

Matching Patients and Practitioners Based on Beliefs About Care: Results of a Randomized Controlled Trial

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Objective: To determine whether an intervention designed to inform and guide patients in choosing a primary care provider (PCP) could increase satisfaction and trust.

Design: A randomized controlled trial conducted at the Santa Clara Medical Center of the Kaiser Permanente Medical Care Program in Northern California.

Patients and Methods: Patients needing a PCP were randomly assigned to Informed Choice (provider-level information offered), Guided Choice (PCP names provided based on the similarity of patients' and practitioners' patient-centered beliefs, and patients then chose), or Usual Care. One year later, mailed questionnaires asked about patients' trust and satisfaction, perceptions of the choice process, and trust and satisfaction with Kaiser Permanente. More than 5000 adult patients were linked with a PCP as part of the project, and completed surveys were returned by 2437 patients.

Results: Neither intervention arm generated better matches on patient-practitioner beliefs than Usual Care; however, trust and satisfaction were higher among Guided Choice patients. Across study arms, patient-practitioner belief discrepancy showed a consistent positive association with trust, satisfaction, and attitudes toward Kaiser Permanente.

Conclusions: The discrepancy between patient and practitioner beliefs about care is an important determinant of trust and satisfaction, and involving patients in the selection of their PCP can have an independent positive effect. It should be possible to build on the experience of this project to develop programs that better match patients and practitioners within managed care plans.

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People in almost 50 million US households selected or changed to a new physician in a recent 2-year period.¹ In finding a new physician, patients prefer to select rather than be assigned, and those who choose are more satisfied, trusting, and likely to adhere to recommendations.²⁻⁶ Most people rely on the recommendations of friends, family, or coworkers. However, those who desire information from their health plans typically indicate that they "pick blindly" from lists provided to them, and many patients attribute the finding of a clinician with whom they were comfortable to good luck.¹

Patients vary in the kinds of practitioner information to which they would like access,⁷⁻⁹ with 4 major cate-

gories emerging^{2,10}: descriptors and characteristics (eg, sex, medical school, and years in practice), convenience and logistics (eg, location, hours, and wait for appointments), expertise and qualifications (eg, training, number of procedures performed, and malpractice suits), and relationship and bedside manner (eg, compassion, communication skills, and practice style). Although expertise and qualifications were the characteristics that patients mentioned most often as important, finding a physician who shared a similar ideology and had good communication skills was deemed by many as at least as important.¹¹

A review of 40 commercial (eg, WebMD and bestdoctors.com) and organization-specific (eg, CIGNA, Pacificare, and Boston Medical Center) Web sites that contained provider-specific information indicated that the available information varied considerably.¹⁰ For instance, physician location was contained in 92.5% of Web sites, specialty in 87.5%, medical school in 62.5%, and board certification in 55.0%. Information on physicians' philosophy of providing care was available in only 3 (7.5%) of the sites reviewed.

Although few sources provide information on practitioner beliefs about care, several studies¹²⁻¹⁴ have demonstrated that the extent to which patients and practitioners hold similar or comparable beliefs is associated with satisfaction and trust. In these studies, patients and their physicians completed identical versions of the Patient-Practitioner Orientation Scale (PPOS), a validated instrument that measures the degree to which each holds patient-centered beliefs

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about the sharing of power and information. Building on these findings, this article presents the results of a prospective randomized trial in which patients were guided in their choice of a practitioner based on their beliefs about care.

It was hypothesized that providing patients with a basis for choosing a primary care provider (PCP) based on beliefs about care in the Guided Choice arm would result in physician-patient pairs who were in greater agreement than those who had not received such information. Moreover, it was expected that the greater belief similarity found in Guided Choice would result in greater patient trust and satisfaction.

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METHODS

The funding agencies for this project played no role in any aspect of its design or in the collection, analysis, or interpretation of the data, and they made no requirements of approval of the finished manuscript. The Kaiser Foundation Research Institute Institutional Review Board approved the study.

