

A Multicenter Study of Physician Mindfulness and Health Care Quality

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ABSTRACT

PURPOSE Mindfulness (ie, purposeful and nonjudgmental attentiveness to one's own experience, thoughts, and feelings) is associated with physician well-being. We sought to assess whether clinician self-rated mindfulness is associated with the quality of patient care.

METHODS We conducted an observational study of 45 clinicians (34 physicians, 8 nurse practitioners, and 3 physician assistants) caring for patients infected with the human immunodeficiency virus (HIV) who completed the Mindful Attention Awareness Scale and 437 HIV-infected patients at 4 HIV specialty clinic sites across the United States. We measured patient-clinician communication quality with audio-recorded encounters coded using the Roter Interaction Analysis System (RIAS) and patient ratings of care.

RESULTS In adjusted analyses comparing clinicians with highest and lowest tertile mindfulness scores, patient visits with high-mindfulness clinicians were more likely to be characterized by a patient-centered pattern of communication (adjusted odds ratio of a patient-centered visit was 4.14; 95% CI, 1.58-10.86), in which both patients and clinicians engaged in more rapport building and discussion of psychosocial issues. Clinicians with high-mindfulness scores also displayed more positive emotional tone with patients (adjusted $\beta = 1.17$; 95% CI, 0.46-1.9). Patients were more likely to give high ratings on clinician communication (adjusted prevalence ratio [APR] = 1.48; 95% CI, 1.17-1.86) and to report high overall satisfaction (APR = 1.45; 95% CI, 1.15-1.84) with high-mindfulness clinicians. There was no association between clinician mindfulness and the amount of conversation about biomedical issues.

CONCLUSIONS Clinicians rating themselves as more mindful engage in more patient-centered communication and have more satisfied patients. Interventions should determine whether improving clinician mindfulness can also improve patient health outcomes.

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INTRODUCTION

Mindfulness refers to a person's tendency to remain "purposefully and nonjudgmentally attentive to their own experience, thoughts and feelings."¹ Mindfulness has gained popularity as a medical treatment for patients, primarily through mindfulness-based stress reduction (MBSR), with beneficial effects shown for pain, psoriasis, and depression, and with biochemical evidence of changes in immune function.^{2,3} Less attention has focused on the potential benefits of mindfulness among physicians and other health professionals. During the past decade, it has been recommended that physicians enhance their own capacities for mindfulness when practicing medicine and interacting with patients.^{1,4-7} Mindfulness is likely to have numerous personal benefits to practicing clinicians. Several studies have shown that MBSR reduces psychological distress or improves the well-being of nurses and physicians in training,⁸⁻¹² and a recent study found that a program teaching mindful communication reduces burnout, as well as improves self-reported well-

being, psychosocial orientation, and empathy among practicing physicians.¹³

In addition to improving the personal well-being of health professionals, a theoretical potential of mindfulness to improve the quality of care delivered to patients has been described. Epstein writes of mindful practice: "This critical self-reflection enables physicians to listen attentively to patients' distress, recognize their own errors, refine their technical skills, make evidence-based decisions, and clarify their values so they can act with compassion, technical competence, presence, and insight."¹¹ In particular, by enabling physicians to be more attentive to patients and their needs, a mindful orientation holds promise for making clinical encounters more patient centered and for enhancing patient-clinician communication.

Despite the theoretical benefits of mindfulness to the patient-clinician relationship and to patients' experiences and outcomes, these associations have not been empirically studied. The purpose of this study was to assess the associations of clinicians' self-reported mindfulness with the patient-centeredness of clinical encounters, patient and clinician communication behaviors, and patients' evaluations of their care. We hypothesized that clinician mindfulness would be associated with higher quality interpersonal care.

