Patient-Provider Shared Decision-Making, Trust, and Opioid Misuse Among US Veterans Prescribed Long-Term Opioid Therapy for Chronic Pain

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ABSTRACT

BACKGROUND: Patient-provider shared decision-making is associated with better treatment adherence and pain outcomes in opioid-specific pain management. One possible mechanism through which shared decision-making may impact pain management outcomes is trust in one's prescribing provider. Elucidating relationships between factors that enhance the patient-provider relationship, such as shared decision-making and trust, may reduce risks associated with opioid treatment, such as opioid misuse.

OBJECTIVE: The purpose of this study was to investigate the mediating effect of trust in one's prescribing provider on the relationship between shared decision-making and current opioid misuse.

DESIGN: A secondary analysis of data from a prospective cohort study of US Veterans ($N = 1273$) prescribed long-term opioid therapy (LTOT) for chronic non-cancer pain.

PARTICIPANTS: Eligibility criteria included being prescribed LTOT, ability to speak and read English, and access to a telephone. Veterans were excluded if they had a cancer diagnosis, received opioid agonist therapy for opioid use disorder, or evidence of pending discontinuation of LTOT. Stratified random sampling was employed to oversample racial and ethnic minorities and women veterans.

MAIN MEASURES: Physician Participatory Decision-Making assessed level of patient involvement in medical decision-making, the Trust in Provider Scale assessed interpersonal trust in patient-provider relationships, and the Current Opioid Misuse Measure assessed opioid misuse.

KEY RESULTS: Patient-provider shared decision-making had a total significant effect on opioid misuse, in the absence of the mediator ($c = -0.243$, $p < 0.001$), such that higher levels of shared decision-making were associated with lower levels of reported opioid misuse. When trust in provider was added to the mediation model, the indirect effect of shared decision-making on opioid misuse through trust in provider remained significant ($c' = -0.147$, $p = 0.007$).

CONCLUSIONS: Shared decision-making is associated with less prescription opioid misuse through the trust that is fostered between patients and providers.

Prior Presentations These results were presented orally at the annual College on Problems of Drug Dependence Conference, June 2022, virtual.

Received December 14, 2022
Accepted April 12, 2023
Published online April 28, 2023

KEY WORDS: shared decision-making; patient-provider relationship; opioid misuse; pain management; long-term opioid therapy.

J Gen Intern Med 38(12):2755–60
DOI: 10.1007/s11606-023-08212-5

Shared decision-making is a process by which providers and patients share information, express opinions and values, and collaborate on treatment.[1] In opioid-specific pain management, shared decision-making is important, as greater scrutiny has been placed on pain treatment in the wake of the opioid epidemic. Among patients with chronic illnesses, positive patient-provider relationships fostered through shared decision-making have been associated with more positive cognitive and affective outcomes,[2] treatment plans that reflect patients' preferences,[3] reduced substance use,[4] and long-term treatment adherence.[5] Alternatively, poor patient-perceived shared decision-making has been associated with worse patient-reported physical and mental health outcomes, more frequent emergency department visits, and lower medication adherence.[6]

Shared decision-making in the context of pain management is complex. Monitoring procedures commonly implemented alongside opioid prescriptions such as signing of opioid treatment agreements before receiving prescriptions, urine drug screening, and querying state prescription drug monitoring program databases can create tension between patients and providers. For example, providers report less use of shared decision-making and more defensive and interrogative interactions when prescribing opioids for chronic pain conditions, and patients often report feeling stigmatized by their providers.[7,8] Conflicting patient-provider views and goals regarding chronic pain management have also been cited, with patients reporting preferences for individualized

pain management approaches and for their experience of pain to be legitimized by their providers, while providers emphasize diagnosis and treatment over quality-of-life concerns.[9] Additionally, while providers agree the patient-provider relationships can facilitate high-quality pain care, provider concerns about the limited effectiveness of long-term opioid therapy (LTOT) for chronic pain and elevated risk of adverse effects may hinder this relationship.[10] Shared decision-making, however, has been associated with better opioid treatment adherence and pain outcomes.[11]