The site for the study was the Department of Medicine at the Santa Clara Medical Center of the Kaiser Permanente (KP) Medical Care Program in Northern California, a large group-model health maintenance organization. At the time the study began, there were approximately 162 000 members and 80 adult medicine PCPs on staff at the Santa Clara Medical Center. Of these PCPs, 52 completed the PPOS and were linked with at least 1 patient through the intervention.

Any adult member 30 or older who was not linked to a PCP in the automated health plan database was eligible for the study, although only one family member could participate. Patients were selected from recently enrolled members who did not have a PCP, ongoing members who did not have a PCP listed, and patients of 2 PCPs with large panels who had retired shortly before the initiation of the study. Within each of these sources, patients were randomly assigned to 1 of 2 intervention (choice) arms or to the Usual Care arm. Further details of the selection and randomization processes have been previously published.¹⁵

Intervention Arms

All patients in the 2 intervention arms were contacted by mail at the outset of the study and were encouraged to contact the center to obtain a new PCP via telephone or a Web site set up especially for this project. The Web site had a set of simple instructions for selecting a PCP, and patients who used the telephone

reached a research assistant who led them through the same procedure.

Informed Choice. Patients in this arm were offered provider-specific information on all available PCPs, which included sex, age, practitioner type (physician or nurse practitioner), medical office location, race or ethnicity, languages spoken, medical school attended, areas of clinical interest, areas of personal interest or hobbies, and openness to alternative medicine. A recent photograph was also available for those who used the Internet.

Guided Choice. Patients in this arm had available to them all the information of Informed Choice patients, but their selection process involved an additional element: they were given a list of PCPs whose beliefs about the sharing of power and information were closest to theirs. To accomplish this, before the project began, all available PCPs were asked to complete a 9-item subscale of the PPOS. All Guided Choice patients responded to identical items as part of the selection process, and their answers were computer scored immediately (score range, 9-54, with a higher score indicating greater patient-centeredness). Patients were then offered a list of 2 to 5 PCPs whose scores were most similar (they were told that these practitioners had a "communication style" that most closely matched theirs).

The algorithm for recommending practitioners provided the names of at least the 2 best matches, defined as the lowest absolute difference between the patient's and the practitioner's scores. Up to 5 practitioners' names were offered if the absolute difference between the patient's and the practitioner's PPOS scores was within 5 points. Guided Choice patients were not required or pressured to select one of the indicated practitioners and were encouraged to explore additional information (the same information available to Informed Choice patients) about any PCP with an open panel.

Usual Care Arm

Patients in the Usual Care arm, which served as a baseline or control group, consisted of new and ongoing members who were not identified as part of the panel of a specific PCP. They were contacted by mail and were encouraged to call the medical center's patient services department to obtain a PCP. Patient services staff did not have access to any systematic information about practitioners and were instructed not to offer unsolicited information, although they were courteous in answering practitioner-relevant questions. In the absence of a stated preference, patients were linked to an available PCP by whatever nonsystematic mechanisms were typically used at that center.

Usual Care patients whose PCP had just retired received a letter from the health plan informing them of

their PCP's retirement and assigning them to a new PCP. Although this method of assignment was more restrictive than that used for the other Usual Care patients, the 2 methods of pairing patients and practitioners (which were combined for purposes of analysis) were low choice and low information and were standard procedure (ie, usual care) at that center for connecting patients with PCPs. All patients were surveyed by mail to assess outcomes approximately 1 year after their linkage with a PCP.

Patients Studied

There were 10 944 patients deemed eligible for the study. Of these, 5059 (46.2%) were linked with a PCP during the study, 44.0% in the combined choice arms and 51.0% in the control arm. For the survey, we sampled 3884 patients, which excluded half of the Usual Care arm patients of retiring physicians who had been assigned a new PCP by mail (done to save survey costs) and more than 500 patients who had died, left the health plan, or for whom accurate contact information was unavailable. After 3 waves of mailing and 1 tele-

phone reminder, we received completed surveys from 2437 patients, a response rate of 62.7%. This was reduced by 269 respondents who had selected a PCP who practiced at a different site, 144 patients who indicated that the listed practitioner had never been their PCP, and 15 people who had left KP. All baseline analyses of patients are based on these 2009 patients who had been randomized to 1 of the 3 arms. However, because we did not have PPOS scores for both members of some patient-practitioner pairs, analyses that investigated patient-practitioner belief similarity are based on 1766 patients (Figure 1).