METHODS

We conducted a cross-sectional analysis of data from the Enhancing Communication and HIV Outcomes (ECHO) Study.^{14,15} Study participants were patients infected with the human immunodeficiency virus (HIV) and their clinicians at 4 HIV care sites in the United States (Baltimore, Detroit, New York, and Portland). The study received institutional review board approval from each of the 4 sites; both patients and clinicians gave written informed consent. Clinicians who agreed to participate completed a baseline questionnaire. Research assistants then enrolled a convenience sample of 10 patients per clinician, placing a digital audio-recording device in the examination room to record the patient-clinician encounter. After the encounter, patients completed an interview with trained research assistants that assessed demographic, social, and behavioral characteristics, as well as patient evaluations of care.

Main Measures

Clinician Mindfulness

Our independent variable was clinician self-rated mindfulness, as measured on the baseline questionnaire by the previously validated Mindful Attention Awareness Scale (MAAS).¹⁶⁻¹⁹ The MAAS contains 14 items, such

as, "I tend to walk quickly to where I am going without paying attention to what I experience along the way," "I find myself listening to someone with one ear, doing something else at the same time," and "I forget a person's name almost as soon as I've been told it for the first time."¹⁶ Possible responses are on a 6-point Likert scale anchored between almost always and almost never. The total score is an average of the 14 items; higher scores indicate more mindfulness.

Audio-Recorded Measures of Patient and Clinician Communication

Audiotapes were analyzed using the Roter Interaction Analysis System (RIAS), a widely used coding system with well-documented reliability and predictive validity in assessing patient and clinician communication behaviors during medical encounters.²⁰⁻²⁴ RIAS analysts assign 1 of 37 categories to each complete thought expressed by the patient or clinician. These categories can be combined to reflect broad types of exchange, such as rapport building (talk oriented toward enhancing the patient-clinician relationship), biomedical talk (oriented toward the patients' illness and therapy), and psychosocial/lifestyle talk (oriented toward the patients' experience and life situation).

RIAS codes are used to construct a summary measure of patient-centeredness as a ratio of patient-centered categories of talk (all talk about psychosocial or lifestyle-related issues, physicians' information giving about biomedical topics, all patients' questions, all physicians' emotionally focused talk, and partnership talk) divided by physician-centered categories of talk (physicians' biomedical question asking, physicians' directive statements, and patients' biomedical information giving).^{14,15,25-28} A value greater than 1 denotes a more patient-centered and a value less than 1 a more doctor-centered encounter.

In addition to providing information on what was said in an encounter, the RIAS also provides global ratings of how the words were said. Emotional tone scores are calculated by summing coders' subjective ratings for patients and physicians (separately). RIAS analysts additionally recorded for each encounter the total duration of the recorded visit (visit length) and the ratio of clinician-to-patient talk during the visit (verbal dominance). All RIAS coding for this study was done by 2 women.

Patient Evaluations of Care

Patient-reported dependent variables in our analysis included (1) patients' perceptions of clinician communication, and (2) patients' overall satisfaction, derived from postencounter patient interviews. Patients rated clinician communication behaviors using the Interper-

sonal Processes of Care Instrument's general communication subscale, which consists of 21 items.²⁶ Possible responses were on a 5-point scale between never and always. We measured overall satisfaction with the question, "Overall, how would you rate the quality of medical care you have received in the past 6 months?" Possible responses were on a 5-point scale ranging between poor and excellent.

Covariates

Patient interviews also elicited the patients' sociodemographic information (age, sex, employment, education, drug use, and the single racial/ethnic group with which patients identified themselves). Medical records provided data on patients' most recent CD 4 lymphocyte counts. Clinician baseline questionnaires provided self-reported basic demographic information including age, sex, and primary racial/ethnic group.

Analysis

We used descriptive statistics to explore and describe the characteristics of our study sample. We examined the distribution, means, and internal consistencies of the mindfulness scale. Based on the nonnormal distribution of scores, we divided our mindfulness variable into low, medium, and high tertiles to account for the skewed distribution while still allowing the examination of graded associations. We then performed *t* tests for continuous variables and χ^2 tests for categorical variables to test for differences in patient and clinician characteristics (covariates) by clinician mindfulness.

