit			In-Visit			In-Visit		
	n	Mean (SD)	p ^a	n	Mean (SD)	p ^a	n	Mean (SD)	p ^a
Age						<0.01			<0.01
<18				54	4.46 (0.72)		52	4.42 (0.72)	
18-34				340	4.49 (0.73)		338	4.49 (0.69)	
35-64				456	4.48 (0.76)		459	4.48 (0.69)	
65+				70	4.81 (0.39)		70	4.79 (0.41)	
Race			0.81			0.91			0.98
White	11	4.45 (0.69)		151	4.52 (0.70)		150	4.50 (0.68)	
Black	32	4.31 (0.82)		735	4.50 (0.74)		735	4.50 (0.69)	
Other	4	4.50 (0.58)		39	4.46 (0.82)		38	4.47 (0.73)	
Insurance						0.87			0.62
Private				359	4.50 (0.76)		360	4.51 (0.66)	
Public				526	4.50 (0.72)		525	4.49 (0.71)	
How long at practice/CP			0.85			0.48			0.52
<1 year	17	4.47 (0.80)		247	4.50 (0.75)		248	4.51 (0.69)	
1-5 years	13	4.31 (0.75)		286	4.46 (0.78)		284	4.46 (0.73)	
5+ years	7	4.43 (0.79)		394	4.53 (0.71)		394	4.51 (0.67)	

^ap-values from ANOVA

SD: standard deviation. CP: care provider.

Age and health insurance information were not collected for the After-Visit sample. The After-Visit sample also did not rate satisfaction with the overall experience

Table 5. Correlations between overall quality measures and self-rated health

Quality measure	Overall health		Mental/emotional health	
	Corr. coef. ^c	p-value	Corr. coef. ^c	p-value
Recommend care provider				
After-Visit	0.23	0.13	0.26	0.09
In-Visit	0.15	<0.01	NC	
Combined	0.15	<0.01	NC	
Recommend practice				
After-Visit	0.25	0.11	0.31	0.05
In-Visit	0.15	<0.01	NC	
Combined	0.16	<0.01	NC	
Overall experience (In-Visit only)	0.16	<0.01	NC	

^cPearson's product-moment correlation coefficients

NC: Not collected.

Personally identifiable information was not collected as part of the In-Visit survey; as such information could not be collected or protected adequately in a real-world clinic-based anonymous satisfaction survey. As such, it was not possible to identify who, if any, patients submitted both In-Visit and After-Visit surveys in the current study. Also, in an attempt to bolster anonymity and preserve a practicable response rate, sociodemographic data was not collected in the In-Visit survey.

Implications for practice

The current study showed that patient satisfaction could be assessed within a visit or by mail 30 days later without a statistically significant effect on mean responses. In studies comparing assessment methodologies, care must be taken in order to ensure that patient satisfaction constructs are being measured with similar instruments.

References

- Boscardin CK, Gonzales R. The impact of demographic characteristics on nonresponse in an ambulatory patient satisfaction survey. *Jt Comm J Qual Patient Saf.* 2013;39:123-128.
- Anhang Price R, Elliott MN, Zaslavsky AM, et al. Examining the role of patient experience surveys in measuring health care quality. *Med Care Res Rev.* 2014;71:522-554.
- Doyle C, Lennox L, Bell D. A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open.* 2013;3:10.1136/bmjopen-2012-001570.
- Hekkert KD, Cihangir S, Kleefstra SM, van den Berg B, Kool RB. Patient satisfaction revisited: a multilevel approach. *Soc Sci Med.* 2009;69:68-75.
- Kennedy DM, Caselli RJ, Berry LL. A roadmap for improving healthcare service quality. *J Healthc Manag.* 2011;56:385-400; discussion 400-2.
- Crow R, Gage H, Hampson S, et al. The measurement of satisfaction with healthcare: implications for practice from a systematic review of the literature. *Health Technol Assess.* 2002;6:1-244.
- Esselman PC, White BF, Chimes GP, Kennedy DJ. Patient satisfaction surveys: tools to enhance patient care or flawed outcome measures? *PM R.* 2013;5:1069-1076.
- Bjertnaes OA. The association between survey timing and patient-reported experiences with hospitals: results of a national postal survey. *BMC Med Res Methodol.* 2012;12:13-2288-12-13.
- Bendall-Lyon D, Powers TL, Swan JE. Time does not heal all wounds. Patients report lower satisfaction levels as time goes by. *Mark Health Serv.* 2001;21:10-14.
- Jackson JL, Chamberlin J, Kroenke K. Predictors of patient satisfaction. *Soc Sci Med.* 2001;52:609-620.
- Jensen HI, Ammentorp J, Kofoed PE. User satisfaction is influenced by the interval between a health care service and the assessment of the service. *Soc Sci Med.* 2010;70:1882-1887.
- Jensen HI, Ammentorp J, Kofoed PE. Assessment of health care by children and adolescents depends on when they respond to the questionnaire. *Int J Qual Health Care.* 2010;22:259-265.
- Stevens M, Reininga IH, Boss NA, van Horn JR. Patient satisfaction at and after discharge. Effect of a time lag. *Patient Educ Couns.* 2006;60:241-245.
- Saal D, Nuebling M, Husemann Y, Heidegger T. Effect of timing on the response to postal questionnaires concerning satisfaction with anaesthesia care. *Br J Anaesth.* 2005;94:206-210.
- Press Ganey Associates I. South Bend, IN, USA:2013.
- Bredart A, Razavi D, Robertson C, et al. Timing of patient satisfaction assessment: effect on questionnaire acceptability, completeness of data, reliability and variability of scores. *Patient Educ Couns.* 2002;46:131-136.
- Burroughs TE, Waterman BM, Gilin D, Adams D, McCollegan J, Cira J. Do on-site patient satisfaction surveys bias results? *Jt Comm J Qual Patient Saf.* 2005;31:158-166.
- Lelievre S, Schultz K. Does computer use in patient-physician encounters influence patient satisfaction? *Can Fam Physician.* 2010;56:e6-12.
- Lin OS, Schembre DB, Ayub K, et al. Patient satisfaction scores for endoscopic procedures: impact of a survey-collection method. *Gastrointest Endosc.* 2007;65:775-781.
- Cheldelin LV, Dunham S, Stewart V. NICU patient satisfaction: how you measure counts. *J Perinatol.* 2013;33:324-326.