Data Collected

The following information was obtained via questionnaire:

Personal and Demographic Characteristics. This included information such as sex, age, education, ethnicity, marital status, and current state of health.

Patient Orientations. Because patients in the control and Informed Choice arms had not completed the PPOS as part of the initial selection process, patients in all 3 arms were asked to respond to the 9-item PPOS.

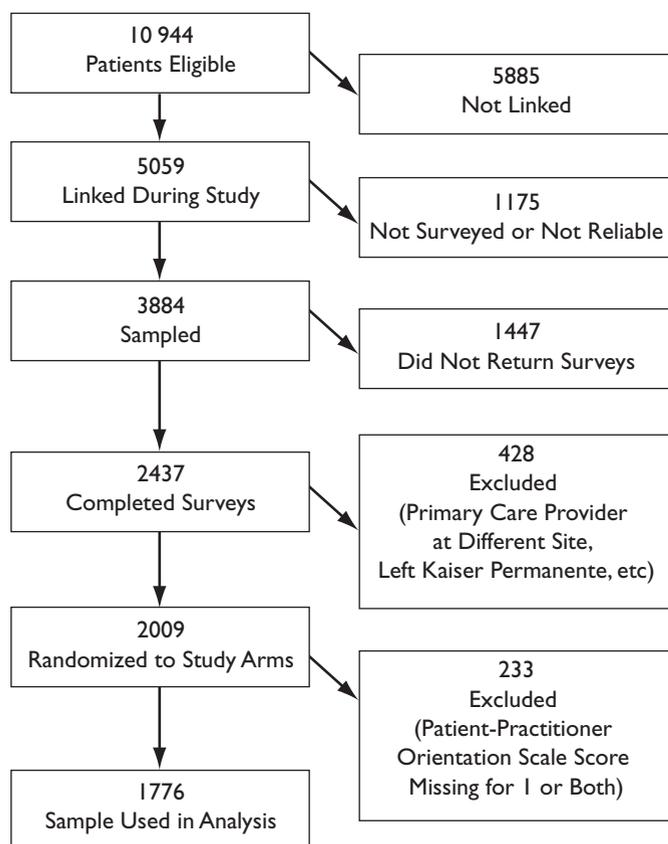
Practitioner Selection Process. Five questions (based on a 6-point Likert scale) covered areas such as whether patients had sufficient information, had enough practitioners to choose from, or believed that they were rushed in selecting a practitioner.

Satisfaction. Eleven questions, adapted from the Medical Outcomes Study,¹⁶ measured satisfaction with the practitioner on a 5-point scale (score range, excellent to poor). Two items referred to technical skills (eg, use of latest medical technologies), 1 was an overall satisfaction question, and the remaining 8 referred to interpersonal issues (eg, quality of explanations given and how carefully the practitioner listens).

Trust. Eight questions adapted from the trust scale by Thom et al^{5,17} were included. These included the degree to which the practitioner is trusted to manage medical problems, to tell the patient if a mistake was made, and to put the patient's medical needs above all other considerations, including costs.

Attitudes Toward Kaiser Permanente. Two questions (based on a 6-point Likert scale) asked about the patient's trust in KP (to put the patient's medical needs above other considerations, including costs, and to connect the patient with the best practitioner for his or her healthcare), and a single question asked about overall satisfaction with KP (based on a 5-point scale; score range, excellent to poor).

Figure 1. Flow Diagram of Patient Participants



Statistical Analysis

The analyses were conducted in several phases. First, 1-way analysis of variance (ANOVA) was used to determine whether patients differed demographically according to study arm and whether these characteristics were associated with PPOS scores. Second, to assess whether the 3 study arms generated differences in patient-practitioner belief similarity, we created a new variable, namely, discrepancy score, which was the signed difference between the patient's PPOS score and that of his or her PCP. Analysis of variance was used to compare mean discrepancy scores across study arms and to determine whether the intervention had an effect on the outcome measures. Paired comparisons tested the differences among each of the study arms, and regression analyses allowed for a determination of the magnitude of effects after controlling for relevant covariates.