Audiotapes from 1 of our 4 study sites included the patients' interactions with more than 1 clinician (a nurse or nurse practitioner in addition to the primary HIV clinician). For that site, it was impossible to distinguish which RIAS communication behaviors emanated from interaction with the primary HIV clinician whose mindfulness we had assessed. We therefore restricted analyses of audio-recorded communication behaviors to data obtained from the other 3 sites.

We categorized patient-centered visits vs physician-centered visits based on whether the RIAS patient-centeredness ratio for the visit was greater than or equal to 1 or less than 1, respectively. We used logistic regression to examine the association of clinician mindfulness with patient-centered visits. We used linear regression to compare patient and clinician communication behaviors by tertiles of clinician mindfulness. We examined several communication behaviors: rapport building, psychosocial talk, biomedical talk, and emotional tone.

Based on the positive skew in the distribution of the 2 patient evaluation variables, we dichotomized patient evaluations of communication quality (at the median

score) and overall satisfaction (excellent vs all other responses). We used logistic regression to compare patient evaluations of clinician communication and patient satisfaction by clinician mindfulness tertiles. Data for these analyses came from all 4 sites.

In both bivariate and multivariate analyses, we adjusted for site and accounted for nesting of patients within clinicians using generalized estimating equations. We conducted multivariate analyses in 2 steps. In the first, we adjusted for patient and clinician age, sex, and race/ethnicity, as well as any other characteristics found to be associated with clinician mindfulness in bivariate analyses at $P < .20$. In the second step, we added visit length to each model. Adding visit length was particularly important for analyses in which our dependent variable represented counts of specific communication behaviors, because longer visits afford the opportunity for more talk by both patients and clinicians. All analyses were conducted using Stata/SE 9.0 (StataCorp LP).

RESULTS

Study Sample

There were 55 clinicians eligible for the study, and 45 (82%) agreed to participate. We identified 617 eligible patients. Clinicians refused to allow 18 patients to be approached for the study (12 because the clinician felt too rushed, 5 because the patient was too sick, and 1 because the patient was coming for laboratory results only and not a complete visit). Of the remaining 599 patients, 437 (73%) agreed to participate and completed all study procedures. Of the 162 patients who declined to enroll in the study, the most common reasons were that they did not have time to complete the interview ($n = 106$), were not feeling well ($n = 22$), or were not interested in studies ($n = 13$).

Mindfulness scores among clinicians ranged from 2.57 to 5.93 (possible range = 1-6) with a mean of 4.33. The scale had good internal consistency (Cronbach's $\alpha = .90$). The mean score in the low tertile was 3.53, in the middle tertile 4.31, and in the high tertile 5.17. Patient and clinician characteristics are displayed in Table 1. Clinician mindfulness was associated with such characteristics of his or her patient panel as patient race/ethnicity, but not with patient age, sex, education, active drug use, or CD4 lymphocyte count. Clinician mindfulness was not associated with clinician age or training background, but was associated with clinician sex and race, in that female clinicians were more likely to be in the highest mindfulness tertile and nonwhite, non-Asian clinicians were also more likely to rate themselves as high on the mindfulness scale.

Association of Clinician Mindfulness With Observed Communication Behaviors

The overall intercoder reliability, calculated on a random sample of 41 audiotapes, across categories for patient and clinician behaviors was 0.71-0.95. In both unadjusted and adjusted analyses, higher clinician mindfulness was associated with higher odds of having a patient-centered visit (Table 2). There was some evidence of a graded association, with the odds

of a patient-centered visit increasing as mindfulness increased, but only clinicians in the high tertile compared with the low tertile of mindfulness were significantly more likely to engage in patient-centered visits.

