



# A Cross-Sectional Study of Stress and the Perceived Style of Decision-Making in Clinicians and Patients With Cancer

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## Abstract

**Background and Aims:** Perceived stress and mindfulness can impact medical decision-making in both patients and clinicians. The aim of this study was to conduct a cross-sectional evaluation of the relationships between stress, mindfulness, self-regulation, perceptions of treatment conversations, and decision-making preferences among clinicians. Also, perceptions of treatment conversations and decision-making preferences among patients with cancer were evaluated.

**Methodology:** Survey instruments were developed for clinicians and patients incorporating previously published questions and validated instruments. Institutional review board approval was obtained. Patients, physicians, and advanced practice providers from a tertiary referral center were asked to complete surveys. Continuous variables were evaluated for normality and then bivariate relationships between variables were evaluated using  $\chi^2$ , Fisher's exact test, Cochran-Mantel-Haenszel (CMH) row mean scores differ statistic, or Kruskal-Wallis tests, where appropriate. Significance was defined at  $P < .05$ . All tests were conducted using SAS v.9.4.

**Results:** 77 patients and 86 clinicians (60.1% and 43% response rates, respectively) participated in the surveys. More clinicians who reported feeling "great/good" said they always/sometimes had enough time to spend with patients (66.1%) compared to those that hardly ever/never had enough time (26.3%),  $\chi^2(1, N = 75) = 6.62, P = .0101$ ; CMH row mean scores differ statistic). Interestingly, 40.3% of patients preferred a paternalistic style of decision-making compared to 6.3% of clinicians,  $\chi^2(2, N = 146) = 27.46, P < .0001$ ;  $\chi^2$  test. Higher levels of dispositional mindfulness (Mindful Attention Awareness Scale) were found among clinicians who reported they felt "great/good" (median = 4.5) as compared to those who reported that they were "definitely stressed/stressed out" (3.3),  $\chi^2(2, N = 80) = 10.32, P = .0057$ ; Kruskal-Wallis test. Higher levels of emotional self-regulation (Emotional Regulation Questionnaire—Cognitive Reappraisal facet) were found among clinicians who reported they felt "great/good" (median = 31.0) compared to those who reported that they were "definitely stressed/stressed out" (20.0),  $\chi^2(2, N = 79) = 8.88, P = .0118$ ; Kruskal-Wallis test.

**Conclusion:** In order to have meaningful conversations about treatment planning, an understanding of mental well-being and its relationship to decision-making preferences is crucial for both oncology patients and clinicians. Our results show that for clinicians, lower perceived stress was associated with higher levels of mindfulness (experiencing the present moment), emotional self-regulation, and spending more time with patients. Larger prospective studies are needed to validate these findings.

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## Keywords

medical decision-making, correlation study, mindfulness, psychological stress

## Background

Shared decision-making (SDM) is considered by the Institute of Medicine (IOM) to be the goal of patient-centered care and is defined as a collaborative process in which patients and their clinical teams work together to make health-care decisions informed by scientific evidence as well as patients' own values and preferences.<sup>1</sup> Shared decision-making is rooted in the understanding that patients and clinicians both bring different yet important perspectives to the decision-making process.<sup>2,3</sup> Yet, in practice, applying SDM is difficult. One of the biggest challenges is that resources and tools (decision aids) to help inform patients are not commonly available,<sup>4</sup> even more-so for patients with complex chronic conditions like cancer.<sup>5</sup> Progress has been made in this regard; however, substantially more resources and research into the efficacy of decision aids are needed.

Another significant barrier to SDM is information exchange and the inherent communication skills of patients and clinicians that impact how information is shared or received.<sup>6</sup> This is where other styles of medical decision-making come into play, such as paternalism and consumerism. Charles et al posited that paternalistic medical decision-making is a scenario where the clinician makes a decision about the patient's medical management by deliberating alone or with other clinicians. A consumerist approach, on the other hand, is one in which the patient makes the decision about medical management and deliberates alone or with others.<sup>7</sup> Although SDM is considered the ideal approach to medical decision-making, the reality is that both patients' and clinicians' preferences and willingness to engage in SDM depend on various and complex factors, which can fluctuate over time and are context dependent.

What factors influence one's penchant for a particular decision-making style? Judgment and decision-making preferences and experiences are impacted by nuanced elements outside conscious awareness, including environment, family, culture, age, sex, past experience, framing, fear, mood and lack of perceived control, risk, and ambiguity.<sup>8</sup> These factors influence our view of events and our perception of stressful situations. Existing research has demonstrated that stress affects decision-making.<sup>9-12</sup> Evidence also suggests that decisions made under stressful conditions or situations tend to be much more erroneous and that a person under stress may make "unsystematic and hurried decisions and lacks a full consideration of all the options."<sup>11,13-15</sup> The result is diminished attention, increased distraction, increased reaction time, and deficits in an individual's working memory.<sup>16</sup> Stress hinders an individual's ability to be in the present moment (mindfulness) and provide attuned communication and empathy, which drive effective SDM.<sup>17</sup>

In practice, clinicians must maintain intense focus to deliver skilled clinical care. At the same time, they need to be present

in the moment, making meaningful connections with patients and their families, and be compassionate and empathetic to their patients' needs. Simply put, this is practicing mindfulness. Mindfulness is defined as "... paying attention in a particular way: on purpose, in the present moment, and non-judgmentally."<sup>18</sup> More medical schools are working to integrate mindfulness and stress resiliency practices in their training programs.<sup>19</sup> Nevertheless, health-care organizations are often stressful work environments and not designed for "reflective, mindful approaches to patient care and staff resilience."<sup>20</sup> A substantial amount of research, the majority of which has been conducted outside the context of health care, has shown an inverse relationship between perceived stress and mindfulness<sup>21-26</sup> and has suggested that one's ability to regulate emotions (emotional self-regulation) is a potential factor that may impact stress responses.<sup>27-29</sup> Particularly, clinicians treating patients with chronic and terminal conditions like cancer are in a position to expend large amounts of emotional energy when communicating with their patients. Emotional exhaustion is a state of feeling emotionally drained as a result of accumulated stress from one's personal or work life, and emotional exhaustion is one of the signs of burnout.<sup>30</sup>

Medical decision-making and the delivery of patient care under stress can lead to undesirable consequences. Researchers found that medical residents who met the criteria for burnout were 2 to 3 times more likely to report providing suboptimum care, such as failure to fully discuss treatment options or answer patient questions, treatment or medication errors that were not due to lack of knowledge or inexperience, and reduced attentiveness or caring behavior toward patients.<sup>31</sup> Training of health-care professionals does not often include "ample focus on human-connection skills and strategies that support clinicians to engage with patients in a meaningful, undistracted, unhurried manner."<sup>20</sup> Furthermore, medical decision-making often occurs in circumstances that are emotionally challenging and require clinicians to actively manage their own and others' emotions.<sup>29</sup> This can be especially true for the treatment and management of chronic conditions like cancer. Heyhoe et al concluded that emotions impact patient safety and urged health-care professionals to be cognizant of that fact.<sup>32</sup> This is, however, beginning to change with more medical education programs piloting or integrating resilience and mindfulness training into their curricula.<sup>33-35</sup> More research is needed about the relationship between stress and mindfulness and how those constructs impact decision-making.