To test whether patients and practitioners who held similar beliefs had more positive outcomes (across study arms) in a manner parallel to that using study arm as the predictor variable, 3 discrepancy score groups were created. Cutoff points were based on the algorithm used in pairing patients and practitioners in Guided Choice: small difference between patients and practitioners (absolute difference between patient's and practitioner's score is within 5 points, n = 579), patients more patient-centered (patient's score is > 5 points higher than practitioner's, n = 528), and patients less patient-centered (patient's score is > 5 points lower than practitioner's, n = 659). Using discrepancy score as the independent variable, an identical set of analyses was performed to determine the relationship between belief similarity and the outcome measures. To identify the independent and joint effects of physicians' and patients' PPOS scores on the outcomes, additional regression analyses and 2-way ANOVAs were performed. To account for potential clustering effects because many patients shared the same PCP, we used the cluster function in Stata 6.0 (StataCorp LP, College Station, Tex) in all analyses comparing experimental arms and discrepancy score groups.

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RESULTS

Characteristics of the Sample

As indicated in **Table 1**, the mean age of the sample was 57.0 years, with somewhat more women (55.1%) than men (44.9%). The patients were well educated (40.2% with a college degree or higher), and most were white (71.6%) and married or in a marriage-like relationship (63.6%). Only 44.9% reported that their health was very good or excellent, and 86.5% had had 1 or

more office visits with their PCP during the study period, with a mean of 3.0 visits per patient. The patients' mean \pm SD PPOS score, with higher numbers indicating greater patient-centeredness, was 38.97 ± 8.91 (out of a possible 54) and was similar to previous administrations of the scale. Patients did not vary demographically according to intervention arm, except that patients in the Usual Care arm were significantly younger and more often male. In addition, tests comparing all patient respondents (n = 2009) with those whose data were included in the analyses of patient-practitioner belief similarity (n = 1766) indicated no statistically significant differences on any of these variables. Female patients and those who were younger, better educated, and healthier held more patient-centered beliefs ($P < .001$ for all).

The physicians' mean age was 40.3 years; 53.8% were male, with an identical percentage who were white. They had been practicing for a mean of 12.7 years. Their mean \pm SD PPOS score (41.67 ± 6.75) was slightly more patient-centered than that of the patients, which is consistent with previous administrations of the scale. None of the demographic characteristics were statistically related to practitioner PPOS scores.

Effect of the Intervention

The mean discrepancy score in the Guided Choice condition (-1.35) was not significantly lower than the discrepancy scores in the Informed Choice and Usual Care arms (-2.25 and -1.62, respectively). Comparisons using the absolute mean discrepancies between patients' and physicians' scores also showed no significant differences across study arms. The findings for satisfaction, trust, perception of the choice process, and attitudes toward KP are summarized in **Table 2**.

Satisfaction. Of the 11 satisfaction items, 7 were significantly different ($P < .04$) and 2 marginally significant according to study arm. Among the 7 satisfaction items showing significant differences, Guided Choice patients were significantly more satisfied on all 7 items compared with Usual Care patients and on 3 items compared with Informed Choice patients. After controlling for age, sex, current state of health, education, race or ethnicity, and marital status, only one satisfaction item remained significant, with 3 others at marginal significance.

