Physician Trust in the Patient: Development and Validation of a New Measure

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ABSTRACT

PURPOSE Mutual trust is an important aspect of the patient-physician relationship with positive consequences for both parties. Previous measures have been limited to patient trust in the physician. We set out to develop and validate a measure of physician trust in the patient.

METHODS We identified candidate items for the scale by content analysis of a previous qualitative study of patient-physician trust and developed and validated a scale among 61 primary care clinicians (50 physicians and 11 nonphysicians) with respect to 168 patients as part of a community-based study of prescription opioid use for chronic, nonmalignant pain in HIV-positive adults. Polychoric factor structure analysis using the Pratt D matrix was used to reduce the number of items and describe the factor structure. Construct validity was tested by comparing mean clinician trust scores for patients by clinician and patient behaviors expected to be associated with clinician trust using a generalized linear mixed model.

RESULTS The final 12-item scale had high internal reliability (Cronbach α = .93) and a distinct 2-factor pattern with the Pratt matrix D. Construct validity was demonstrated with respect to clinician-reported self-behaviors including toxicology screening ($P < .001$), and refusal to prescribe opioids ($P < .001$) and with patient behaviors including reporting opioids lost or stolen ($P = .008$), taking opioids to get high ($P < .001$), and selling opioids ($P < .001$).

CONCLUSIONS If validated in other populations, this measure of physician trust in the patient will be useful in investigating the antecedents and consequences of mutual trust, and the relationship between mutual trust and processes of care, which can help improve the delivery of clinical care.

Conflicts of interest: authors report none.

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INTRODUCTION

Interpersonal trust is a key feature of the clinician-patient relationship that resonates with both patients and clinicians. Trust in another person refers to an expectation that the other person will behave in a way that is beneficial, or at least not harmful, and allows for risks to be taken based on this expectation. For example, patient trust in the physician provides a basis for taking the risk of sharing personal information.

Given that patients are the more vulnerable party in the relationship, it is not surprising that virtually all investigation of trust in the patient-physician relationship has been limited to patient trust in the physician; however, patient and physician trust are closely linked in that both refer to expectations of future behavior with respect to complementary roles. For example, a physician needs to trust a patient to provide information or to commit to a course of care.[1] Physician trust in the patient appears to enhance patient trust in the physician[2,3]; conversely, lack of physician trust is perceived quite negatively by patients and likely affects patient behavior.[2,4] Mutual trust improves cooperation and reduces the need for monitoring.[2] Studies in social psychology demonstrate the importance of mutual trust[5]; a recent review of the psychosocial literature concluded that

"successful and sustainable cooperation must be built on a foundation of trust and reciprocity."[6]

Although several measures of patient trust in the physician have been published,[7-11] there is apparently no measure of physician trust in the patient. Such a measure would allow for the characterization of mutual (reciprocal) trust in the patient-physician relationship and could potentially provide a better understanding of the relationship between mutual trust and processes and outcomes of care leading to improvements in quality care and both patient and physician satisfaction.

We set out to develop and validate a measure of physician trust in the patient as part of a study of prescription opioid treatment of chronic, nonmalignant pain. Trust in patients receiving prescription opioids for chronic pain may be particularly problematic.[1] In this setting, clinicians often use written contracts and urine screening for illicit drug use, and may discontinue opioids for violations of adherence.[12] Investigating predictors and consequences of clinician trust in this setting is therefore of particular interest.

METHODS

Questionnaire Development

We identified candidate items for our measure of physician trust from analysis of a prior qualitative study of patient and physician trust that used physician focus groups and individual physician interviews.[2,13] Two physician focus groups were conducted with 10 of 21 physicians in the academic practice (8 family physicians, 2 general internists) to discuss the role of trust in the patient-physician relationship and covered both patient trust in the physician and physician trust in the patient. For the latter, questions asked included "What are some of the differences between the patients that you have felt high and low trust for?" and "What factors do you think are important for patients in generating trust by their physicians?" Also, semistructured individual interviews were conducted with 21 of 58 invited physicians from a community-based multispecialty clinic. Physician ages ranged from 31 to 64 years; most were white (15), male (12), and US-born (16). Eleven were primary care physicians (3 internists, 8 family physicians), and 10 were specialists. Physicians were not specifically asked about their trust in the patient, but rather to describe examples of both high-trust and low-trust relationships, and what events or behaviors led to each. Focus groups and individual interviews were recorded and transcribed. One coauthor (D.H.T.) reviewed the transcripts to identify content related to physician trust in the patient. Items were grouped into themes with iterative referral back to the original transcripts. Although we were unable to return to the physicians in the original qualitative study

to further validate the choice of items, all items were reviewed by physician research colleagues in family medicine and general internal medicine who had expertise in constructing health measures. Small modifications were made in item wording, and the items were pilot-tested with a convenience sample of 14 primary care physicians.