The mechanisms through which the patient-provider relationship may impact pain outcomes and treatment adherence remain unclear. One possible mechanism is patients' trust in their provider. Establishing trust between patients and providers may be crucial in opioid-specific pain management, given the subjective experience of pain and patient-provider communication as the primary source of diagnostic information. While strong shared decision-making may enhance patients' trust in their providers, poor shared decision-making may, conversely, erode this trust. In the context of opioid management, greater trust that one's prescribing provider is acting in the best interest of the patient may empower patients and instill a desire to follow through with treatment as recommended, and reduce risks associated with opioid-related treatment non-adherence, including opioid misuse. In a qualitative study of negotiating trust in chronic pain treatment among patients and providers, patients' perceptions of providers' interpersonal effectiveness and the extent to which patients believe their providers trust their motives for pain treatment increased patient trust and enhanced the therapeutic relationship.[7] Reports of lower provider trust in patients receiving prescription opioids have been attributed to difficult patient-provider interactions and less collaboration in developing pain management plans.[12]

Taken together, shared decision-making and patients' trust in their providers appear to play an important role in the patient-provider relationship, which may impact key treatment outcomes in pain management and substance misuse. The purpose of this study was to investigate the mediating effect of trust in one's prescribing provider on the relationship between shared decision-making and current opioid misuse among a national cohort of patients prescribed LTOT for chronic non-cancer pain. We hypothesized that increased shared decision-making would be associated with less opioid misuse, and that patients' increased trust in their opioid-prescribing provider, when shared decision-making is used, would help to explain this association mechanistically.

METHOD

Participants

This study was approved by the Institutional Review Board of the Veterans Affairs (VA) Portland Health Care System. Patient participants ($N = 1273$) were part of an ongoing prospective cohort study comprising a national sample of US veterans prescribed LTOT for chronic non-cancer pain. Stratified random sampling of the population of VA patients prescribed LTOT was used to oversample women veterans and veterans who identified with a minoritized race or ethnicity when assembling the study cohort. Eligibility criteria included (1) being prescribed LTOT, defined as having completed continuous opioid therapy for at least 12 months, with gaps for no more than 30 days between completion of an opioid prescription to the next filled prescription; (2) ability to speak and read English; and (3) access to a landline or cellular phone. Veterans were excluded if there was a confirmed diagnosis of cancer (other than non-melanoma skin cancer) identified in the electronic health record within 1 year of study enrollment, receipt of opioid agonist therapy for opioid use disorder, or evidence of pending discontinuation of LTOT based on manual review of the electronic health record.

Measures

All participants completed a baseline survey administered online via REDCap[13,14] or via a mailed hardcopy survey, based on participant preference, between September 01, 2019 and October 31, 2020. Well-validated survey measures used in the current study include the following:

Physician Participatory Decision-Making (*PPDD*)[15] is a four-item measure designed to assess level of patient involvement in medical decision-making with their VA opioid-prescribing clinician. Items are constructed on a 5-point Likert scale ranging from 0 to 4, where 0 = "none of the time" and 4 = "all of the time" and are scored by calculating the sum of all items. Example items include, "How often does your doctor or health care provider offer choices in your medical care?" and "How often does your doctor or health care provider discuss the pros and cons of each choice with you?" Internal validity of this measure in the current study was excellent ($\alpha = 0.94$).

The *Trust in Provider Scale* (*TIPS*)[16] is an 11-item self-report measure assessing interpersonal trust between patients and their opioid-prescribing provider. Items are rated on a 5-point Likert scale ranging from 1 to 5, where 1 = "Strongly disagree" and 5 = "Strongly agree." Example items include "I trust my doctor's judgment about my medical care." Internal consistency of this measure for the current study was excellent ($\alpha = 0.91$).

The *Current Opioid Misuse Measure* (*COMM*)[17] is a 17-item self-report measure assessing opioid misuse. Items range from 0 to 4 on a 5-point Likert scale, where 0 = "Never" and 4 = Very often." An example item includes, "In the past 30 days, how often have you taken your medications differently from how they were prescribed?" Scores are totaled by summing all items. Internal consistency of this measure for the current study was good ($\alpha = 0.82$).