A diagnosis of cancer brings a degree of uncertainty that makes the process of medical decision-making uniquely stressful from the patient perspective. They must weigh various factors such as clinician recommendations, side effects, and overall survival rates to decide on a course of treatment.<sup>36</sup> Researchers have described how stress associated with the

diagnosis of breast cancer and the perceived sense of urgency to make a treatment decision negatively impacts information seeking behavior, resulting in decisional conflict or regret.<sup>37,38</sup> This reinforces the importance of active patient engagement in treatment decisions and conversations. O'Brien and colleagues reported that emotional distress can inhibit women with breast cancer from being able to engage in effective medical decision-making with their clinicians, and they rely heavily on surgeons to make treatment decisions for them.<sup>39</sup> Participants of the IOM's National Cancer Policy Forum discussed ways to mitigate these dynamics by providing standardized nurse navigator services and well-coordinated patient-centered care activities, which could improve outcomes by decreasing anxiety and optimizing communication and decision-making between patients, clinicians, and health-care teams.<sup>40</sup>

Stress, burnout, fatigue, and psychological distress on both sides of decision-making conversations can impact the quality of health care an institution is able to provide and that which patients are able to receive. Clinicians, who are trained in the practice of mindfulness and healthy emotional self-regulation habits to manage stress and balance the demands of clinical practice, can facilitate the delivery of effective SDM with patients and high-quality care. Patients with cancer can also benefit from stress reduction interventions and tailored patient-centered care activities that can reduce anxiety and improve communication and decision-making with their clinical teams.

## Aim/Hypotheses

Health-care organizations may benefit from an understanding of stress and decision-making preferences and experiences and the relationship between these constructs from those who provide and receive care. This may enable these organizations to be better equipped to set priorities and tailor evidence-based interventions. The aim of this study was to conduct an evaluation of patients' and clinicians' decision-making preferences and activities and their relationship to stress, in order to gain a better understanding of how they reach the choices they make in stressful medical scenarios. This cross-sectional, correlational study administered surveys to patients with cancer, as well as to physicians and advanced practice providers. Research from the American Medical Association (AMA) demonstrated that different specialties experience different levels of stress and burnout,<sup>41</sup> so we also sought to evaluate subsets of clinicians by specialty. In order to understand how patient and clinician decision-making preferences align or differ, additional evaluations were conducted to compare those 2 groups.

For clinicians, we hypothesized that those who report higher levels of perceived stress may report decision-making experiences related to the consumerist or paternalistic types. Based on previous research discussed above, although largely outside the context of health care, we hypothesized a priori that relationships may exist among clinicians' perceived stress, mindfulness, and/or emotional-self-regulation

levels. Additionally, we hypothesized a priori that differences will also be apparent between patients' and clinicians' decision-making preferences.

## Methods

### Study Design

This cross-sectional study utilized a self-report survey with voluntary sampling of patients with cancer, and physician and advanced practice providers at a tertiary referral medical center. Separate survey instruments and protocols were developed for both clinicians and patients. The study protocols were approved by the Aspire Institutional Review Board Inc. (protocol # 020.NUR.2017.D and 015.HEP.2017.D). No personally identifiable information was collected from any study participants in order to reduce potential bias.

### Participants and Setting

**Clinicians.** The clinician survey instrument was developed following an extensive literature review and respondent debriefing sessions with a small sample of clinicians ( $n = 5$ ) representing medical, surgical, and primary care disciplines. During these debrief interviews, clinicians completed the survey and then answered several evaluation questions, including those about comprehension and interpretation of survey questions, content, difficulty, and the time it took them to complete it. Modifications (ie clarifications, elimination, or rewording of some questions) were made to the survey based on the feedback received. The final survey instrument was disseminated to 200 physicians and advanced practitioners within Methodist Health System" between October 2017 and April 2018. Respondents had to be current licensed clinicians at a hospital affiliated with Methodist Health System. This study was part of an initiative known as "Mindfulness at Methodist".

**Patients.** The patient survey instrument was developed after conducting an extensive literature review, focus groups with patients, and interviews with clinicians. Two focus group sessions were hosted with a total of 11 patients who participated in Methodist Dallas Medical Center (MDMC) cancer support groups. During the first focus group ( $n = 5$ ), patients were asked questions about various factors that impacted their medical decision-making choices and experiences. In the second focus group ( $n = 6$ ), participants completed a draft survey and then were asked evaluation questions as a group, including those about comprehension and interpretation of survey questions, content, difficulty, and the time it took them to complete it. Focus group sessions were recorded and transcribed and the results from the draft survey were evaluated. The draft survey and results were also discussed with clinicians ( $n = 4$ ), including medical and surgical specialists, in one-on-one interviews. Modifications (ie, clarifications, elimination, or rewording of some questions) were made to the survey based on the feedback received.

## Procedure

**Clinicians.** The final survey was disseminated to clinicians via an e-mailed link from the study PI. Qualtrics, a secure online survey platform, was used to collect survey responses anonymously. The link directed respondents to the survey with an informed consent front page. At the bottom of the informed consent page was an option to indicate willingness to participate, selection of which gave access to the actual survey. No personally identifiable information was collected. Participants were not compensated.

**Patients.** The final survey was disseminated to 128 patients at MDMC between May and July 2017. This included MDMC inpatient oncology units and a Texas Oncology clinic, and patients who attended MDMC cancer support groups. Respondents had to be aged 18 years or older, a past or current patient or caregiver of a patient treated for a malignancy, and literate in English. Patients were approached in the settings described above and given paper copies of the survey, which included an informed consent front page. At the bottom of the front page, respondents were instructed that if they were willing to participate, they could turn the page to complete the actual survey. No personally identifiable information was collected. Participants were not compensated.

## Instruments

**Clinician survey.** The objective of the clinician survey was 2-fold; first, to evaluate differences in decision-making preferences and experiences, and second, to evaluate the perceived levels of stress, mindfulness, and emotional self-regulation by physicians' (1) demographics, (2) specialty type, (3) perceptions of patient-clinician treatment conversations, (4) perceptions regarding the impact of stress on communication and clinical encounters, and (5) perceptions of patient-centered care activities.

The English survey instrument for clinicians contained questions consisting of multiple-choice, Likert, and free-text response options. Demographic data were collected, including age, sex, marital status, type of clinician (eg, medical doctor, doctor of osteopathic medicine, nurse practitioner), specialty type, and years in current practice.<sup>42</sup>

Specialty types were classified as medical (eg, cardiology, cardiovascular, emergency medicine, gastroenterology, gynecology, hematology/oncology, hepatology, infectious diseases, medical oncology, nephrology, pathology, psychiatry, radiation oncology), primary care (family medicine, internal medicine, or urgent care), or surgical (cardiothoracic, colorectal, general, hepatobiliary, neurological, head and neck, and transplant).

Some questions were developed empirically by the research team to get a cursory understanding of patients' preferences. Therefore, no validity or reliability testing was completed for these questions. Additionally, publicly available, previously published questions and individual validated instruments were also incorporated:

**Decision-making experiences and preferences.** Respondents were asked about their professional medical decision-making experiences and preferences.<sup>43</sup> To our knowledge, no validity or reliability testing exists on these questions. Options were (1) "I (prefer to) tell my patients and their families the options, and the pros and cons of each, and then they decide what to do," (2) "I (prefer to) discuss options with my patients and their families and then come to a decision together," (3) and "I (prefer to) keep my patients informed, but in general, make health-care decisions for them on the basis of what I think is best." Herein after, option 1 is called "consumerism," option 2 is called "shared decision-making (SDM)," and option 3 is called "paternalism."

**Perceived stress.** Perceived stress, also described as brain/emotional state,<sup>44</sup> was ascertained by asking respondents the single question, "Which emotional/mental state do you most frequently find yourself in?" Options were 1 (feeling great!), 2 (feeling good), 3 (a little stressed), 4 (definitely stressed), and 5 (stressed out!). Published research conducted in a population of registered nurses in a tertiary care medical center found that responses to the perceived stress question were significantly associated with their self-reported frequency of work-related stressors,  $\chi^2(4, N = 267) = 50.66, P < .0001$ .<sup>45</sup> This provides some degree of face validity that this question reflects the actual perceived stress of respondents.