Validation Study

The 18 candidate items were included in a questionnaire sent to primary care clinicians of participants in the Pain Study, a 2-year prospective study of pain and the use and misuse of opioid analgesics among indigent adults in San Francisco. Study participants were recruited from a preceding study of homeless or marginally housed, HIV-positive adults.[14] Of the 296 patients initially enrolled in the Pain Study, 272 (91.9%) were active in follow-up during data collection, of whom 269 (98.9%) provided written consent allowing contact of their primary care clinician. Of the 269, 240 (89.3%) named a total of 90 clinicians (physicians, nurse practitioners, or physician assistants) in outpatient practice who had confirmable contact information. Clinicians practiced at more than 30 different sites that included public and private hospital-based clinics, public health and private nonprofit community clinics, academic and private practices, Veterans Administration Medical Centers, and integrated health networks. We received completed patient-specific questionnaires for 168 patients from 61 clinicians (50 physicians and 11 nonphysicians). The clinician-specific questionnaire included questions about the clinician's demographics and practice characteristics. The patient-specific questionnaire included questions about the patient's medical conditions, use and misuse of prescription narcotics, and the clinician's prescribing behavior regarding the patient. We obtained informed consent from participants and their primary care clinicians before the onset of the study. All study protocols were reviewed and approved by the University of California, San Francisco, Institutional Review Board. Clinicians were reimbursed with a $10 gift certificate for each questionnaire completed.

Analysis

We generated descriptive statistics on the clinician trust items to examine distribution, response rate, and floor and ceiling effects. Internal consistency was assessed using item-scale correlations and the Cronbach α.[15] Because items had an ordinal response scale, we conducted an exploratory factor analysis using a polychoric correlation matrix.[16] Factors were extracted if their eigenvalue was greater than 1 using maximum likelihood estimation and the promax rotation method. We used the resulting pattern factors, structure factors, and communality coefficients to create a Pratt matrix[17] in which the D column values are calculated by combining

information from the pattern and structural factors, to partition the communality of each item (the proportion of the variance of the item that is shared with other items and therefore due to a common factor) into non-overlapping parts attributable to each factor. That is, the Pratt D measures the proportion of an item's communality (shared variance) explained by each factor. In theory, it should range from 0 if none of the variance is explained by a factor to 100 if all of the variance is explained. In practice, values can sometimes be slightly negative or slightly greater than 1.

The convergent validity of the final scale was assessed by examining the association between the clinician's reported trust of a patient and the clinician behaviors and beliefs about the patient's misuse of prescribed opioids. Specifically, we expected a clinician's trust scores would be lower for patients for whom the clinician had ordered toxicology screens, had refused to prescribe opioid analgesics because of concerns about misuse, or had discontinued prescription opioid analgesics because the patient had violated his or her agreement. In addition, we expected that clinicians would have lower trust in patients who they believed had reported their prescribed opioid as lost or stolen, had taken their prescribed opioid to get high, or had sold or traded opioids. To evaluate discriminant validity, we examined the association between clinician trust scores and 3 diagnoses not expected to be associated with clinician trust: diabetes, peripheral neuropathy, and history of cancer. The degree of clustering of trust scores by physician was estimated using the intraclass correlation coefficient, calculated as the variance of trust scores between clusters divided by the total variance.[18] We assessed differences in trust scores between groups of patients defined by each of the above characteristics using a generalized linear mixed model to account for clustering. All analyses were done using SAS 9.2 (SAS Institute Inc, Cary, North Carolina).

RESULTS

Item Generation and Piloting

We identified statements regarding physician trust in the patient from review of transcripts and grouped similar statements together into a single concept or item. For example, the statement "So I guess that would be a question of trust too. Like once they said they read on it on the Internet, I know that they've tailored their stories" and the statement "trusting that whatever the patient says [about his or her symptoms] is correct" were used to create the item "accurately report his or her symptoms?" Six themes (with a total of 21 items) for patient behaviors engendering trust emerged: provide accurate and complete information (6 items), adhere to

the agreed upon treatment plan (4 items), actively participate in his or her care (4 items), respect the physician (3 items), not manipulate for secondary gain (2 items), and remain committed to the relationship (2 items). On the basis of the results of this pilot test, including feedback from the physicians, we reduced the number of items to 18. Specifically, "…come back to see you again" was dropped because it was believed to be redundant with "…keep his or her appointments," and the item "…not bring a malpractice suit against you" was dropped as being too extreme. We combined 2 items, "…not exaggerate symptoms" and "…accurately report his or her symptoms," into a single item "…accurately report (not exaggerate or downplay) his or her symptoms." The resulting 18 candidate items and their relationship to the original 6 themes are shown in Table 1.

