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CASE AND COMMENTARY: PEER-REVIEWED ARTICLE

How Does Cognitive Bias Affect Conversations With Patients About Dietary Supplements?

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Abstract

Many patients use dietary supplements but do not inform their clinicians. Some allopathic clinicians' conscious and unconscious cognitive and emotional biases against complementary and alternative medicine can affect whether patients disclose details about dietary supplement use, the quality of communication during clinical encounters, and the information clinicians draw upon to make decisions and recommendations. This article describes 6 cognitive biases that can influence patient-clinician communication and shared decision making about dietary supplements and suggests 6 ways to mitigate biases' negative effects on patient-clinician relationships.

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Case

ST is a 52-year-old patient visiting an interdisciplinary family medicine clinic due to more frequent migraine headaches, now occurring about 4 times monthly. She has resisted taking allopathic preventative medications and wants to know more about feverfew, a plant long used in many traditions to prevent headaches for which ST found evidence of safety in the allopathic clinical literature.[1] A physician, psychologist, and clinical pharmacist consult with ST and aim to discuss the possible benefits of starting propranolol, topiramate, or divalproex instead. One asks ST, "Are you taking feverfew right now? What prompted you to do so?" ST responds and then listens and asks questions about the allopathic medications but says no more about other dietary supplements she's reviewed and hoped to discuss. ST leaves the appointment with a prescription for propranolol but does not plan to have it filled.

Commentary

The clinical team in ST's case steered the conversation from feverfew toward allopathic medicine. This common reaction might reflect the team members' negative emotional and cognitive biases against dietary supplements. Conscious and unconscious biases in clinical decision making can result in suboptimal case management.[2,3,4,5,6,7] Although conscious, willful bias can be egregious, we restrict discussion to unconscious negative

cognitive bias, hereafter referred to as bias. There are many ways bias can negatively affect clinical communication and outcomes (eg, missed diagnosis, assuming a common rather than uncommon diagnosis is correct). Since clinicians in the United States have little, if any, training in dietary supplements' roles in complementary and alternative medicine (CAM), they might be biased against supplements and CAM, even when trying to be open-minded. Almost 60% of adults in the United States use dietary supplements, with higher use among women and individuals aged 60 and older.[8] Like ST, nearly half of adults with migraines or severe headaches use CAM, which is associated with decreased mental distress.[9,10]

This commentary describes 6 cognitive biases—visceral, ascertainment, overconfidence, omission, confirmation, and feedback sanction—that can influence patient-clinician communication and shared decision making about dietary supplements. It also suggests 6 tools—insight and awareness cultivation, emotional regulation, metacognition, feedback, task simplification, and time pressure minimization—to help mitigate biases' negative effects on patient-clinician communication and relationships.

Six Cognitive Biases

In our experience, 6 kinds of bias tend to influence clinical approaches to dietary supplements (see Table 1).

Table 1. Types of Cognitive Bias in Medicine

Visceral	• "Excessive emotional involvement of the clinician" in a relationship with a patient[3] • "Affective sources of error" influence clinical decision making[2]
Ascertainment	• Clinician's "thinking is shaped by prior expectation"[2] • Distortion in measuring a phenomenon's rate of occurrence due to bias in the way information is collected[3]
Overconfidence	• Overestimation of knowledge, limited identification of knowledge gaps[3] • Decisions based on incomplete knowledge, information, or intuition; placing faith in opinion rather than evidence[2]
Omission	• A "tendency towards inaction"[2,3] based on intention to avoid harm[1] • Follows from idea that events deemed part of "natural" disease progression are more clinically and ethically acceptable than events attributable to clinicians' actions[2,3]
Confirmation	• Consciously or unconsciously noticing evidence in support of a decision at the expense of definitive evidence to the contrary[2,3] • Misinterpreting what a patient says and remembering events as one "wish[ed] they had happened"[3]
Feedback sanction	• Apparent absence of immediate or obvious consequences of clinician's actions or decisions leads to an erroneous belief that there were none[2]

Visceral bias. Visceral bias occurs when positive or negative feelings influence decision making. Possibly due to visceral bias, many allopathic clinicians have negative attitudes toward CAM.[11,12] Rather than acknowledging that such an attitude is a product of their training, allopathic indoctrination, or current professional environment, some clinicians respond viscerally to what they perceive as a negative stimulus (eg, the patient or the supplement). Perhaps unsurprisingly, patients often do not reveal their use of or interest in dietary supplements to clinicians.[13] Visceral bias can activate expression of additional biases, negatively influencing conversations with patients, as occurred with ST, who will not be filling the propranolol but will likely take feverfew over the counter without saying she plans to do so.

Ascertainment bias. Ascertainment bias occurs when a clinician's thinking is shaped by prior expectations. The fact that women are more likely to use dietary supplements and that women physicians are more likely to recommend them suggests that personal identity and perspective influence practice.[14] When collecting patients' medication histories, allopathic clinicians often do not ask patients what supplements they use and patients often do not report using them,[13,15] so clinicians can easily develop a skewed view of supplements' roles in patients' care plans and outcomes. In the case, it seems that ST probably will not tell her future allopathic clinicians about the feverfew she plans to take instead of propranolol.

Overconfidence bias. Overconfidence is common[5] and happens when clinicians overestimate their own knowledge and make decisions based on opinion, intuition, incomplete information, or poorly understood evidence. For example, if a clinician's go-to medication for migraine prophylaxis is propranolol, that clinician might not explore potential therapeutic benefits of feverfew, despite evidence of its efficacy in migraine prevention.[16]

Omission bias. Omission bias reflects a tendency toward inaction based on the greater acceptability of negative outcomes that are due to a disease's natural progression rather than a prescribed treatment or other iatrogenic source.[2,3,4] For example, if one assumes that an action (eg, endorsing ST's interest in and use of feverfew) is more likely to cause an immediate adverse effect than inaction, and if one assumes that inaction would not result in ST feeling worse, then one might feel safer in not endorsing feverfew. Clinicians tend to not blame themselves for a patient's underlying illness but might blame themselves for feverfew's side effects if they endorsed it.