**Dispositional mindfulness.** Mindfulness, as it pertains to everyday experiences, was analyzed using the Mindful Attention Awareness Scale (MAAS).<sup>46</sup> The MAAS is a validated and well-established scale that measures dispositional mindfulness. MacKillop and Anderson provided an analysis of the validity and internal reliability (Cronbach  $\alpha$  indicated good internal reliability,  $\alpha = .89$ ) of the MAAS.<sup>47</sup> Fifteen statements about everyday experiences are presented and ranked by respondents based on how frequently or infrequently they have the experiences. An example statement is "I rush through activities without being really attentive to them." Respondents ranked each statement on a 6-point Likert-type scale ranging from 1 (almost always) to 6 (almost never). To score the scale, the average of the 15 items was computed; therefore, the final scores could range from 1 to 6. Higher scores reflect higher levels of dispositional mindfulness.

**Emotional self-regulation.** Emotional self-regulation was analyzed using the Emotion Regulation Questionnaire (ERQ).<sup>48</sup> The criterion validity of the ERQ has been studied extensively, revealing several associations with constructs related to adaptive and nonadaptive functioning.<sup>49</sup> The ERQ is a 10-item scale designed to measure respondents' propensity to adjust their emotions in 2 ways: (1) cognitive reappraisal (ERQ\_CR) and (2) expressive suppression (ERQ\_ES). Respondents answered each item on the ERQ along a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). For each ERQ facet (ERQ\_CR and ERQ\_ES), the scores were simply added to produce a cumulative score. Higher scores on the cognitive

reappraisal facet and lower scores on the emotional suppression facet could correlate to greater well-being.<sup>48</sup> An example statement on ERQ\_CR facet is “When I want to feel more positive emotions (such as joy or amusement), I change what I’m thinking about.” An example from the ERQ\_ES facet is “I control my emotions by not expressing them.”

**Perception of treatment discussions.** Questions developed by Murray et al<sup>43</sup> about perception of treatment discussions and multidisciplinary collaboration were included. To our knowledge, no validity or reliability testing exists on these questions. Respondents were asked how often they felt that they had enough time to spend with patients during visits, how often they presented their patients with different treatment options, and how often they asked their patients for their treatment option preferences. Options were “always,” “sometimes,” “hardly ever,” “never,” and “does not apply.” For analysis, responses were categorized as (1) “always/sometimes” and (2) “hardly ever/never.” Respondents were also asked how frequently they collaborated with other members of the health-care team on patients’ plan of care. Options were “very frequently,” “frequently,” “occasionally,” and “never.” For analysis, responses were combined as (1) “very frequently/frequently” and (2) “occasionally/never.”

Respondents were also asked 4 questions developed by the research team to gauge clinician perceptions of the impact of stress on clinical encounters and outcomes. Similar to patients, clinicians were asked how strongly they felt stress impacted communication (eg, between patients and their clinician or between patients and their caregiver). They were also asked how strongly they believe patients’ stress impairs the patient’s ability to listen and remember information during office visits, if stress impairs the decisions they (the clinician) make in clinic and if patients’ stress impairs health outcomes. Ranking options included “very strongly,” “strongly,” “somewhat strongly,” or “not strongly.” For analysis, responses were combined as (1) “very strongly/strongly” and (2) “somewhat strongly/not strongly.” No validity or reliability testing was completed for these questions.

**Perception of patient-centered care activities.** Finally, respondents were asked to rank the level of importance of patient-centered care activities (eg, nurse navigation, multidisciplinary collaboration, end-of-life planning, and stress management) that are said to optimize communication and decision-making between patients and clinicians.

Ranking options included “very important,” “important,” “somewhat important,” and “not important.” For analysis, responses were combined as (1) “very important/important” and (2) somewhat important/not important. No validity or reliability testing was completed for these questions.

**Patient survey.** The objectives of the patient survey were to evaluate oncology patients’ decision-making preferences and experiences by patients’ (1) demographics, (2) perceptions of the impact of stress on communication, (3) factors that

influenced their treatment decisions, and (4) importance of patient-centered care activities.

The survey instrument contained questions that consisted of multiple-choice, Likert, and free-text response options. Demographic data were collected including age, sex, race/ethnicity, marital status, education level, and cancer diagnosis.

Some questions were developed empirically by the research team to get a cursory understanding of patients’ preferences. Therefore, no validity or reliability testing was completed. Other publicly available, previously published questions were included.

**Decision-making experiences and preferences.** Questions about decision-making preferences and experiences were also presented to respondents.<sup>50</sup> To our knowledge, no validity or reliability testing exists on these questions. Preference and experience options were “make the final choice of which treatment I receive,” “make the final choice after seriously considering my doctor’s opinion,” “my doctor and I share responsibility for choosing which treatment is best for me,” “my doctor makes the final choice but seriously considers my opinion or the opinion of my family,” and “leave all choices regarding treatment to my doctor.” For simplicity, herein after, the first 2 options (patient makes the final choice alone or alone but considering doctor’s opinion) are called “consumerism,” the third option (shared responsibility for choice) is called “shared decision-making (SDM),” and the last 2 options (doctor makes choice alone or alone but considering patient and/or family’s input) are called “paternalism.”

**Perception of treatment discussions.** The research team developed questions which asked respondents how strongly they felt stress impacts communication (eg, between patient and their clinician or between patient and their caregiver). Ranking options included “very strongly,” “strongly,” “somewhat strongly,” or “not strongly.” For analysis, responses were combined as (1) “very strongly/strongly” and (2) “somewhat strongly/not strongly.”

Respondents were also asked about factors that affected their treatment decision, such as the sufficiency of the information they received and the amount of time they had to make a decision. Options included “not enough time or information,” “just the right amount of time or information,” and “too much information or more than enough time.”

**Perception of patient-centered care activities.** The research team asked respondents to rank the level of importance of patient-centered care activities. This was identical to the clinician survey.

**Clinician and patient survey comparisons.** To evaluate the differences between patients and clinicians on topics that were common to both surveys, the objectives were as follows: to compare (1) decision-making preferences and experiences, (2) perceptions of the impact of stress on communication, and (3) the importance of patient-centered care activities. Perceived

stress, mindfulness, and emotional self-regulation instruments were *not* given to patients.

### Statistical Analysis

Descriptive statistics are reported as absolute frequencies (n) and median (range) for continuous variables, and absolute (n) and relative frequencies (%) for categorical variables. Continuous variables (ie, age, years in practice, MAAS, ERC\_CR, and ERQ\_ES) were evaluated for normality using the Shapiro-Wilk test combined with examination of the normal probability plot. Bivariate relationships between categorical patient and clinician characteristics and outcomes of interest were evaluated using  $\chi^2$ , Fisher's exact test, or Cochran-Mantel-Haenszel (CMH) row mean scores differ statistic, where appropriate. Bivariate relationships between continuous clinician characteristics and outcomes of interest were evaluated using the nonparametric Kruskal-Wallis test. Significance was defined as  $P < .05$  for 2-tailed tests. All analyses were conducted using SAS v. 9.4 (SAS Institute Inc, Cary, North Carolina).

### Results

The survey was disseminated to 200 clinicians and 128 patients. Eighty-six clinicians and 77 patients completed the surveys, with a 43% and 60.1% response rate, respectively. Tables 1 to 4 present the results of statistical tests completed, but due to missing responses for some questions, the sample sizes for the same groups may be different.