Associations of clinician mindfulness with specific clinician and patient communication behaviors are shown in Table 3. In encounters with clinicians in the high compared with the low tertile of mindfulness, both patients and clinicians engaged in substantially more

rapport building and psychosocial talk. On average, clinicians with high compared with low self-rated mindfulness made 30 more statements per visit categorized as rapport building (95% CI, 5-55), and 16 more statements related to psychosocial issues (95% CI, 3-29). In visits with high-mindfulness compared with low-mindfulness clinicians, patients made 40 more rapport-building statements (95% CI, 18-63) and 46 more statements about psychosocial issues (95% CI, 20-73) per visit. Clinicians' affect, or emotional tone, during the encounter was more positive as mindfulness increased. Patients' emotional tone was not significantly associated with clinician mindfulness, and we found no association between clinician mindfulness and the amount of biomedical talk during the visit. When comparing communication in the high-mindfulness with communication in the medium-mindfulness categories, we also found differences only in patient rapport-building and psychosocial talk, with no statistically significant differences comparing high- with medium-mindfulness categories in the overall communication measures or in any of the clinician behaviors.

Effect of Visit Length

The average visit among HIV-infected patients and their clinicians lasted about 22 minutes (Table 3). After adjusting for study site and patient and clinician characteristics, high-mindfulness clinicians spent on

Table 1. Characteristics of Study Sample

Characteristics	All	Clinician Mindfulness Tertile ^a			p Value
		Low	Middle	High	
Patient, No.	437	150	146	141	
Age, mean (SD), y	45.4 (9.4)	44.8 (9.6)	43.9 (9.1)	47.6 (9.2)	0.41
Female, No. (%)	147 (34)	48 (32)	46 (31)	53 (36)	0.45
High school degree, No. (%)	317 (73)	44 (37)	37 (31)	39 (33)	0.74
Race/ethnicity, No. (%)					<0.01
Black	254 (58)	97 (65)	61 (42)	96 (68)	
Hispanic	62 (14)	13 (9)	33 (23)	16 (11)	
White	106 (24)	37 (25)	44 (30)	25 (18)	
Other	15 (3)	3 (2)	8 (5)	4 (3)	
Active drug use, No. (%)	128 (29)	50 (33)	47 (32)	41 (22)	0.07
Depression score, mean (SD)	2.11 (0.64)	2.13 (0.69)	2.08 (0.67)	2.11 (0.56)	0.81
CD4 cell count, mean (SD)	470 (329)	458 (318)	440 (278)	513 (383)	0.37
Length of patient-physician relationship >5 year, No. (%)	144 (33)	51 (34)	53 (37)	40 (29)	0.39
Clinician, No.	45	15	15	15	
Age, mean (SD), y	44.5 (8.6)	43.7 (9.7)	47.5 (6.8)	42.3 (8.6)	0.23
Female, No. (%)	25 (56)	4 (27)	8 (53)	13 (87)	<0.01
Physicians, No. (%)	34 (76)	13 (38)	10 (29)	11 (32)	0.43
Race/ethnicity, No. (%)					0.05
White	30 (67)	11 (73)	12 (80)	7 (47)	
Asian	11 (24)	4 (27)	3 (20)	4 (27)	
Other	4 (9)	0 (0)	0 (0)	4 (27)	

^aMean mindfulness scores: low tertile = 3.53, middle tertile = 4.31, high tertile = 5.17.

Table 2. Patient-Centeredness of Clinical Encounter, by Clinicians' Self-Rated Mindfulness

Clinician Evaluation	Clinician Mindfulness Tertile		
	Low (n = 116)	Middle (n = 127)	High (n = 119)
Patient-centered visit, No. (%)	23 (19.8)	38 (29.9)	51 (42.9)
Unadjusted, OR (95% CI)	–	1.64 (0.79-3.38)	3.76 (1.69-8.37)
Adjusted for covariates, OR (95% CI)	–	1.64 (0.73-3.67)	4.14 (1.58-10.86)
Adjusted for covariates + visit length, OR (95% CI)	–	1.30 (0.54-3.11)	3.36 (1.17-9.60)

OR = odds ratio.

Note: Data from 3 sites. Unadjusted and adjusted logistic regression models account for clustering of patients within clinicians using generalized estimating equations and adjust for study site; adjusted model also includes patient age, sex, race/ethnicity, and current drug use, and clinician age, sex, and race/ethnicity. Referent group for odds ratios is the low clinician mindfulness tertile.

