

Making Meaningful Impacts: Centering Breakdowns in Dyadic Communication Processes in Racial Disparities in Surgical Pain Care

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Despite decades of efforts to reduce racial pain disparities, abundant evidence demonstrates that Black patients' pain continues to be under-diagnosed and undertreated, including in perioperative contexts.¹ Some may attribute such under-diagnosis and under-treatment to a growing awareness of the adverse effects of opioids and evolving consensus on best practices for opioid prescribing. However, Black patients are more likely than White patients to be prescribed inadequate doses of opioids^{2–4} even when opioids are the appropriate treatment. These racial disparities in pain care mirror well-documented disparities in surgical outcomes in mortality, morbidity, and postsurgical complications.⁵ Moreover, the consequences of racial pain care disparities are not limited to postsurgical recovery. The experience of persistent pain robustly predicts poorer quality of life,⁶ including greater likelihood of depression/anxiety, difficulty/inability to return to work, and increased subsequent healthcare utilization. Thus, racial pain care disparities in surgical contexts contribute directly to larger social inequalities.

The root cause of racial healthcare disparities in the United States, including those in pain care, is racism,⁷ a fact acknowledged by the American Medical Association.⁸ Because racism is systemic and operates at structural, institutional, and interpersonal levels, eliminating racial disparities in pain care requires multiple interventions that address all levels. However, changes at structural and institutional levels often come slowly, while human behaviors are relatively modifiable. Given their

potential to produce immediate impacts, the need for interventions at the interpersonal level is urgent.

Critically, discussing pain management with patients prior to surgery is a key predictor of subsequent recovery.^{9,10} Thus, facilitating optimal communication during pre-operative consultations is a promising approach to reducing pervasive and persistent racial pain care disparities. This likely comes as no surprise to researchers studying interpersonal and environmental influences on pain. In widely used frameworks like the Social Communication Model of pain, interpersonal processes are *inherent* to the pain experience.¹¹ Thus, successful pain care requires constructive negotiation processes between patients and surgeons. However, racially discordant (vs. concordant) medical interactions tend to be less productive and positive in tone.¹² Therefore, because Black patients frequently interact with non-Black surgeons, Black patients are more likely than White patients to experience disruptions during these negotiation processes.

Research into race-based disruptions in patient-provider communication is by no means a recent development. However, previous work has shortcomings that limit our ability to improve pain care discussions in surgical contexts. Here, we outline those limitations and propose solutions to addressing them.

GAPS IN THE RACIAL PAIN CARE DISPARITIES LITERATURE

Separate research programs have examined the psychological mechanisms responsible for why racially discordant medical interactions tend to be poorer in quality than racially concordant ones. Typically, this research has focused specifically on patient and provider factors in isolation as either influencing care directly (Fig. 1A) or indirectly through patient *or* provider communication behavior (Fig. 1B). Examples of patient factors include medical mistrust and perceived personal racial discrimination.¹³ These patient factors often impact *patients'* engagement in medical interactions with non-Black surgeons and reduce the quality of the care they receive. Examples of provider factors include implicit prejudice (automatically activated negative attitudes toward Black Americans), explicit stereotyping (deliberately applied racist beliefs about Black Americans' experiences of pain),¹⁴ and bias in visual perception [seeing pain less readily on Black (vs. White) faces].¹⁵ These provider factors can alter *surgeons'* engagement in medical interactions, with negative consequences for treatment decisions and pain care.

Despite this extensive catalogue of patient and provider factors contributing to disruptions in individual behaviors during patient-provider communication, very little progress has been made to meaningfully improve the quality of patient-provider communication. We argue that this is because those

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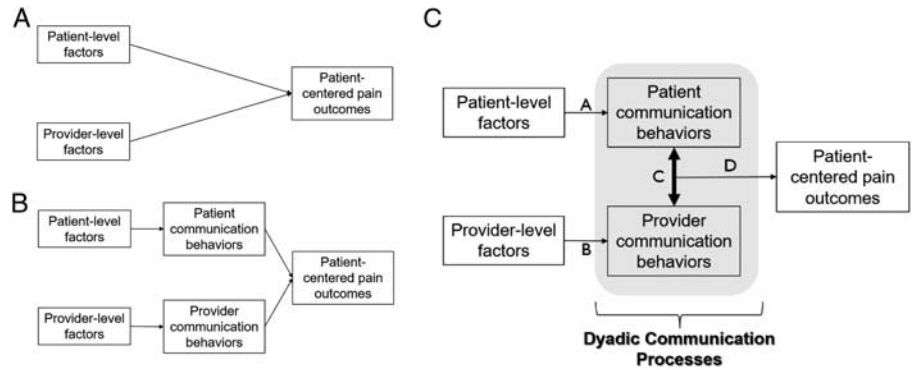
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FIGURE 1. Our conceptual model. Previous work focused on patient-level and provider-level factors in isolation (A), even when considering the role of communication behavior (B). We propose that dyadic communication processes are the key mechanism through which patient- and provider-level factors contribute to racial disparities in patient-centered pain outcomes (C).



individual-level factors were identified in isolation, rather than a multifactorial approach. Said differently, previous work failed to consider the *dyadic processes* between patients and surgeons that feed off and fuel each other dynamically.