Trust. Six of the 8 trust items were significantly different ($P < .05$) according to study arm, with another at marginal significance. Guided Choice patients made significantly more positive ratings on 5 of the 6 trust items compared with Informed Choice and Usual Care patients. However, only 2 of the individual trust items remained at

Table 1. Patient Characteristics*

Characteristic	Total	Guided Choice	Informed Choice	Usual Care	<i>P</i> [†]	
					Guided Choice vs Informed Choice	Guided Choice vs Usual Care
	(N = 2009)	(n = 773)	(n = 747)	(n = 489)		
Demographics and health status						
Age, y	57.0	57.6	57.7	55.1	.90	.004
Female	55.1	54.3	61.3	46.6	.01	.01
Health status, excellent or very good	44.9	46.3	42.2	46.8	.11	.87
Education, ≥ college degree	40.2	41.0	38.8	41.0	.40	.99
White	71.6	71.4	73.4	69.1	.40	.39
Marital status, married or marriage-like	63.6	64.4	63.9	61.8	.82	.34
Visits to personal primary care physician during study						
≥ 1 visits	86.5	87.3	86.0	85.8	.49	.46
No. of visits, mean	3.0	3.1	3.0	3.0	.42	.46

*Data are given as percentages unless otherwise indicated.

[†]Pairwise comparisons between arms.

marginal significance once the other variables were controlled for.

Perception of the Process. Patients' ratings of the choice process showed a similar pattern, with 4 of the 5 items showing significant differences according to study arm ($P < .04$). Guided Choice patients rated the process significantly higher on all 4 items compared with Informed Choice patients and on 2 items compared with Usual Care patients. After controlling for other covariates, 3 of the 4 items that were originally significant remained so, and 1 was marginally significant.

Attitudes Toward Kaiser Permanente. Patients' ratings of their attitudes toward KP showed no significant differences on any of the items measuring trust and satisfaction with the organization.

Effects of Belief Discrepancy

To test the extent to which the discrepancy between patient and practitioner beliefs made a difference independent of the intervention, patient-PCP pairs were compared across study arms. In these analyses, the 3 discrepancy groups consisted of pairs in which the relationship of the physician's to the patient's score was closely matched, the patient was more patient-centered, or the patient was less patient-centered. The findings for each of the outcome variables are summarized in **Table 3**.

Satisfaction. Nine of the 11 satisfaction items were significantly different ($P < .03$). Of these, the group in which practitioners were more patient-centered than their patients was more satisfied than those pairs whose beliefs were similar on all 9 items, and was more satisfied on 8 of 9 items compared with pairs in which the practitioner was less patient-centered. The groups in which patients had similar beliefs or in which the practitioner was less patient-centered were not significantly different on any of these items. Once the other covariates used in the prior analyses were accounted for, 5 items remained significant and 4 were marginal.

Trust. All 8 trust items were highly significant ($P < .001$ for 7 of 8) according to discrepancy score group. Comparing these pairwise, the group in which the practitioner was more patient-centered generated significantly higher ratings than either of the other 2 discrepancy score groups on every trust item, and the latter 2 groups did not differ significantly on any of the items. After controlling for other covariates, 7 of these items remained significant and 1 was marginal.

Perception of the Process. Only 2 of the 5 items were significantly different by discrepancy score group, and for these the pairwise comparisons and regression analyses indicated a pattern identical to those of satisfaction and trust. The group in which the practitioner was more patient-centered had higher