Table 3. Observed Patient-Clinician Communication, by Clinicians' Self-Rated Mindfulness

Measure	Clinician Mindfulness Tertile ^a			β Coefficient (95% CI)			
	Low (n = 116)	Middle (n = 127)	High (n = 119)	Adjusted for Covariates ^b		Adjusted for Covariates ^b + Visit Length	
				Middle vs Low	High vs Low	Middle vs Low	High vs Low
Overall measures							
Visit length, minutes	22.7 (9.0)	22.2 (8.9)	22.5 (10.5)	2.2 (-1.9 to 6.3)	5.8 (0.9 to 10.8)	–	–
Verbal dominance	1.36 (0.6)	1.49 (0.5)	1.24 (0.4)	0.12 (-0.10 to 0.34)	-0.09 (-0.34 to 0.15)	0.12 (-0.12 to 0.37)	-0.15 (-0.45 to 0.15)
Clinician behaviors							
Rapport-building talk	80 (37)	87 (38)	89 (44) ^c	17 (-3 to 38)	30 (5 to 55)	12 (-5 to 29)	15 (-5 to 36)
Psychosocial talk	18 (18)	23 (27)	27 (29) ^c	5 (-6 to 16)	16 (3 to 29)	3 (-8 to 12)	9 (-3 to 21)
Biomedical talk	120 (63)	135 (71)	111 (66)	27 (-1 to 56)	17 (-17 to 51)	16 (-8 to 40)	-12 (-42 to 17)
Emotional tone	11.6 (1.7)	11.8 (1.7)	11.8 (1.8)	0.69 (0.11 to 1.3)	1.17 (0.46 to 1.9)	0.60 (0.04 to 1.6)	0.92 (0.22 to 1.6)
Patient behaviors							
Rapport-building talk	95 (48)	97 (47)	107 (59) ^d	14 (-4 to 33)	40 (18 to 63)	6 (-7 to 19)	19 (3 to 35)
Psychosocial talk	52 (47)	62 (63)	78 (55) ^d	13 (-9 to 34)	46 (20 to 73)	6 (-14 to 25)	28 (4 to 52)
Biomedical talk	94 (56)	91 (52)	96 (65)	8 (-14 to 29)	23 (-4 to 50)	0 (-16 to 16)	2 (-18 to 22)
Emotional tone	21.1 (1.8)	21.0 (2.0)	21.3 (1.6)	0.07 (-0.53 to 0.66)	0.62 (-0.12 to 1.36)	0.04 (-0.56 to 0.64)	0.53 (-0.22 to 1.29)

Note: Data are from 3 sites.

^a Visit-level data for each variable. Verbal dominance is the ratio of clinician to patient talk. Talk variables are numbers of statements. Emotional tone is sum of scaled ratings by coders listening to audiotaped dialogue.

^b Results from linear regression models using generalized estimating equations to account for clustering of patients within clinicians and adjusting for study site; patient age, sex, race/ethnicity, and current drug use; and clinician age, sex, and race/ethnicity. Referent group for β coefficients is the low clinician mindfulness tertile.

^c $P < .05$.

^d $P < .01$, for comparisons of middle or high- vs low-mindfulness tertile, accounting for clustering of patients within clinicians and adjusting for study site.

average 5.8 (95% CI, 0.9-10.8) minutes longer with their patients than did those in the lowest tier. After adjusting for visit length, the association between mindfulness and the odds of a patient-centered visit (Table 2) remained significant, as did differences in patient expression of rapport-building and psychosocial statements (Table 3). Adjusting for visit length, however, did substantially reduce differences in the amount of physician rapport-building and psychosocial talk (Table 3).

Patient Evaluations of Care

The Cronbach's α for the interpersonal processes of care measure of communication quality in our sample was .88. In unadjusted and adjusted analyses, patients of clinicians in the high tertile compared with the low tertile of mindfulness had greater odds of reporting high-quality communication and high overall satisfaction with care (Table 4). Neither of these associations changed after accounting for visit length.