Validation Study

A total of 61 clinicians and 168 patients enrolled in the Pain Study, whereas 29 clinicians and 72 patients were eligible but did not respond (ie, were not enrolled).

Table 1. Candidate Items for Trust in the Patient Scale

Item	Description (Root: "How confident are you that this patient will…")
1	Provide all the medical information you need?[a]
2	Answer your questions honestly?
3	Accurately report (not exaggerate or downplay) his or her symptoms?
4	Let you know when there has been a major change in his or her condition?[a]
5	Tell you about all medications and treatments he or she is using?[a]
6	Understand what you tell him/her?[a]
7	Accept your medical judgment?
8	Believe what you say?
9	Follow the treatment plan you recommend?[a]
10	Ask appropriate questions?
11	Be actively involved in managing his/her condition/problem?[a]
12	Tell you if he/she is not following the treatment plan?[a]
13	Tell you if she/he has a problem with something you did?
14	Respect your time?[a]
15	Respect personal boundaries?[a]
16	Not make unreasonable demands?[a]
17	Not manipulate the office visit for secondary gain (eg, for inappropriate disability certification or prescription of controlled substances)?[a]
18	Keep his or her appointments?[a]

Notes: Response scale: 1 = not at all confident; 2 = a little confident; 3 = somewhat confident; 4 = mostly confident; 5 = completely confident. Relationship of items to themes from the qualitative study: provide accurate and complete information (items 1-5), adhere to the agreed upon treatment plan (items 6-9), actively participate in his or her care (items 10-13), respect the physician (items 14-16), not manipulate for secondary gain (item 17), remain committed to the relationship (item 18).

[a] Items retained in final scale.

Clinicians and patients came mainly from public hospital–based clinics and community health clinics, though private hospital–based clinics, integrated health networks, and Veterans Administration clinics were also represented. Type of practice site differed significantly between clinicians enrolled in the study and those not enrolled, largely because the study enrolled 33 of 37 clinicians from San Francisco General Hospital. If this site is excluded, there were no significant differences in the enrolled vs nonenrolled groups by type of sites ($P = .25$). Fully 49% of study clinicians contributed data on just 1 patient, and 87% contributed data on 5 or fewer patients. The mean number of patients per clinician was 2.8 (median, 2.0; range, 1-12).

Enrolled patients were predominately male (66%) and African American (47%) or white non-Hispanic (35%), and the majority (71%) had at least a high school education. Nearly three-quarters (73%) reported having had pain for more than a year, about one-half (49%) had used a prescription opioid in the past 3 months, and slightly more than a third (35%) reported having used illegal drugs in the past 5 years. Compared with patients in the study, the 72 patients not enrolled were similar with respect to age, sex, race, history of chronic pain, and illegal drug use, but were more likely to be male (79% vs 66%) and to have more than a high school education (41% vs 26%).

Item Reduction, Factor Analysis, and Internal Validity

Spearman correlation coefficients among all 18 items ranged from .10 to .89. Initial principal components factor analysis yielded a 2-factor solution with eigenvalues of 11.5 and 2.2; all other eigenvalues were less than 1.0. Examination of the Pratt D matrix reveled that item 3 ("accurately report (not exaggerate or downplay) his or her symptoms"), item 7 ("accept your medical judgment"), and item 8 ("believe what you say") did not distinctly load on either factor. We therefore dropped these 3 items. Because item 13 ("tell you if she/he has a problem with something you did") had a particularly low communality estimate of .44 (vs .62 for the next lowest of the remaining items), it was also dropped. A total of 10 items loaded on the first factor, so we evaluated reducing the number of items by examining item-item correlations. Item 1 ("provide all the medical information you need") was highly correlated with item 2 ("answer your questions honestly") ($r_s = .85$). The Pratt matrix D value was 0.94 for item 1 and 0.78 for item 2. We therefore dropped item 2. Similarly, item 10 ("ask appropriate questions") and item 11 ("be actively involved in managing his/her condition/problem") were strongly correlated ($r_s = .80$). Item 11 demonstrated higher scores on pattern, structure, communality, and the Pratt D value. We therefore dropped item 10, resulting in the final 12-item, 2-factor scale indicated by footnote a in Table 1.