Table 2. Comparison of the 3 Study Arms on the Outcome Measures*

	Mean Scores			P				
	Guided Choice	Informed Choice	Usual Care	Overall Comparison	Guided Choice vs Informed Choice	Guided Choice vs Usual Care	Informed Choice vs Usual Care	Adjusted Comparison [†]
Satisfaction								
Amount of time	4.46	4.31	4.23	.01	.04	.004	.23	.06
Explanations	4.49	4.52	4.37	.02	.07	.008	.07	.10
Technical skills	4.27	4.30	4.13	.19	—	—	—	—
Personal manner	4.97	4.96	4.76	.02	.86	.008	.01	.18
Technology use	3.60	3.43	3.34	.08	—	—	—	—
Prevention	4.47	4.35	4.22	.03	.16	.009	.16	.07
Concern for well-being	4.46	4.29	4.21	.02	.04	.008	.40	.07
Listening skills	4.68	4.61	4.49	.06	—	—	—	—
Familiarity	3.95	3.78	3.61	.003	.05	.001	.10	.008
Participation	4.29	4.09	4.11	.13	—	—	—	—
Overall	4.70	4.62	4.49	.04	.29	.01	.10	.12
Trust								
Considerate of needs	3.99	3.88	3.91	.05	.02	.10	.10	.41
Follow advice	3.93	3.86	3.84	.18	—	—	—	—
Trust judgment	4.06	3.92	3.96	.003	.001	.04	.38	.12
Patient's need first	3.89	3.71	3.76	.001	.001	.03	.03	.06
Well qualified	4.06	3.98	3.95	.04	.05	.02	.51	.09
Admits mistakes	3.85	3.75	3.73	.04	.05	.02	.62	.13
Knows well	3.18	3.13	3.02	.04	.35	.01	.09	.11
Best care provided	3.97	3.87	3.87	.06	—	—	—	—
Process								
Many choices	4.84	4.62	4.63	.04	.02	.09	.92	.03
Well suited	4.51	4.41	4.49	.52	—	—	—	—
Enough information	4.73	4.55	4.36	.008	.06	.003	.13	.004
Clear idea	5.19	5.02	4.94	.03	.04	.02	.47	.02
Not rushed	4.68	4.31	4.47	.002	< .001	.11	.25	.02
Health plan								
KP will connect with best primary care provider	4.82	4.76	4.73	.52	—	—	—	—
KP puts patient's need first	4.61	4.55	4.50	.49	—	—	—	—
Overall satisfaction	3.83	3.72	3.72	.13	—	—	—	—

KP indicates Kaiser Permanente; —, not applicable.

*All items were scored so that a higher score indicates greater positivity. Individual comparisons were only performed on those items in which the overall test showed significant levels of probability.

[†]After controlling for age, sex, current state of health, education, race or ethnicity, and marital status.

ratings than either of the others, with the effects on both items remaining significant after the covariates were accounted for.

Attitudes Toward Kaiser Permanente. Discrepancy score group was significantly related to each of the 3 questions in this domain ($P < .001$ for all). Consistent with the other outcomes, the practitioners who were more patient-centered had higher rat-

ings than the other 2 groups. The differences on all 3 variables remained significant after controlling for the covariates.

Tests of Independent and Joint Effects

To clarify the extent to which patient PPOS score, provider PPOS score, and discrepancy score independently contributed to these findings, additional analyses

Table 3. Comparison of the 3 Discrepancy Score Categories on the Outcome Measures

	Mean Scores			Overall Comparison	P			Adjusted Comparison*
	(1) Provider More Patient-Centered	(2) Small Belief Discrepancy	(3) Provider Less Patient-Centered		1 vs 2	1 vs 3	2 vs 3	
Satisfaction								
Amount of time	4.48	4.26	4.29	.008	.004	.02	.63	.06
Explanations	4.60	4.45	4.50	.14	—	—	—	—
Technical skills	4.49	4.06	4.18	< .001	< .001	< .001	.22	.001
Personal manner	5.02	4.86	4.91	.09	—	—	—	—
Technology use	3.84	3.35	3.23	< .001	< .001	< .001	.32	< .001
Prevention	4.55	4.28	4.30	.003	.002	.007	.82	.02
Concern for well-being	4.46	4.26	4.24	.03	.03	.02	.02	.08
Listening skills	4.74	4.53	4.55	.009	.006	.02	.81	.02
Familiarity	4.42	3.62	3.74	< .001	< .001	.005	.25	.06
Participation	4.29	4.01	4.17	.004	.001	.17	.08	.08
Overall	4.79	4.51	4.56	.001	< .001	.005	.51	.008
Trust								
Considerate of needs	4.00	3.87	3.89	.01	.005	.03	.65	.06
Follow advice	4.05	3.77	3.76	< .001	< .001	< .001	.88	< .001
Trust judgment	4.10	3.90	3.88	< .001	< .001	< .001	.82	< .001
Patient's need first	3.98	3.67	3.63	< .001	< .001	< .001	.41	< .001
Well qualified	4.11	3.93	3.93	< .001	< .001	< .001	.91	.001
Admits mistakes	3.92	3.74	3.65	< .001	< .001	< .001	.09	< .001
Knows well	3.36	3.00	2.92	< .001	< .001	< .001	.23	< .001
Best care provided	4.07	3.82	3.71	< .001	< .001	< .001	.48	< .001
Process								
Many choices	4.85	4.64	4.72	.13	—	—	—	—
Well suited	4.77	4.35	4.44	< .001	< .001	.002	.49	< .001
Enough information	4.82	4.54	4.40	< .001	.009	< .001	.22	.002
Clear idea	5.12	5.10	4.97	.23	—	—	—	—
Not rushed	4.45	4.39	4.61	.18	—	—	—	—
Health plan								
KP will connect with best primary care provider	5.12	4.72	4.47	< .001	< .001	< .001	.002	< .001
KP puts patient's need first	4.99	4.45	4.20	< .001	< .001	< .001	.006	< .001
Overall satisfaction	4.88	4.70	4.71	.001	.001	.003	.85	.01