DISCUSSION

Mindfulness among health care clinicians was associated with more patient-centered communication, pro-

viding the first evidence of which we are aware that clinician mindfulness is associated with the quality of care patients receive as measured by patient-centeredness and patient satisfaction. Mindfulness among clinicians was associated with more rapport building and communication about psychosocial issues between patient and clinician, and a more positive emotional atmosphere within the clinical encounter. These findings give empirical weight to Epstein's speculation that the benefits of mindful practice extend beyond the practitioner to his or her patients; it is not only that mindful practitioners can listen attentively, but that their patients are empowered to make their voice heard in areas that matter to them. It is perhaps this reciprocal communication dynamic that drives the differences observed across levels of mindfulness and the patient-centeredness score and related categories.

How might clinicians' mindfulness affect their communication with patients? Although our study did not address this question directly, we can speculate on possible explanations. Mindfulness is defined as attentiveness, curiosity, presence, and the ability to adopt multiple perspectives simultaneously—all qualities that promote greater awareness of self and oth-

Table 4. Patient Evaluations of Care, by Clinicians' Self-Rated Mindfulness

Patient Evaluation	Clinician Mindfulness Tertile		
	Low (n = 150)	Middle (n = 146)	High (n = 141)
High clinician communication score, No. (%) ^a	62 (41.3)	67 (46.5)	79 (56.8)
Prevalence ratio (95% CI)			
Unadjusted	–	1.23 (0.92-1.64)	1.47 (1.15-1.87)
Adjusted for covariates	–	1.27 (0.98-1.65)	1.51 (1.21-1.87)
Adjusted for covariates + visit length	–	1.26 (0.96-1.66)	1.48 (1.17-1.86)
Highest patient satisfaction, No. (%) ^b	82 (54.7)	91 (63.2)	95 (68.4)
Prevalence ratio (95% CI)			
Unadjusted	–	1.23 (0.97-1.55)	1.36 (1.05-1.76)
Adjusted for covariates	–	1.25 (1.00-1.55)	1.46 (1.16-1.83)
Adjusted for covariates + visit length	–	1.26 (1.01-1.58)	1.45 (1.15-1.84)

Note: Unadjusted and adjusted regression models account for clustering of patients within clinicians using generalized estimating equations and adjust for study site; adjusted models also include patient age, sex, race/ethnicity, and current drug use, and clinician age, sex, and race/ethnicity. Referent group is the low clinician mindfulness tertile.

^a High clinician communication score defined as higher than median patient ratings of clinician communication.

^b High patient satisfaction defined as overall quality of care rated as excellent vs all other responses.

ers. Mindfulness training also includes skills to lower reactivity and to enhance responsiveness to stressful situations. Mindfulness may free clinicians' attention so that they are better able to attend to others' experience, less likely to distance themselves from distressing situations, and more likely to consider a variety of explanations in complex situations. As mindful clinicians maintain greater attention to their own, as well as their patients', experiences, they may be more able to appreciate the impact of an illness on the patient's life or the nuances of the patient's emotions. This deeper appreciation of the patient's experience perhaps enables the clinician to respond to such opportunities with understanding, empathy, and compassion, attending to the "lifeworld" in which in which the patients reside,²⁹ and these exchanges are conveyed through emotional tones of warmth, acceptance, and positive regard. Although patient-centered communication skills must still be learned, the practice of mindfulness may make it more likely that the clinician is able to employ this technique.

Notably, the association between clinician mindfulness and both clinician and patient communication behaviors was partly attributable to the increased average time spent with patients by clinicians with high self-rated mindfulness. In addition, many associations, particularly those with patient evaluations of their care, were not solely attributable to longer visits; therefore, mindfulness may enhance patient-centeredness in clinical encounters by improving both the quantity and quality of attention clinicians give to their patients.