Confirmation bias. Confirmation bias, also described as "tunnel vision,"[2,4] occurs when clinicians acknowledge evidence supporting a decision but ignore evidence not supporting that decision. Some clinicians prescribing propranolol for migraine prevention would likely review evidence of propranolol's but not feverfew's effectiveness in migraine management, despite evidence of feverfew's effectiveness.[16] Moreover, were ST to take propranolol, a reduction in her migraine frequency would further predispose the clinician to favor propranolol, even if feverfew might have been effective. Confirmation bias feeds overconfidence bias and is supercharged by feedback sanction.

Feedback sanction. Feedback sanction occurs when the apparent absence of immediate consequences leads one to believe there were no significant consequences at all. A form of "ignorance trap," feedback sanction enables the formation and influence of other biases, privileging short-term over long-term assessment of outcomes. This effect can be a source of patient harm, as clinicians remain ignorant of undetected

consequences.[2] Dietary supplements can activate this bias because patients frequently underreport their use of supplements,[13,15] and, as a result, clinicians could remain ignorant of the positive or negative consequences of supplement use. Because negative side effects of a supplement can be noted immediately, whereas benefits might become clear over time, feedback sanction is also described as a "time-delay trap."[1] Together with confirmation bias, it can muddle clinicians' formation of a more complete picture of supplements' merits and drawbacks for patients like ST. That is, if feverfew reduces ST's migraines such that she need not return to clinic, the benefit might remain invisible to the clinician, who, if aware that ST was taking feverfew, would assume that feverfew was ineffective.

Mitigation Strategies

Bias mitigation strategies generally target bias development or block the influence of bias on reasoning.[2,17] The latter strategy is further divided into strategies that help individual clinicians and those targeting system-wide influences on bias.[2,17] Several biases can be activated at once, so multiple mitigation strategies might be needed.

Table 2. Mitigation Strategies for Cognitive Biases

Develop insight/ awareness	• Describe clinical examples of one's own biases and their effects on relationships, communication, decision making, and outcomes.[2]
Emotional regulation	• Strive for positive emotional states to broaden one's scope of attention and ability to take in new information, which can decrease activation of biases.[17]
Metacognition	• Adopt a reflective approach to solving problems.[2] • Step back and contemplate thinking processes.[2]
Feedback	• Recognize decisions' consequences so that errors can be quickly understood and corrected.[2]
Make task easier	• Seek information and tools to reduce task difficulty.[2]
Minimize time pressures	• Allow time to make high-quality and complex clinical decisions.[2]

Develop insight and awareness. Training to combat the negative influence of common biases in clinical practice can help clinicians become aware of how biases manifest and of their obligation to manage biases.[2,5] Developing insight into their biases about dietary supplements specifically might help clinicians during clinical encounters to facilitate patients' disclosure of interest in and use of supplements.

Emotional regulation. Biases are more likely to be activated under conditions of emotional stress, sleep deprivation, high cognitive load, and time pressure, each of which are defining features of clinical work environments.[17] Although bias mitigation strategies should also address environmental factors, emotional regulation is a key strategy for individuals and can be cultivated by practicing mindfulness, meditation, exercise, relaxation, and other wellness activities. The benefits of emotional regulation extend beyond bias mitigation to improving overall cognitive function, creativity, problem solving, and relationships and even to illuminating other prejudices.[18,19,20,21]

Metacognition. Metacognition means thinking about how we think. Self-reflection is necessary to identify disruptive thoughts and emotions during decision making. To mitigate negative biases' influence on decision making, clinicians must first notice that they are experiencing disruptive emotions or unhelpful thoughts (eg, "I noticed the urge to roll my eyes when ST told me she wanted to use feverfew for migraine prevention.") Self-reflection reminds us that not believing in something doesn't make it untrue and prompts us to ask, "Why is that?" Metacognition allows clinicians to step back and be open to the possibility of thinking differently.[2]

Feedback. Feedback is an obvious solution to feedback sanction as a source of bias, yet it has broader effects. For example, it could be valuable to learn that ST's use of feverfew reduced her migraine frequency by, say, 50%. Although delayed, because positive results take months to manifest, this feedback provides an opportunity for learning but does not guarantee it. Ideally, feedback is best combined with other strategies like metacognition.[2] If the clinicians in the case, for example, reconsider their initial resistance to feverfew, they might be able to better open a conversation with ST and perhaps learn something important about her experience of her illness.

Make tasks easier and minimize time pressures. Many clinicians' limited knowledge of, or experience with, dietary supplements can be exacerbated by the fact that doing more research takes time that can be hard to find.[22] Yet remaining willfully ignorant supports omission bias and unconsciously feeds confirmation bias. Making research tasks easier (eg, sharing them with colleagues in pharmacy) can help clinicians gain knowledge and experience, cultivate new point-of-care references, or identify decision support tools.[23,24] Having evidence-based references on supplements, such as Natural Medicines™, readily available—ideally linked directly from an electronic health record—would meet this criterion. References many clinicians use every day, such as Micromedex®, include information on supplements (eg, feverfew, butterbur, riboflavin, coenzyme Q10) that have efficacy for migraine prophylaxis.[24] With these tools at their disposal, ST's clinicians might have been able to quickly look up evidence about feverfew for migraine prophylaxis during her visit. ST could have left with the clinicians' endorsement, or at least better understanding, of feverfew instead of a prescription for propranolol that she's unlikely to use.

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