KP indicates Kaiser Permanente; —, not applicable.

* After controlling for age, sex, current state of health, education, race or ethnicity, and marital status.

were performed. Using regression analysis, signed discrepancy scores were entered along with the covariates of age, sex, education, ethnicity, current state of health, and marital status. In a separate set of analyses, physician and patient PPOS scores were entered as independent predictors, along with the same covariates.

The results of each regression analysis showed a consistent pattern across outcomes. Discrepancy score was a strong independent predictor of satisfaction (significant on 5 items and marginally significant on 4 others), trust (significant on 7 items and marginally significant on the remaining other), attitudes toward KP (significant on all 3 items), and evaluation of the

choice process (significant on 2 of 5 items). In the second set of regression analyses, physician PPOS was not a significant predictor of any of the outcome measures. Patient PPOS, however, was a strong predictor, with patient-centered patients giving lower scores on 8 of the 11 physician satisfaction items, all 8 trust items, all 3 items measuring attitudes toward KP, and on 4 of the 5 items rating the choice process.

Using ANOVA to determine the extent to which a joint effect existed in the form of an interaction between physician and patient PPOS score, we divided the physician and patient groups into thirds according to their PPOS scores (to simplify the analysis, we included in the analysis only physicians in the upper and lower thirds). The results of these 2×3 ANOVAs were noteworthy in the area of trust, with consistent main effects indicating that patients with high PPOS scores were less trusting ($P < .004$ for all 8 items), but with no significant main effects for physician PPOS scores. For 6 of the 8 trust items, there was a consistent strong interaction (range, $P = .04$ to $P = .08$) of physician and patient PPOS scores.

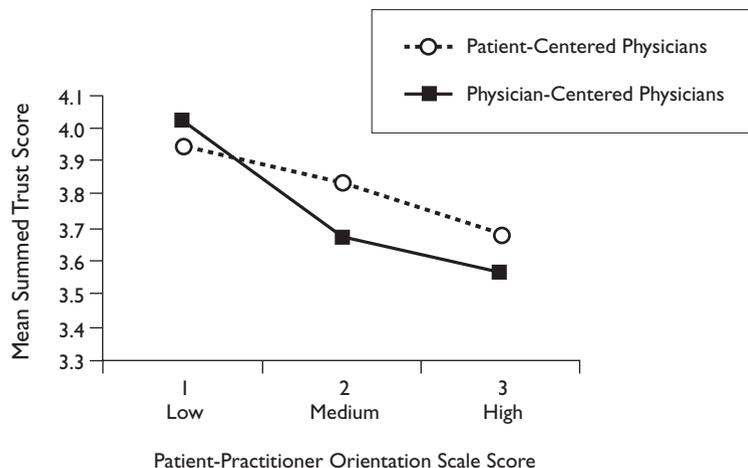
To summarize the overall relationship between trust and physician and patient PPOS scores, the 8 trust items were summed into a single index and an additional 2×3 ANOVA was performed. The interaction between patient and physician scores ($P < .04$) is illustrated in **Figure 2**. It shows that patient-centered patients were less trusting regardless of their practitioners' orientation, yet they were more trusting of those physicians whose beliefs about care were more similar to their own.