#### Clinician Survey

**Demographics.** The majority of clinicians were younger than 65 years (89.0%), male (66.7%), physicians (88.6%), and represented a variety of medical (41.7%), surgical (26.2%), and primary care (32.1%) specialties (Table 5). Clinicians had a median (range) of 6.0 (0.5-43.0) years in practice.

We sought to understand whether there were differences in clinician characteristics and clinicians' specialty type (see Supplementary material). Regardless of specialty type, there were no differences in clinicians' perceived stress, mindfulness, emotional self-regulation, or clinicians' perceptions on the impact of stress on clinical encounters. However, among those who reported that they hardly ever or never had enough time to spend with patients, the majority (60%) were medical specialists,  $\chi^2(1, N = 76) = 4.95, P = .02$ ; CMH row mean scores differ statistic.

**Decision-making experiences and preferences.** In examining clinicians' perceived style of decision-making, there was a difference in decision-making practices and perceived stress (emotional/brain state). A nonparametric 1-way analysis of variance test revealed that among those who reported feeling great or good, the majority had perceived their style as SDM (77.3%),  $\chi^2(2, N = 78) = 6.99, P = .0304$ ; Kruskal-Wallis test, compared to paternalism (4.6%) and consumerism (18.2%).

Additionally, among those who practiced paternalism (9), the majority (77.8%) reported that they hardly ever or never had enough time to spend with patients,  $\chi^2(1, N = 77) = 9.78, P = .0019$ ; Kruskal-Wallis test, compared to those who always or sometimes had enough time to spend with patients (22.2%). In the SDM group, all clinicians ( $N = 60, 100\%$ ) reported that they always or sometimes asked patients which treatment options they preferred,  $\chi^2(1, N = 77) = 4.46, P = .0346$ ; Kruskal-Wallis test (Table 1). Results of clinicians' preferred decision-making preferences can be found in Supplementary material.

**Perceived stress.** We also examined clinician characteristics by perceived stress level. There were no differences between perceived stress levels and clinicians' demographics, practice characteristics, or clinician perceptions of the impact of stress on clinical encounters (Table 2). Higher levels of dispositional mindfulness were found among those clinicians who reported that they felt great or good (median [full range] = 4.5 [2.3-5.8]) compared to those who reported that they were a little stressed (4.2 [3.0-5.3]) or definitely stressed or stressed out (3.3 [2.5-4.7]),  $\chi^2(2, N = 80) = 10.32, P = .0057$ , Kruskal-Wallis test. Similarly, higher levels on the ERQ\_CR were found among clinicians who reported that they felt great or good (31.0 [10-42.0]) compared to those who reported that they were definitely stressed or stressed out (20.0 [15.0-35.0]),  $\chi^2(2, N = 79) = 8.88, P = .0118$ , Kruskal-Wallis test.

**Dispositional mindfulness.** The MAAS scores ranged from 2.33 to 5.80, with a median score of 4.27 (the MAAS was designed with a possible range from 1 to 6, with higher scores indicating greater dispositional mindfulness).

**Emotional self-regulation.** The median ERQ\_CR facet score was 30.0 (full range of facet = 6.0-42.0), and the median ERQ\_ES facet score was 15.0 (full range of facet = 4.0-28.0). Higher cognitive reappraisal and lower emotional suppressive scores may indicate greater well-being.<sup>48,51</sup> There were no significant differences between decision-making preferences or practices, specialty types, and clinicians' age and sex.

**Perception of treatment discussions.** No significant associations were discovered between clinicians' perceptions of treatment discussions and decision-making preference or perceived stress (Tables 1 and 2).

**Perception of patient-centered care activities.** No significant associations were discovered between clinicians' perceptions of patient-centered care activities and decision-making preference or perceived stress (Tables 1 and 2).

#### Patient Survey

**Demographics.** Patients were generally elderly individuals, 70+ (32.9%), mostly male (54.5%), high school graduates (36.4%), married (56.0%), and had a variety of solid tumor malignancies

**Table 1.** Clinician Characteristics by Perceived Style of Decision-Making.<sup>a</sup>

Variables	Perceived Style of Decision-Making (Experience)				P Value
	Total, N = 80	Paternalism, N = 9	Shared Decision-Making, N = 62	Consumerism, N = 9	
	N (%) or Median (Range)	N (%)	N (%)	N (%)	
Age					
25-44	37 (48.1)	7 (18.9)	26 (70.3)	4 (10.8)	.0594 <sup>b</sup>
45-64	31 (40.2)	2 (6.5)	28 (90.3)	1 (3.2)	
65+	9 (11.7)	0 (0)	6 (66.7)	3 (33.3)	
Sex					
Male	52 (67.5)	5 (9.6)	41 (78.9)	6 (11.5)	.6900 <sup>b</sup>
Female	25 (32.5)	4 (16.0)	19 (76.0)	2 (8.0)	
Practice characteristics					
Years in practice	7.0 (0.5-43.0)	4.0 (1.0-20.0)	7.0 (0.5-43.0)	10.0 (5.0-40.0)	.2716 <sup>c</sup>
Type					
MD/DO	68 (89.5)	6 (8.8)	54 (79.4)	8 (11.8)	.0554 <sup>b</sup>
PA, NP, or other	8 (10.5)	3 (37.5)	4 (50.0)	1 (12.5)	
Specialty					
Medical	32 (41.6)	5 (15.6)	24 (75.0)	3 (9.4)	.7968 <sup>b</sup>
Primary care	26 (33.8)	3 (11.5)	21 (80.8)	2 (7.7)	
Surgical	19 (24.7)	1 (5.3)	15 (79.0)	3 (15.8)	
Stress, mindfulness, and self-regulation					
Emotional/brain state					
Feeling great!/feeling good	44 (56.4)	2 (4.6)	34 (77.3)	8 (18.2)	<b>.0304<sup>d</sup></b>
A little stressed	27 (34.6)	5 (18.5)	21 (77.8)	0 (0)	
Definitely stressed/stressed out!	7 (9.0)	1 (14.3)	6 (85.71)	0 (0)	
Mindfulness Attention Awareness Scale (MAAS)	4.3 (2.3-5.8)	4.1 (2.6-5.4)	4.3 (2.3-5.6)	5.3 (2.8-5.8)	0.2452 <sup>c</sup>
Emotional Regulation (ERQ)					
ERQ Reappraisal	30.0 (10.0-42.0)	24.0 (17.0-36.0)	30.0 (10.0-42.0)	34.0 (17.0-38.0)	.1493 <sup>c</sup>
ERQ Suppression	14.0 (4.0-28.0)	13.0 (5.0-17.0)	14.5 (4.0-28.0)	16.0 (5.0-22.0)	.5102 <sup>c</sup>
Clinician perceptions of treatment conversations					
I have enough time to spend with patients during visits					
Always/sometimes	56 (72.7)	2 (3.6)	47 (83.9)	7 (12.5)	<b>.0019<sup>d</sup></b>
Hardly ever/never	21 (27.3)	7 (33.3)	13 (61.9)	1 (4.8)	
I present patients with different options for treating his or her medical conditions					
Always/sometimes	76 (98.7)	9 (11.8)	59 (77.6)	8 (10.5)	.9779 <sup>d</sup>
Hardly ever/never	1 (1.3)	0 (0)	1 (100.0)	0 (0)	
I ask patients which treatment options he or she prefers					
Always/sometimes	76 (98.7)	8 (10.5)	60 (78.9)	8 (10.5)	<b>.0356<sup>d</sup></b>
Hardly ever/never	1 (1.3)	1 (100.0)	0 (0)	0 (0)	
How frequently do you collaborate with others on health-care team on patients' plan of care					
Very frequently/frequently	57 (76.0)	6 (10.5)	44 (77.2)	7 (12.3)	.8923 <sup>d</sup>
Occasionally/never	18 (24.0)	2 (11.1)	14 (77.8)	2 (11.1)	
Clinician perceptions of the impact of stress					
Stress impairs communication (between physician and patient, physician and nurses, support staff or colleagues)					
Very strongly/strongly	57 (71.2)	6 (10.5)	43 (75.4)	8 (14.0)	.3007 <sup>d</sup>
Somewhat strongly/not strongly	23 (28.8)	3 (13.0)	19 (82.6)	1 (4.4)	
Patients' stress impairs their ability to listen					
Very strongly/strongly	74 (92.5)	8 (10.8)	57 (77.0)	9 (12.2)	.3739 <sup>d</sup>
Somewhat strongly/not strongly	6 (7.5)	1 (16.7)	5 (83.3)	0 (0)	
My stress impairs the decisions I make in clinic					
Very strongly/strongly	34 (68.0)	5 (14.7)	27 (79.4)	2 (5.9)	.1552 <sup>d</sup>
Somewhat strongly/not strongly	46 (32.0)	4 (8.7)	35 (76.1)	7 (15.2)	