Demographic data on age, sex, gender, race, ethnicity, level of education, VA service-connection status, and

service connection disability rating were collected and used as covariates. VA service connection status refers to a disability status in which a veteran's physical or mental health conditions were caused by or incurred during their military service and is thus compensated. A service connection disability rating is a percentage assigned by the VA to a veteran's service-connected conditions which reflect the severity of the condition, with higher percentages indicating more severe disability.

Data Analyses

Bivariate correlations examined associations between the independent variable (shared decision-making), mediator (trust in provider), dependent variable (opioid misuse), and demographic covariates. We used path analysis to examine the direct effect of shared decision-making on opioid misuse and the indirect effect of shared decision-making on opioid misuse through trust in provider. Consistent with the mediation literature, paths in the figure depicting the mediation model are as follows: a is the effect of the independent variable on the mediator; b is the effect of the mediator on the dependent variable, c is the effect of the independent variable on the dependent variable in the absence of mediation, and c' is the effect of the independent variable on the dependent variable after accounting for mediation. The final mediation model used a bootstrap analysis with 1000 bootstrap samples. It controlled for age, sex, gender, race, ethnicity, level of education, service-connection status, and service connection rating. Descriptive, bivariate, and mediation analyses were conducted using Mplus. An α-level of 0.05 and two-tailed tests of significance were used for all inferential analyses.

RESULTS

Participant Characteristics

Stratified random sampling was used to achieve near equal representation of race and birth sex. More than half of our sample identified as people of color (51.9%), and 13.9% identified as Hispanic/Latinx. Half of the sample identified as female (49.2%) and had completed some college (54.7%). Most participants had a VA service–connected disability (74%), and on average 54 years of age ($M = 53.77$, $SD = 22.85$). More than one-fourth of the sample earned a bachelor's degree or greater (27.3%) (for full demographic descriptions of the sample, see Table 1).

Bivariate correlations were conducted to examine associations between shared decision-making, trust in provider, and opioid misuse. Results indicated shared decision-making and opioid misuse ($r = -0.171$), shared decision-making and trust in provider ($r = 0.705$), and trust in provider and opioid misuse ($r = -0.172$) were all significantly correlated.

Table 1 Sample Characteristics

Demographic characteristic	*M* (*SD*) % (*n*)
Age	53.77 (22.85)
Sex	
Male	50.70 (642)
Female	49.20 (623)
Intersex	0.00 (1)
Race	
American Indian or Alaska Native	10.10 (128)
Asian American	1.00 (13)
Native Hawaiian or Other Pacific Islander	1.60 (21)
Black or African American	29.00 (369)
Non-Hispanic White	55.90 (677)
Other	7.30 (93)
Ethnicity	
Hispanic	13.90 (168)
Education level	
Less than high school	1.4 (18)
High school or equivalent	15.9 (203)
Some college	54.7 (696)
Bachelor's degree or greater	27.3 (348)
VA service–connected disability	74.50 (941)
Study variables	*Median* (*IQR*)
Physician Participatory Decision-Making	11 (8)
Trust in Provider	42 (17)
Current Opioid Misuse	6 (8)

Median and IQR were used in place of mean and standard deviations for study variables due to skewed distributions

Mediation Model

In the fully adjusted model, the total effect of patient-provider shared decision-making on opioid misuse was significant ($B = -0.243$, $SE = 0.04$, $p \leq 0.001$). Higher levels of shared decision-making were associated with lower levels of reported opioid misuse. The direct effect of patient-provider shared decision-making on opioid misuse was also significant ($B = -0.147$, $SE = 0.06$, $p = 0.007$). Using this mediation model, we also found a significant indirect effect of shared decision-making on opioid misuse *through* trust in provider ($B = -0.096$, $SE = 0.04$, $p = 0.019$) (see Fig. 1 for the mediation model).