This fragmented approach is fundamentally flawed and cannot advance our understanding of racial pain care disparities because decisions about surgical pain care are not made unilaterally. Pain is an inherently social signal; communication of that signal involves the expression of pain by the patient *and* interpretation of that pain by the surgeon—both of which are embedded in interpersonal, situational, and systemic factors.¹¹ Thus, decisions about pain care are not solely the product of the patient's expression of pain or the surgeon's perception of pain. Therefore, patient and surgeon factors cannot result in the well-documented racial disparities in surgical pain care without influencing the dyadic processes underlying patient-surgeon communication. Studying these factors interactively will advance the slow progress the health care community has made in eliminating racial pain care disparities.

CHALLENGES AND SOLUTIONS: FOCUSING ON DYADIC PROCESSES

We propose a conceptual model that will shift current research paradigms in racial pain care disparities (Fig. 1C). In this model, patient-level and surgeon-level factors interact to influence patient-centered pain outcomes through dyadic communication. For example, previous approaches might characterize racially discordant patient-surgeon dyads solely in terms of the activation of implicit prejudice in the surgeon (or medical mistrust in the patient), resulting in negative *individual* communication behaviors. However, communication doesn't occur in a vacuum. Surgeon communication behaviors can influence the *patient's* communication regarding pain, and vice versa, in a dynamic and iterative manner. Here, surgeon implicit bias and patient medical mistrust could interact to reduce the extent to which the surgeon and patient experience interpersonal synchrony (eg, spontaneous coordination of behavior between individuals), which might precipitate negative consequences for patient-centered pain outcomes. Our model considers the dyadic communication processes during perioperative surgeon-patient interactions as the key mechanism underlying—and thus the key intervention target for reducing—racial pain care disparities in surgical contexts.

Implementing this model will require significant changes to our approach in terms of research design, analysis, and team composition. First, we must study the entire chronology of pain negotiations (from patients' and surgeons' attitudes and perceptions to patient-centered outcomes) in natural clinical settings. This approach will identify novel intervention points that

are more realistic and ecologically valid, and consequently, more feasibly and influentially intervened upon. Research into the underpinnings of pain disparities is often conducted in decontextualized and ideal experimental settings, in which predictors are tightly controlled or varied systematically. While this approach has obvious benefits to internal validity (eg, isolating individual variables exerting a causal influence on a specific outcome), it has its limits in terms of predictive capability and generalizability, which may lead to inefficient deployment of effective interventions.

Second, to highlight dyadic processes between patients and surgeons as our core unit of analysis, we need to employ an integrative, multimethod approach. These dyadic processes are often operationalized as coordination of verbal, paraverbal, and nonverbal behavior facilitating effective communication and mutual understanding between interacting individuals.¹⁶ Capturing behavioral coordination unfolding in real-time is a complex task because it manifests across multiple channels of communication, from leader-follower dynamics in conversation, to cross-modal synchrony (eg, coordination between body movements and verbal dynamics), to synchronization in basic language dynamics (eg, pitch and tone of speech). Moreover, this necessitates innovative integration of multiple, complementary methodologies. Specifically, researchers first need to identify and quantify patterns of behavioral coordination (eg, “How coordinated is this dyad in terms of nonverbal behavior?” or “How frequently is the patient leading coordination?”). Once coordination is identified quantitatively, it can be characterized *qualitatively*—for example, what does coordination (or disruption therein) actually look and sound like?

Finally, the points above highlight the necessity of interdisciplinary teams. To study racial pain care disparities in natural surgical settings, surgeons must be centrally involved in this research. In turn, social scientists can help progress this work beyond a descriptive catalogue of disparity features, toward an understanding of their underlying mechanisms, which can then be targeted for intervention. To capture the dynamic and dyadic processes fueling disparities and fully characterize the content of this communication, research teams must also include *both* quantitative and qualitative data scientists. Teams with more diverse backgrounds will be better suited to meet the challenges of this complex work. Importantly, this work will be fruitless if it does not center Black patient voices. After all, individuals are experts in their pain because the experience of pain is highly individualized.¹⁷ Thus, research teams must listen to and learn from patients about their experience of pain. In addition, because pain is the product of both biological *and* psychosocial processes,¹⁸ understanding psychosocial contexts commonly shared by Black patients is essential for interpreting results

sensibly and drawing meaningful implications. Thus, research teams are encouraged to include community partners or work with community research advisory boards.

In this perspective, we highlighted the major shortcomings in prior research on patient-provider communication and discussed the implications for lack of progress in reducing racial pain care disparities in surgical contexts. With renewed interest during the COVID-19 pandemic in health and healthcare disparities fueled by systemic racism, we urgently encourage researchers to shift their focus away from simply measuring individual communication behaviors in isolation. Instead, researchers should study the dynamic and dyadic processes supporting surgical pain care disparities in real-life settings. By doing so, future work will elucidate factors that provide the biggest return on investment for interventions.

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