(continued)

Table 1. (continued)

Variables	Perceived Style of Decision-Making (Experience)				P Value
	Total, N = 80	Paternalism, N = 9	Shared Decision-Making, N = 62	Consumerism, N = 9	
	N (%) or Median (Range)	N (%)	N (%)	N (%)	
Patients' stress impairs health outcomes					
Very strongly/strongly	67 (83.7)	7 (10.5)	52 (77.6)	8 (11.9)	.5255 <sup>d</sup>
Somewhat strongly/not strongly	13 (16.3)	2 (15.4)	10 (76.9)	1 (7.7)	

Abbreviations: DO, doctor of osteopathic medicine; MD, medical doctor; NP, nurse practitioner.

<sup>a</sup>Bold text indicates a statistically significant  $P$  value  $<.05$ .

<sup>b</sup>Variables were evaluated using Fisher's exact test, 2-sided.

<sup>c</sup>Variables were evaluated using the Kruskal-Wallis test.

<sup>d</sup>Variables were evaluated using the CMH row mean scores differ statistic.

including breast, colorectal, hepatic, lung, pancreatic, and others (Table 5).

**Decision-making experiences and preferences.** We examined demographics and perceptions on the impact of stress on communication by patients' preferred style of decision-making (Table 3). There were no differences between preferred decision-making styles and age, sex, race/ethnicity, education, or current treatment status. Type of malignancy and decision-making preference were related ( $P = .0278$ , Fisher exact test, 2-sided). Results of patients' decision-making experiences can be found in the Supplementary material.

**Perception of treatment discussions.** No significant associations were discovered between patients' preferred style of decision-making and whether stress impacted communication and factors affecting treatment decisions (Table 3).

**Perception of patient-centered care activities.** Among patients who preferred SDM, significantly more patients (92.6%) felt very strongly or strongly that nurse navigators should be involved to navigate cancer care experience and compared to those who felt somewhat or not strongly (7.4%) about the role of nurse navigators,  $\chi^2(1, N = 63) = 6.29, P = .0122$ .

### Clinician and Patient Comparisons

Finally, an analysis of decision-making preferences and experience, perceptions regarding the impact of stress on communication, and the importance of patient-centered care activities (between patients and clinicians) was examined (Table 4).

**Decision-making experiences and preferences.** There were significant differences in decision-making preferences and experiences between patients and clinicians. Patients preferred paternalism and SDM styles equally (40.3% each), as opposed to consumerism (19.4%). On the other hand, clinicians preferred SDM the most (77.2%), followed by consumerism (16.5%), with paternalism the least (6.3%),  $\chi^2(2, N = 146) = 27.46, P < .0001$ ;  $\chi^2$  test. However, there was no difference

between patients' and clinicians' perception that they had experienced or practiced their preferred style of decision-making.

**Perception of treatment discussions.** More clinicians (71.4%) felt very strongly or strongly that stress impairs communication as compared to patients (51.5%),  $\chi^2(1, N = 152) = 6.34, P = .0118$ , CMH row mean scores differ statistic.

**Perception of patient-centered care activities.** Nearly unanimously, patients (95.5%) felt very strongly or strongly that all members of their cancer care treatment team should work together to coordinate care as compared to clinicians (86.6%),  $\chi^2(1, N = 135) = 6.99, P = .0082$ , CMH row mean scores differ statistic.

## Discussion

Clinicians' perceived stress, mindfulness, and emotional self-regulation levels were not significantly related to their specialty type (ie, medical, surgical, or primary care). In examining clinicians' perceived style of decision-making, there was a difference in decision-making practices and perceived stress (ie, emotional/brain state). Contrary to our hypothesis that clinicians who had higher levels of perceived stress would be more inclined to prefer consumerist or paternalistic decision-making styles, among those clinicians who reported feeling definitely stressed or stressed out, a significant majority perceived their style as SDM ( $n = 6, 85.7\%$ ). Perhaps this reveals that constructs like decision-making preference are more static and dependent on nuanced, personal factors that are not impacted by more dynamic constructs like perceived stress. More research is needed to understand how these constructs are related.

Clinicians need to be able to be present, making meaningful connections with patients and their families, and be compassionate and empathetic to their patients' needs, all of which facilitates effective SDM. Mindfulness scores for clinicians in our study were heavily consistent with findings from Beach et al, who also used the MAAS to measure dispositional mindfulness among clinicians.<sup>52</sup> As expected, significantly lower