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COMMENT

To our knowledge, the project reported is the first of its kind to involve patients in selecting their practitioners based on beliefs about care and to systematically test its effect. By allowing patients this opportunity, it was expected that better matches would be created and that satisfaction and trust would be high as a result.

Surprisingly, the discrepancy between patients' and practitioners' belief scores was not smaller in Guided Choice than either of the other 2 arms. This finding may be explained several ways. First, because the PPOS was not completed by all patients at the time they selected a PCP, the patients' PPOS scores used in this analysis were collected a year later. Although beliefs toward care are thought to be fixed and the PPOS has

Figure 2. Summed Trust Scores of Physicians by Patients at 3 Levels of Patient-Centeredness



been shown to have acceptable levels of test-retest reliability, some shifting of scores may have introduced a degree of random error.

Second, given the small number of practitioners involved, the distribution of scores may not have been large enough to provide all patients with an ideal array of possible practitioners from which to choose. Even in a large care center such as the one used, there may have been a limited number of practitioners with open panels whose belief scores were within 5 points of any given patient.

Third, some Guided Choice patients may have chosen not to select one of the practitioners whose names were offered. No formal records were kept as to which patients or what percentage of patients selected one of the recommended practitioners, although study staff recall that this was not common. However, the actual extent of this cannot be determined. Finally, patients may have their own informal ways of finding physicians with compatible beliefs that were not measured or detected in this study.

Because there were no meaningful differences among the 3 arms in their relative discrepancy scores, which was the mechanism assumed to affect satisfaction and trust, it was surprising that the intervention nonetheless had a small positive effect. We suggest that the salutary effect of the intervention may have resulted from a different mechanism, namely, that soliciting patients' preferences may be an independent factor that leads patients to have positive associations. This suggests that combining the act of choice with a comprehensive system for assisting or guiding choice should be effective.

Although the Guided Choice intervention did not create closer belief matches, we were able to explore the

principle that served as the basis for the intervention by looking at the effect of belief discrepancy across arms. We found that discrepancy score had a small but consistent relationship with trust and satisfaction with one's practitioner and was associated with perceptions of trust and satisfaction with the larger organization.

An unanticipated finding was that the group in which the patients' scores were less patient-centered than their practitioners' had more positive associations than that in which belief discrepancy was small. To explain this, we note that the practitioners' mean PPOS scores were higher and the standard deviation slightly lower than those of the patients. This suggests that the best pairings of patients and practitioners may be those with equivalent or compatible scores rather than scores that are identical or matching.

The conclusions of this research are limited by the fact that few practitioners (n = 65) were involved, that the setting was a single group-model healthcare center, and that a large percentage of the patients were white and middle class. In addition, like most studies dealing with the patient-practitioner relationship, this study was cross-sectional, capturing satisfaction and trust at one point in time rather than following the manner in which the beliefs of both parties and levels of satisfaction and trust evolve over time. Nonetheless, given the findings that patients who were involved in the choice process were more positive on several of the outcome measures, and the association of patient-practitioner belief discrepancy with positive outcomes (now demonstrated in several studies),¹²⁻¹⁴ the study reinforces the idea that interventions such as the one attempted can have significant value.

Subsequent interventions to match patients and practitioners can benefit from the lessons of this one to create a better system of matching. If the PPOS were used as a tool to create such a system, it would be important to determine an appropriate algorithm that serves to define what levels of relative patient-practitioner scores constitute a best match. More generally, it would be necessary to determine which beliefs are most relevant and important to patients and to find the most appropriate means of providing this information in an accessible format. By determining an individual patient's rank ordering of choice criteria, it might be

possible to develop a system in which choice is guided via a series of steps (eg, providing the names of only those male or female practitioners with compatible beliefs if it were determined that practitioner sex was a critical issue for a given patient). Given the number of instances in which patients select or switch to a new practitioner, the desire for patients to choose in an informed manner, the growing technological capability of providing relevant information, and the suggestive results of this project, it would seem that healthcare organizations would do well to devote growing attention to address issues such as these to determine the best ways of matching patients with practitioners.

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