DISCUSSION

Better patient-provider relationships may mitigate risks associated with LTOT for chronic pain, including opioid misuse. Shared decision-making is one approach to enhancing the patient-provider relationship and can optimize treatment adherence. Aligned with our hypotheses, these results demonstrate that in a nationally representative sample of veterans receiving LTOT for chronic pain, increased shared decision-making was directly and inversely related to opioid misuse. In addition, our results suggest that shared decision-making is associated with less opioid misuse partly by increasing trust in one's opioid-prescribing provider. While literature has demonstrated trust in physician and shared decision-making as independently associated[18,19] and predictive of

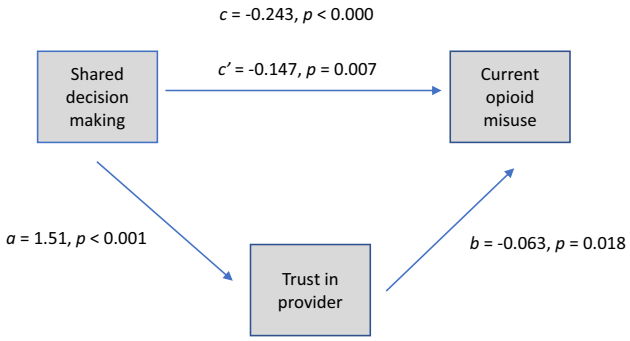

Figure 1 Trust partially mediates the relationship between shared decision-making and opioid misuse. Path "a" signifies a significant positive relationship between patient-provider shared decision-making and patient-perceived trust in their prescribing provider. Path "b" signifies a significant negative relationship between trust in prescribing provider and opioid misuse. Path "c" signifies a significant, positive relationship between patient-provider shared decision-making and opioid misuse in the absence of the mediator (trust). Path "c′" signifies the significant positive relationship between shared decision-making and opioid misuse in the presence of the mediator, trust.

treatment adherence outcomes in populations with chronic illness,[20] this is the first known study to examine the mediated effect of trust on the relationship between shared decision-making and opioid misuse, which elucidates a nuanced relationship between, and contribution of, these two variables in our understanding of opioid misuse.

These results offer insight into the role of shared decision-making in promoting treatment adherence. Prior research has shown hesitancy of providers to share decision-making with patients with chronic pain conditions, and even more so with patients who have an opioid use disorder.[8] This likely stems from greater restrictions placed on prescribing opioids in the wake of the opioid epidemic, and perhaps echoes models which have led to stigmatization of addictive disorders in the past such as the Moral Model of Addiction, which views addiction as a moral failure and places full responsibility of consequences of use on the patient.[21] In light of recent research on the benefits of collaborative approaches to healthcare, clinician training programs could offer courses on shared decision-making to promote the patient-provider relationship and incentivize providers who do practice patient-centered care.[22] Moreover, courses could also be offered within healthcare systems for opioid-prescribing clinicians to mitigate risks associated with opioid misuse. Increased investment in education on evidence-based approaches to treating pain conditions at the patient-provider level, such as through shared decision-making, could enhance treatment outcomes and reduce costs associated with opioid misuse. It may also ease tension between patients and providers and foster a collaborative approach to care which empowers patients to participate in their own health and wellbeing, and reduce pain.[23]

Trust, or the belief that one's provider is acting in their best interest, is less understood within healthcare settings. Research often investigates behaviors that *lead* to greater trust in one's provider such as shared decision-making and communication,[24,25] rather than directly investigating trust as a primary outcome. A review of interventions that directly targeted patient-provider trust demonstrated little to no differences in patient perceived trust compared to control conditions;[25] lack of sensitivity of trust measures and ceiling effects may contribute to these findings given that trust in one's provider is generally high as physicians are viewed as "the expert." However, medical mistrust has increased in recent years[26,27] and has been recognized as having deleterious impacts on patient outcomes.[28] For example, veterans who experienced military sexual trauma and institutional betrayal are less likely to utilize the VA.[29] Similar results have also been found among minoritized groups who have been historically disenfranchised by the healthcare system.[30,31]

Person-centered approaches in individual treatment and in designing healthcare systems as a whole are potential solutions to developing higher levels of trust within the healthcare setting and mitigating mistrust.[27] Mohottige and colleagues outlined specific actions to mitigate mistrust among healthcare professionals: (1) understanding patient mistrust, (2) centering patient voices in treatment planning, (3) adopting an empathic and culturally humble approach to treatment planning, and (4) developing a self-critical lens in understanding implicit biases and positionality of patient and provider identities.[32] Systems-level change and support by the healthcare system is needed for clinicians to develop person-centered, self-critical, and culturally humble approaches toward patient service and to equalize the relevance of patients' voices and lived experiences alongside medical expertise to inform effective treatment plans. As this is the first known study to establish a mediating effect of trust on the relationship between shared decision-making and opioid misuse, more granular investigations of specific aspects of trust, variations of trust among populations who have been historically disenfranchised by the healthcare system, and investigating trust of the larger healthcare system as an organization is warranted.