**Table 2.** Clinician Characteristics by Perceived Stress (Brain/Emotional State).<sup>a</sup>

Variables	Perceived Stress (Brain/Emotional State)				P Value
	Total, N = 83 N (%) or Median (Range)	Feeling Great!/Feeling Good, N = 48	A Little Stressed, N = 28	Definitely Stressed/Stressed Out!, N = 7	
		N (%)	N (%)	N (%)	
Age					
25-44	40 (49.4)	23 (57.5)	13 (32.5)	4 (10.0)	.4103 <sup>b</sup>
45-64	32 (39.5)	16 (50.0)	13 (40.6)	3 (9.4)	
65+	9 (11.1)	7 (77.8)	2 (22.2)	0 (0)	
Sex					
Male	56 (67.5)	35 (62.5)	16 (28.6)	5 (8.9)	.3932 <sup>b</sup>
Female	27 (32.5)	13 (48.2)	12 (44.4)	2 (7.4)	
Practice characteristics					
Years in practice	6.0 (0.5-43.0)	5.5 (0.5-40.0)	6.0 (1.0-43.0)	11.5 (3.0-28.0)	.3580 <sup>c</sup>
Type					
MD/DO	70 (89.7)	42 (60.0)	23 (32.9)	5 (7.1)	.6042 <sup>b</sup>
PA, NP, or other	8 (10.3)	4 (50.0)	3 (37.5)	1 (12.5)	
Specialty					
Medical	35 (42.2)	18 (51.4)	12 (34.3)	5 (14.3)	.2383 <sup>b</sup>
Primary care	27 (32.5)	16 (59.3)	11 (40.7)	0 (0)	
Surgical	21 (25.3)	14 (66.7)	5 (23.8)	2 (9.5)	
Mindfulness Attention Awareness Scale (MAAS)	4.3 (2.3-5.8)	4.5 (2.3-5.8)	4.2 (3.0-5.3)	3.3 (2.5-4.7)	<b>.0057<sup>c</sup></b>
Emotional Regulation (ERQ)					
ERQ Reappraisal	30.0 (10.0-42.0)	31.0 (10.0-42.0)	30.0 (11.0-42.0)	20.0 (15.0-35.0)	<b>.0118<sup>c</sup></b>
ERQ Suppression	14.5 (4.0-28.0)	13.0 (4.0-28.0)	16.0 (7.0-22.0)	15.5 (8.0-23.0)	<b>.1816<sup>c</sup></b>
Clinician perceptions of treatment conversations					
I have enough time to spend with patients during visits					
Always/sometimes	56 (74.7)	37 (66.1)	16 (28.6)	3 (5.4)	<b>.0101<sup>d</sup></b>
Hardly ever/never	19 (25.3)	5 (26.3)	10 (52.6)	4 (21.1)	
I present patients with different options for treating his or her medical conditions					
Always/sometimes	74 (98.7)	42 (56.8)	25 (33.8)	7 (9.5)	.1910 <sup>d</sup>
Hardly ever/never	1 (1.3)	0 (0)	1 (100.0)	0 (0)	
I ask patients which treatment options he or she prefers					
Always/sometimes	74 (98.7)	42 (56.8)	26 (35.1)	6 (8.1)	.8182 <sup>d</sup>
Hardly ever/never	1 (1.3)	0 (0)	0 (0)	1 (100.0)	
How frequently do you collaborate with others on health-care team on patients' plan of care					
Very frequently/frequently	59 (76.6)	33 (55.9)	21 (35.6)	5 (8.5)	.7690 <sup>d</sup>
Occasionally/never	18 (23.4)	11 (61.1)	6 (33.3)	1 (5.6)	
Clinician perceptions of the impact of stress					
Stress impairs communication (between physician and patient, physician and nurses, support staff or colleagues)					
Very strongly/strongly	59 (72.0)	36 (61.0)	17 (28.8)	6 (10.2)	.1605 <sup>d</sup>
Somewhat strongly/not strongly	23 (28.0)	11 (47.8)	11 (47.8)	1 (4.3)	
Patients' stress impairs their ability to listen					
Very strongly/strongly	77 (93.9)	43 (55.8)	27 (35.1)	7 (9.1)	.3627 <sup>d</sup>
Somewhat strongly/not strongly	5 (6.1)	4 (80.0)	1 (20.0)	0 (0)	
My stress impairs the decisions I make in clinic					
Very strongly/strongly	34 (41.5)	18 (52.9)	12 (35.3)	4 (11.8)	.6520 <sup>d</sup>
Somewhat strongly/not strongly	48 (58.5)	29 (60.4)	16 (33.3)	3 (6.3)	
Patients' stress impairs health outcomes					
Very strongly/strongly	70 (85.4)	39 (55.7)	24 (34.3)	7 (10.0)	.6832 <sup>d</sup>
Somewhat strongly/not strongly	12 (14.6)	8 (66.7)	4 (33.3)	0 (0)	

Abbreviations: DO, doctor of osteopathic medicine; MD, medical doctor; PA, physician assistant; NP, nurse practitioner.

<sup>a</sup>Bold text indicates a statistically significant P value <.05.

<sup>b</sup>Variables were evaluated using Fisher's exact test, 2-sided.

<sup>c</sup>Variables were evaluated with the Kruskal-Wallis test.

<sup>d</sup>Variables were evaluated using the CMH row mean scores differ statistic.

**Table 3.** Patient Characteristics by Preferred Style of Decision-Making.<sup>a</sup>

Variables	Preferred Style of Decision-Making (Preference)				P Value
	Total, N = 67	Paternalism, N = 27	Shared Decision-Making, N = 27	Consumerism, N = 13	
	N (%) or Median (Range)	N (%)	N (%)	N (%)	
Age					
18-29	2 (3.0)	1 (50.0)	1 (50.0)	0 (0)	.6692 <sup>b</sup>
30-49	14 (21.2)	4 (28.6)	6 (42.9)	4 (28.6)	
50-69	30 (45.5)	12 (40.0)	14 (46.7)	4 (13.3)	
70+	20 (30.3)	9 (45.0)	6 (30.0)	5 (25.0)	
Sex					
Male	34 (51.5)	12 (35.3)	16 (47.1)	6 (17.6)	.4198 <sup>c</sup>
Female	32 (48.5)	15 (46.9)	10 (31.2)	7 (21.9)	
Race/ethnicity					
White	26 (40.0)	10 (38.5)	12 (46.1)	4 (15.4)	.9716 <sup>b</sup>
Black or African American	22 (33.8)	9 (40.9)	8 (36.4)	5 (22.7)	
Hispanic or Latino	15 (23.1)	5 (33.3)	6 (40.0)	4 (26.7)	
Other	2 (3.1)	1 (50.0)	1 (50.0)	0 (0)	
Education level					
Less than HS	7 (10.6)	2 (28.6)	2 (28.6)	3 (42.9)	.5031 <sup>b</sup>
HS graduate	25 (37.9)	12 (48.0)	10 (40.0)	3 (12.0)	
Trade/technical/vocational training	10 (15.2)	4 (40.0)	4 (40.0)	2 (20.0)	
College degree	15 (22.7)	7 (46.7)	5 (33.3)	3 (20.0)	
Postgraduate degree	9 (13.6)	1 (11.1)	6 (66.7)	2 (22.2)	
Cancer type					
Breast	11 (18.6)	7 (63.6)	3 (27.3)	1 (9.1)	<b>.0278<sup>b</sup></b>
Colorectal	15 (25.4)	3 (20.0)	7 (46.7)	5 (33.3)	
Hepatic	4 (6.8)	1 (25.0)	2 (50.0)	1 (25.0)	
Lung	4 (6.8)	0 (0)	2 (50.0)	2 (50.0)	
Pancreatic	11 (18.6)	8 (72.7)	3 (27.3)	0 (0)	
Other solid tumor malignancies	14 (23.7)	4 (28.6)	9 (64.3)	1 (7.1)	
Current treatment status					
Before treatment	4 (6.3)	2 (50.0)	2 (50.0)	0 (0)	.1598 <sup>b</sup>
During treatment	45 (71.4)	22 (48.9)	18 (40.0)	5 (11.1)	
Completed treatment	14 (22.2)	3 (21.4)	6 (42.9)	5 (35.7)	
Perceived style matches preferred style of decision-making					
Yes	47 (70.1)	17 (36.2)	20 (42.5)	10 (21.3)	.5629 <sup>b</sup>
No	20 (29.9)	10 (50.0)	7 (35.0)	3 (15.0)	
Stress impacts communication					
Very strongly/strongly	31 (50.0)	14 (45.2)	8 (25.8)	9 (29.0)	.7325 <sup>c</sup>
Somewhat strongly/not strongly	31 (50.0)	10 (32.3)	18 (58.1)	3 (9.7)	
Factors affecting treatment decision					
Amount of information to make a treatment decision					
Not enough information	5 (7.7)	2 (40.0)	1 (25.0)	1 (25.0)	.7938 <sup>d</sup>
Just the right amount of information	56 (86.1)	22 (39.3)	25 (44.6)	9 (16.1)	
Too much information	4 (6.2)	2 (50.0)	1 (25.0)	1 (25.0)	
Amount of time to make a treatment decision					
Not enough time	8 (12.3)	4 (50.0)	0 (0)	4 (50.0)	.6895 <sup>d</sup>
Just the right amount of time	50 (76.9)	20 (40.0)	22 (44.0)	8 (16.0)	
More than enough time	7 (10.8)	2 (28.6)	4 (57.1)	1 (14.3)	
Importance of patient-centered care activities					
Nurse navigator works with me to navigate cancer care experience/coordinates care					
Very important/important	56 (88.9)	24 (42.9)	25 (44.6)	7 (12.5)	<b>.0122<sup>c</sup></b>
Somewhat important/not important	7 (11.1)	1 (14.3)	2 (28.6)	4 (57.1)	
All members of cancer care treatment team (ie, oncologists, surgeons, social work, etc) work together to coordinate care					
Very important/important	62 (98.4)	26 (41.9)	27 (43.6)	9 (14.5)	.0782 <sup>c</sup>
Somewhat important/not important	1 (1.6)	0 (0)	0 (0)	1 (100.0)	
Physician discusses end-of-life options early in cancer journey					
Very important/important	42 (60.0)	17 (40.5)	18 (42.7)	7 (16.7)	.8465
Somewhat important/not important	18 (40.0)	8 (44.4)	7 (38.9)	3 (16.7)	