This final scale had a mean score of 43.1 ± 10.8 out of a possible 60, with an observed range from 17 to 60. Item-scale correlations ranged from .60 to .81; the Cronbach α was .93, indicating excellent internal reliability. Clinician trust scores were fairly normally distributed, with a skewness of –.31 and minimal ceiling effect with less than 3% of scores being at the maximum. The Pratt D matrix for the final measure is shown in Table 2. We

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Table 2. Physician Trust in the Patient, Pratt Matrix D

Item	Description (Root: "How confident are you that this patient will...")	P F1	P F2	S F1	S F2	C –	D F1	D F2
1	Provide all the medical information you need?	.85	.12	.92	.57	.85	0.92	0.08
4	Let you know when there has been a major change in his or her condition?	.91	–.10	.86	.38	.74	1.06	–0.05
5	Tell you about all medications and treatments he or she is using?	.83	.10	.89	.54	.80	0.93	0.07
6	Understand what you tell him/her?	.73	.09	.78	.47	.61	0.93	0.07
9	Follow the treatment plan you recommend?	.86	.08	.90	.53	.82	0.94	0.05
11	Be actively involved in managing his/her condition/problem?	.94	–.09	.89	.41	.80	1.05	–0.05
12	Tell you if he/she is not following the treatment plan?	.86	.00	.85	.45	.73	1.00	0.00
14	Respect your time?	.01	.89	.48	.89	.80	0.01	0.99
15	Respect personal boundaries?	.00	.95	.50	.96	.91	0.00	1.00
16	Not make unreasonable demands?	–.02	.99	.50	.98	.96	–0.01	1.01
17	Not manipulate the office visit for secondary gain (eg, for inappropriate disability certification or prescription of controlled substances)?	.12	.82	.55	.88	.79	0.08	0.92
18	Keep his or her appointments?	.69	.19	.79	.56	.65	0.84	0.16

C = communality (the percentage of variance in each item explained by the 2 factors); D = P × S/C (the Pratt D value, the proportion of the explained variance attributable to each factor; a measure of the relative importance of each factor to a given item); F1 = Factor 1; F2 = Factor 2; P = pattern coefficient (the equivalent of the standardized partial regression coefficient, ie, slope of a factor on the item); S = structure coefficient (the equivalent of the simple Pearson correlation between an item and each factor).

Note: Factor 1 (Patient Role) is composed of items 1, 4, 5, 6, 9, 11, 12, and 18; Factor 2 (Respect for Boundaries) is composed of items 14, 15, 16, and 17.

labeled Factor 1 and Factor 2 as Patient Role (8 items) and Respect for Boundaries (4 items), respectively, and they are clearly distinct with very little overlap. The interfactor correlation coefficient was .48. The intraclass correlation coefficient was .058, indicating a small degree of clustering of trust scores by clinician.[19]

Convergent and Discriminant Validity

We assessed the convergent validity of the total scale and the 2 subscales with respect to 6 clinician-reported behaviors for the past year expected to be inversely associated with level of clinician trust (Table 3). In all cases, the direction of the association with the total trust score was as predicted with all P values less than .01 except for "discontinued opioid analgesics because violated agreement," which had only 8 patients in the Yes category, and "reported opioid lost or stolen," which was associated with the Patient Role subscale with a P value of .057. Discriminant validity was evidenced by the lack of association, as predicted, with a diagnosis of diabetes, peripheral neuropathy, or cancer (all P values >.20).

We repeated the analyses reported in Table 3 separately for the 50 physicians and 11 nonphysicians. Results were similar for the 2 groups, although not always significant for nonphysicians because of their smaller number (data not shown).

Table 3. Construct Validity: Mean Physician Trust Scores by Clinician-Reported Behaviors and Patient Diagnoses