Greater patient-centeredness and improved patient experiences with mindful clinicians as found in this study could ultimately also enhance retention in care and clinical outcomes, especially in the setting of HIV care, where positive patient-clinician relationships have been linked to higher quality, greater medication adherence, and better outcomes.^{30,31} It may furthermore be true that these benefits extend to all patients, especially to those from underserved or marginalized populations who may be particularly attentive to a clinician's affective demeanor and for whom issues of trust and respect are central.³²

Our study had several limitations. One limitation relates to the difficulty in measuring both mindfulness and patient-

centeredness. Mindfulness is a highly complex practice and may be imperfectly measured by the MAAS. The MAAS measures only 1 of several constructs inherent in mindfulness, and more recently developed operational definitions and instruments³³⁻³⁵ may allow a more nuanced understanding of which aspects of mindfulness are important. A somewhat similar methodological issue may be raised in regard to patient-centeredness—a concept with many dimensions.³⁶ Nevertheless, the RIAS measure used is well validated and has been found to be predictive of patient outcomes in other studies.^{24,27} Also, patients and clinicians in our study knew that they were being recorded and may have attempted to communicate differently, which could bias our study toward more favorable communication behaviors. Prior studies, however, have directly addressed this issue and have not found that recorded visits were substantively different from nonrecorded ones^{37,38}; moreover, any Hawthorne effect would have to have differentially influenced clinicians with varying levels of mindfulness to have affected our findings. The clinical context of these study visits was HIV care. HIV-infected patients have a serious, chronic illness. Perhaps as a result, they may have particularly close relationships with their clinicians within which the effect of a clinician's mindfulness may be more (or less) pronounced than in routine ambulatory care. Although we found an association between mindfulness and physician race/ethnicity, we had a limited number of nonwhite, non-Asian clinicians. One clinician had been trained in mindfulness, and we do not know how amenable to training clinicians would

be. Finally, we cannot determine from this cross-sectional analysis whether mindfulness training for health care clinicians will result in better clinical interactions, or whether some other characteristics of mindful physicians were responsible for the positive patient outcomes we observed.

Future research should attempt to replicate these findings by measuring mindfulness among clinicians and exploring its effects on the quality of patient care in terms of patient-centeredness, as well as considering other aspects of quality, such as safety, effectiveness, efficiency, and equity. Such research might also consider exploring potential explanatory mechanisms for such findings in terms of the quality of information gathered by the clinician, clinical decision making, patient engagement, and trust. Further, studies should test whether interventions to improve the mindfulness of practicing clinicians affect patient satisfaction and other aspects of quality.

Mindfulness may be an important pathway to a more humanistic, effective, and satisfying practice of medicine. The highly reciprocal influence of patients and clinicians on one another is in itself a powerful and positive medical tool—perhaps in some situations more powerful than other interventions that can be offered to patients. In an era in which many physicians suffer professional burnout, mindful practice may be the way in which physicians not only heal themselves, but heal their patients as well.

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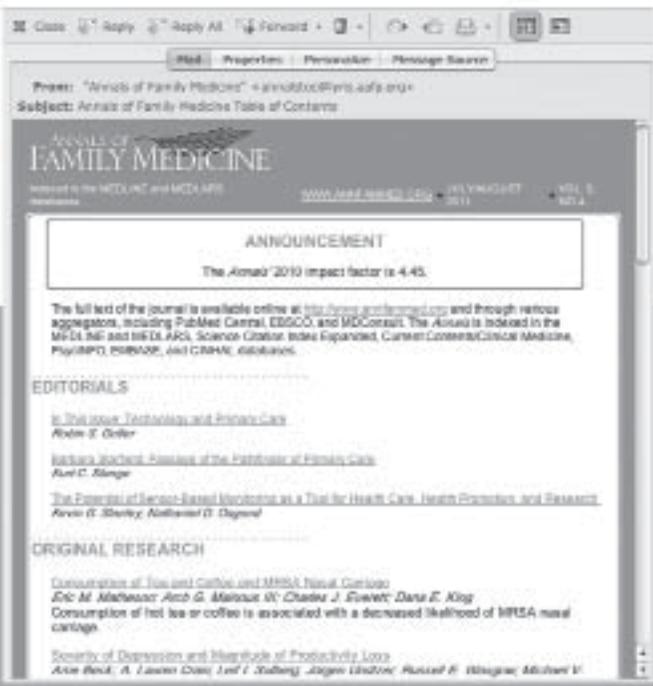
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