(continued)

**Table 3.** (continued)

Variables	Preferred Style of Decision-Making (Preference)				P Value
	Total, N = 67	Paternalism, N = 27	Shared Decision-Making, N = 27	Consumerism, N = 13	
	N (%) or Median (Range)	N (%)	N (%)	N (%)	
Cancer team provides resources to manage stress					
Very important/important	52 (83.9)	21 (40.4)	23 (44.2)	8 (15.4)	.8400
Somewhat important/not important	10 (16.1)	4 (40.0)	4 (40.0)	2 (20.0)	

Abbreviation: HS, high school.

<sup>a</sup>Bold text indicates a statistically significant P value <.05.

<sup>b</sup>Variables were evaluated using Fisher's exact test, 2-sided.

<sup>c</sup>Variables were evaluated using the Cochran-Mantel-Haenszel row mean scores differ statistic.

<sup>d</sup>Variables were evaluated using the  $\chi^2$  test.

**Table 4.** Overlapping Survey Characteristics by Patients and Clinicians.<sup>a</sup>

Variables	Total, N = 155 N (%) or Median (Range)	MDMC Oncology Patients and Clinicians		P Value
		Patients, N = 69	Clinicians, N = 86	
		N (%)	N (%)	
Preferred style of decision-making				
Paternalism	32 (21.9)	27 (40.3)	5 (6.3)	<b>&lt;.0001<sup>b</sup></b>
Shared decision-making	88 (60.3)	27 (40.3)	61 (77.2)	
Consumerism	26 (17.8)	13 (19.4)	13 (16.5)	
Perceived style of decision-making				
Paternalism	32 (21.2)	23 (33.3)	9 (11.2)	<b>&lt;.0001<sup>b</sup></b>
Shared decision-making	91 (60.3)	29 (42.0)	62 (77.5)	
Consumerism	28 (18.5)	17 (24.6)	9 (11.2)	
Perceived themselves practicing/experiencing their preferred style				
Yes	108 (76.6)	47 (75.8)	61 (77.2)	.8445 <sup>b</sup>
No	33 (23.4)	15 (24.2)	18 (22.8)	
Stress impact on communication				
Stress impairs communication (between physician and patient, physician and nurses, support staff or colleagues)				
Very strongly/strongly	95 (62.5)	35 (51.5)	60 (71.4)	<b>.0118<sup>c</sup></b>
Somewhat strongly/not strongly	57 (37.5)	33 (48.5)	24 (28.6)	
Importance of patient-centered care activities				
Nurse navigator works with me to navigate cancer care experience/coordinates care				
Very important/important	119 (89.5)	62 (89.9)	57 (89.1)	.8821 <sup>c</sup>
Somewhat important/not important	14 (10.5)	7 (10.1)	7 (10.9)	
All members of cancer care treatment team (ie, oncologists, surgeons, social work, etc) work together to coordinate care				
Very important/important	125 (92.6)	67 (98.5)	58 (86.6)	<b>.0082<sup>c</sup></b>
Somewhat important/not important	10 (7.4)	1 (1.5)	9 (13.4)	
Physician discusses end-of-life options early in cancer journey				
Very important/important	97 (75.2)	45 (70.3)	52 (80.0)	.2045 <sup>c</sup>
Somewhat important/not important	32 (24.8)	19 (29.7)	13 (20.0)	
Cancer team provides resources to manage stress				
Very important/important	119 (90.1)	57 (85.1)	62 (95.4)	<b>.0477<sup>c</sup></b>
Somewhat important/not important	13 (9.8)	10 (14.9)	3 (4.6)	

<sup>a</sup>Bold text indicates a statistically significant P value <.05.

<sup>b</sup>Variables were evaluated using the  $\chi^2$  test.

<sup>c</sup>Variables were evaluated using the Cochran-Mantel-Haenszel row mean scores differ statistic.

levels of mindfulness were found among clinicians who reported feeling definitely stressed or stressed out. This finding makes sense from a theoretical perspective and has been

observed in a substantial number of other studies showing a negative relationship between perceived stress and mindfulness, whereas those who report higher levels of perceived stress

**Table 5.** Clinician and Patient Demographics.

Variables	N (%)	Median (Range)
Clinician demographics (N = 86)		
Age		44.5 (27-74)
25-44	41 (50.0)	
45-64	32 (39.0)	
65+	9 (11.0)	
Sex		
Male	56 (66.7)	
Female	28 (33.3)	
Years in practice		6.0 (0.5-43.0)
Type		
MD/DO	70 (88.6)	
PA, NP, or other	9 (11.4)	
Specialty		
Medical	35 (41.7)	
Primary care	27 (32.1)	
Surgical	22 (26.2)	
Patient and caregiver characteristics (N = 77)		
Age		
18-29	2 (2.6)	
30-49	14 (18.4)	
50-64	22 (28.9)	
65-69	13 (17.1)	
70+	25 (32.9)	
Sex		
Male	42 (54.5)	
Female	35 (45.5)	
Education		
<HS	11 (14.3)	
HS graduate	28 (36.4)	
Trade school	11 (14.3)	
College graduate	17 (22.1)	
Postgraduate	10 (13.0)	
Marital status		
Single	13 (17.3)	
Married	42 (56.0)	
Divorced, widowed, separated	20 (26.0)	
Cancer type		
Breast	13 (18.8)	
Colorectal	17 (24.6)	
Hepatic	7 (10.1)	
Lung	5 (7.3)	
Pancreatic	11 (15.9)	
Other	16 (23.2)	

Abbreviations: DO, doctor of osteopathic medicine; HS, high school; MD, medical doctor; PA, physician assistant; NP, nurse practitioner.

report lower levels of mindfulness and vice versa.<sup>21-26</sup> However, the majority of these studies were conducted outside the context of health care, so our findings indicate that this relationship extends to practicing clinicians.