Variable	No.[a]	Full Scale[b] Mean ± SD	P Value[e]	Factor 1: Patient Role[c] Mean ± SD	P Value[e]	Factor 2: Respect for Boundaries[d] Mean ± SD	P Value[e]
Clinician-reported behaviors[f]							
Ordered toxicology screen			<.001		.001		<.001
Yes	32	37.4 ± 10.6		23.7 ± 8.0		13.8 ± 4.4	
No	127	45.1 ± 10.3		28.8 ± 7.6		16.3 ± 4.0	
Discontinued opioid because violated agreement			.14		.13		.77
Yes	8	34.4 ± 9.2		22.5 ± 7.5		12.4 ± 4.7	
No	60	40.5 ± 10.5		27.0 ± 8.0		14.4 ± 4.2	
Did not prescribe opioid because concerned about misuse			<.001		<.001		<.001
Yes	26	34.3 ± 10.6		22.3 ± 7.7		12.0 ± 4.7	
No	137	45.1 ± 9.9		28.6 ± 7.7		16.4 ± 3.7	
Patient reported opioid lost or stolen			.008		.057		.003
Sometimes/often/very often	21	36.5 ± 10.5		24.2 ± 7.4		12.3 ± 5.0	
Never/rarely	87	43.7 ± 10.6		27.9 ± 8.1		15.8 ± 4.1	
Patient has used opioid to get high			<.001		<.001		<.001
Definitely/probably/maybe	37	36.5 ± 10.0		23.4 ± 11.0		13.2 ± 4.0	
Probably not/definitely not	73	44.8 ± 10.4		28.8 ± 7.8		16.0 ± 4.1	
Patient has sold, traded, stolen, given away opioid			<.001		<.001		<.001
Definitely/probably/maybe	46	36.3 ± 9.5		23.0 ± 7.1		13.2 ± 4.8	
Probably not/definitely not	64	46.2 ± 10.1		29.8 ± 7.6		16.4 ± 3.7	
Patient diagnoses							
Diabetes			.53		.33		.78
Yes	19	44.9 ± 13.8		29.4 ± 10.1		15.6 ± 4.4	
No	146	43.2 ± 10.1		27.4 ± 7.6		15.8 ± 4.0	
Peripheral neuropathy			.87		.78		.26
Yes	77	43.4 ± 11.3		27.9 ± 8.3		15.5 ± 4.5	
No	79	43.2 ± 10.4		27.3 ± 7.9		15.9 ± 4.0	
History of cancer			.89		.95		.98
Yes	13	42.6 ± 12.2		27.4 ± 8.9		15.2 ± 4.3	
No	152	43.5 ± 10.5		27.2 ± 7.9		15.8 ± 4.2	

[a] Numbers of patients do not total to 168 because of missing data.

[b] Possible scores range from 0 to 60; higher scores indicate greater trust.

[c] Possible scores range from 0 to 40; higher scores indicate greater trust.

[d] Possible scores range from 0 to 20; higher scores indicate greater trust.

[e] P values were calculated by a generalized linear mixed model to account for clustering by clinician.

[f] In the past 12 months.

DISCUSSION

We derived a model of physician trust in patients by qualitative analysis of data from focus groups and individual physician interviews, and used this model to develop and validate a measure of clinician trust with high internal consistency, reliability, a distinct 2-factor pattern, and both convergent and discriminant validity. The final measure includes items asking about expectations that patients will behave in ways that fulfill their roles in providing accurate and complete histories, asking questions, adhering to a treatment plan, and following up. It also includes respecting the physician's time and personal boundaries, and not manipulating the relationship for personal gain. The content of the scale is consistent with the limited published qualitative work on physician trust of patients.[1,2,4,20]

Our study was limited to indigent HIV-infected adults in San Francisco, most of whom had chronic pain, and their primary care clinicians. Clinician trust in this population is likely to be lower on average and have a broader range than would be found in most other practice settings. Although we expect the measure to perform similarly in other populations, this generalizability remains to be established. We developed candidate items for the trust measure from a qualitative study of physician-patient trust that included mostly family physicians and general internists, and more than 80% of the clinicians in the validation study were primary care physicians. Although analyses yielded very similar results for physician and nonphysician clinicians, further study is needed to evaluate the generalizability of the measure to nonphysicians, and to non–primary care physicians. In addition, we did not have data to investigate the predictive validity of our measure of clinician trust for future clinician behaviors (eg, ordering of toxicology screens or prescribing of opioid analgesics).

This new measure of clinician trust will allow investigation of the consequences of clinician trust and mutual trust, factors that increase or decrease clinician trust, and the association of mutual trust with processes of care. Previous studies have found that low trust by public health workers adversely affected the quality of services provided to their clients.[21] It is possible that low clinician trust similarly can lead to differences in clinician behavior that adversely affect patients. Studies in social psychology have found that trust is generally lower between individuals with fewer shared characteristics.[22] It may be that differences in sex, age, race, or culture between clinicians and patients can result, even unconsciously, in lower levels of clinician trust that in turn may contribute to health disparities. Identifying circumstances that lead to inappropriately low trust in patients may help clini-

cians avoid or mitigate adverse consequences. Another area for investigation is the association of trust with processes of care. How does continuity of care affect mutual trust? What are the effects of restructuring practices around the Patient-Centered Medical Home model on levels of trust between clinicians and patients? What is the relationship between mutual trust and shared decision making? Being able to measure both clinician trust in the patient as well as patient trust in the clinician will facilitate the investigation of the role of mutual trust in the clinician-patient relationship that can help protect and improve the quality of the clinician-patient interaction.

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