Our study also demonstrated that clinicians who perceived themselves as definitely stressed or stressed scored significantly lower on the ERQ\_CR (cognitive reappraisal) and, although not significant, higher on the ERQ\_ES (emotional suppression), as compared to those who reported feeling great or good. Eftekhari et al defined cognitive reappraisal, simply put, as a form of cognitive change in which one thinks about the

situation in a manner such that one does not respond emotionally. Emotional suppression, on the other hand, is defined as the conscious inhibition of emotional expressive behavior while emotionally aroused and is often associated with negative consequences.<sup>51,53</sup> Therefore, higher scores on the cognitive reappraisal and lower scores on the emotional suppression facets indicate greater well-being. Research has shown that individuals with high reappraisal and low suppression reported lower levels of depression, anxiety, and post-traumatic stress disorder symptoms than individuals who reported regulating their emotions less effectively and infrequently using reappraisal and suppression.<sup>51</sup>

Recently, there have been substantial efforts into understanding the magnitude of physician stress and burnout at the national level. Researchers from the AMA and Mayo Clinic found that physician burnout has increased significantly between 2011 and 2014 from 45.5% to 54.4%.<sup>54</sup> Burnout is defined as “a long-term stress reaction characterized by depersonalization, including cynical or negative attitudes toward patients, emotional exhaustion, a feeling of decreased personal achievement and a lack of empathy for patients.”<sup>42</sup> Although burnout is a different measure than what we examined in our study (perceived stress), prolonged or chronic stress from an individual’s personal or work life leads to emotional exhaustion, one of the tell signs of burnout.<sup>30</sup> Due to prevalence of burnout at the national level around 42%,<sup>41</sup> it was surprising that only 8.4% of clinicians in our study reported feeling “definitely stressed/stressed out.” Furthermore, physicians in surgical subspecialties had some of the highest burnout rates (52.7%) in the study by the AMA and Mayo.<sup>55</sup> Conversely, our study found that clinicians in surgical specialties had the highest proportion of respondents, reporting they felt “great/good” (66.7%). This potentially reflects a significant participation bias in which clinicians who completed surveys disproportionately possessed certain traits, like being less stressed and more mindful, than those who did not participate.

However, there was convergence between our study results and those of national studies on medical decision-making preferences and experiences of clinicians and patients.<sup>43,50</sup> A national sample of 1050 physicians and our studies’ clinicians largely preferred SDM (74.3% and 77.2%, respectively), followed by paternalism (13.5% and 6.3%) and consumerism (11.2% and 16.5%).<sup>43</sup>

Additionally, 77.8% (n = 7) of clinicians who reported practicing paternalism reported that they hardly ever or never had enough time to spend with patients, compared to 21.7% of those who practice SDM who reported they hardly ever or never had enough time to spend with patients. This is also similar to results of Murray et al<sup>43</sup> that demonstrated that clinicians who preferred paternalism as compared to SDM were 1.81 times more likely to report hardly ever or never having enough time to spend with patients (95% confidence interval, 1.03-3.18).

Murray et al also examined decision-making preferences in a national survey and, like our study, found patients’ preferences to be more varied.<sup>50</sup> Murray et al’s national study and our

patient cohort preferred SDM (43.8% and 40.3%, respectively), followed by paternalism (35.8% and 40.3%) and consumerism (20.4% and 19.4%). These studies also found a significant difference between patient and clinician preferences compared to each other, whereas clinicians largely preferred SDM (74.3%) followed by paternalism (13.5%), while patients were more equitable in the preference for SDM (43.8%) and paternalism (35.8%).<sup>43,50</sup>

It is interesting that patient and clinician preferences for decision-making were noncongruent, as Murray et al demonstrated.<sup>43,50</sup> Patients had more varied preferences for and experiences with SDM, paternalism, and consumerism, while clinicians largely preferred and practiced SDM, with lesser interest in or practice of paternalism and consumerism. This underscores the need to understand both patient and provider communication styles in order to best facilitate medical decision-making conversations.

## Limitations

This study has some limitations. A cross-sectional survey such as this one can only demonstrate associations, not causality, and due to the number of statistical tests completed as part of this study, there is a possibility of erroneous findings arising from multiple testing. The sample sizes for each population (clinicians = 86 and patients/caregivers = 77) are relatively small, resulting in even smaller sample sizes when broken down into groups for analysis. This may result in errors in inferences made from associated statistical tests. Additionally, some questions used (ie, perceived stress, perception of treatment decisions/discussions, perception of patient-centered care activities, and decision-making experiences and preferences) had no validity or reliability testing completed on them, which may also result in errors in inferences made from this study.

Participation bias may be present in the study and represents patients and clinicians who disproportionally possess certain traits (ie, clinicians who are less stressed overall or patients who are more interested in decision-making) that make them more likely to participate in our study, and consequently, affect the outcomes and interpretations. Patients were largely 50+ years old (78.9%) and represented a combination of those with current (at various stages) and past diagnoses of cancer, which may impact their opinions and views captured in the study. Larger prospective studies are needed to validate these findings and investigate potential modifiers in the relationship among decision-making preferences, experiences, and stress. The overall survey tools used were not validated, but the clinician survey included individual instruments that were indeed validated. Additionally, the significant associations on the clinician survey between dispositional mindfulness and perceived stress ( $P = .0057$ ), while keeping in mind the proven relationship between these factors, provides a degree of internal consistency.

The pilot sample of clinicians participating in the survey was very small in relation to the 1000 plus clinicians in practice within Methodist Health System. Equitable specialty types

were represented in our sample and the findings related to clinicians' decision-making preferences and experiences were congruent with larger national studies, which give us confidence in our findings. However, there were imbalances in the age distribution in clinicians by specialty types.

Finally, even though survey participants were assured of anonymity and no personally identifiable information was collected, self-report surveys typically carry the potential of social desirability bias. This is a type of response bias that drives respondents to answer questions in a way that makes them appear more favorable to the experimenter. Few clinicians reported feeling definitely stressed or stressed out (8.4%), which is less than other national studies of physician burnout, albeit a different measure.<sup>55</sup> Also, most clinicians reported that they preferred and practiced what is considered and acknowledged as the "gold standard" for patient-centered care: SDM. Regardless, there was alignment between our results and those of larger, national studies of decision-making,<sup>43,50</sup> in addition to alignment with other studies of clinicians' self-reported levels of dispositional mindfulness,<sup>52</sup> which support our findings.

## Conclusions

This cross-sectional, correlational study evaluated clinicians' decision-making preferences and experiences by their perceived levels of stress, mindfulness, and self-regulation facets, patients' decision-making preference and experiences, and patient and clinician comparisons of decision-making preferences and experiences. We found that clinicians' perceived style of decision-making was significantly related to perceived stress (ie, emotional/brain state) levels. Mindfulness was inversely related to perceived stress and to negative emotional suppressive tendencies. Notably, patient and clinician preferences for decision-making were noncongruent, with significantly more patients preferring paternalism than clinicians. These findings are consistent with other studies of decision-making preferences as well as other studies of the relationship between mindfulness, perceived stress, and emotional self-regulation. We also found that clinicians' perceived stress, mindfulness, and emotional self-regulation levels did not differ by specialty type (ie, medical, surgical, or primary care). Future research should focus on gathering data from larger samples prospectively and should enlist more sophisticated statistical analyses, which could control for potential confounders in the relationship between decision-making and perceived stress.

Although this study was not designed to determine a causal relationship between clinicians' dispositional mindfulness and perceived stress, a substantial amount of research has shown that mindfulness-based stress reduction (MBSR) interventions can improve various outcomes (eg, stress, mindfulness, anxiety, or resiliency) in clinical providers.<sup>56-61</sup> For patients, clinical studies of MBSR have demonstrated efficacy in treating pain, mood disorders, arthritis, sleep disturbances, stress, and in alleviating both mental and physical symptoms in the adjunct treatment of cancer and other chronic diseases.<sup>62,63</sup> In a planned future prospective study of MBSR interventions in

clinicians and patients, we will work to determine a causal relationship between mindfulness practices, emotional self-regulation tendencies, perceived stress, and decision-making experiences.

By offering stress reduction interventions for patients or clinicians, health-care organizations can provide fertile ground where shared and meaningful medical decision-making conversations can take place. This should result in the delivery and receipt of exceptional, safe, high-quality health care. It is hoped that future studies will shed more light onto this often unrecognized but vital aspect of health care.

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### Supplemental Material

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