Given that building trust in one's provider only *partially* mediated the relationship between shared decision-making and prescription opioid misuse, there are other unknown factors that contribute to this relationship. Addiction stigma, or the degree to which patients perceive that their provider views them as an "addict," may diminish the quality of patient-provider communication, diminish trust, and increase risk for opioid misuse.[33] Indeed, stigmatization of opioid misuse in news ecosystems and other media channels may increase patients' sensitivity and defensiveness to being perceived as "addicts" and likewise may increase providers' negative attitudes toward their patients, resulting in poorer treatment delivery.[34] Another factor explaining this relationship may be pain expectations. For example, patients who

believe that pain should entirely abate after treatment may be more prone to misusing opioids when they discover that pain persists at times, even with opioid treatment.[35] However, if patients and providers discuss realistic pain expectations—that pain treatment aims to increase function and not fully alleviate pain—patients may be less likely to misuse opioids. Further, providers could consider delineating differences between a patient's desired treatment outcomes (i.e., pain relief patients are hoping to gain) and providers' anticipated treatment outcomes (i.e., functional restoration).[36] Making this distinction could promote realistic treatment goals and enhance the patient-provider relationship.

Interpersonal and systemic factors should also be noted when considering the patient- provider relationship, all of which can be addressed with collaborative communication. Negative experiences with previous providers can lead to deleterious outcomes, including reduced trust and treatment adherence.[37] A systematic review[37] of 57 empirical studies found that factors which cause patients to have negative experiences with providers include perceptions of being treated with disrespect (i.e., discrimination or being minimized and/or mocked by their provider), experiencing pressure due to time constraints (i.e., feeling a burden to the physician or unworthy of their time), and feelings of helplessness due to the dominance of biomedical culture (i.e., orientation toward physical symptoms and away from psychosocial factors impacting health); experiences of discrimination and differences in values were particularly impactful for racial and ethnic minority patients. Fostering an environment of open communication and respect that demonstrates empathy and listening, along with increasing training in cultural humility and culturally relevant approaches to healthcare, may reduce some of the concerns expressed by patients, particularly those from disenfranchised groups, and in turn may enhance trust of providers, bolster collaborative care, and improve pain outcomes.

Limitations

Several limitations should be noted. First, the sample comprised US veterans and results may not generalize to non-veteran populations. Second, these data are cross-sectional and inferences of causality cannot be drawn. Future research should assess these variables using longitudinal data to replicate and extend this study's findings. Third, while well-validated self-report measures were used, prescription opioid misuse was based on self-report. Future research may use objective measures of opioid misuse, such as urine drug screens and data from state prescription drug monitoring program databases, although these measures themselves may be a hindrance to trust. Fourth, these analyses focused on a single mediator and did not assess other factors that may further explain the relationship between shared decision-making and prescription opioid misuse. Multiple mediation analyses in future studies may account for the unexplained variability within this relationship. Further, organizational trust in the healthcare system, and how trust may vary among minoritized populations, warrants investigation. Last, data were not collected on the setting in which patients received LTOT, the total length of continuous opioid treatment (beyond 12 months required for study inclusion), nor the number of different opioid prescribers assigned to patients over the course of LTOT. These factors could have been associated with different levels of clinician comfort in communicating about opioid prescribing with patients, particularly within pain specialty clinics where prescribers may have more time-limited treatment encounters with patients, relative to primary care.

CONCLUSION

Shared decision-making is associated with less prescription opioid misuse through the trust that is fostered between patients and providers. Supporting providers and healthcare systems to enhance collaborative input from patients in pain treatment can increase treatment adherence and in turn reduce risks associated with opioid misuse. More longitudinal research is needed to assess how shared decision-making impacts trust and treatment adherence over time, and to identify additional factors that may explain the relationship between shared decision-making and opioid misuse.

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Funding *This study was funded by grant I01HX002518 from the United States Department of Veterans Affairs Health Services Research & Development. Dr. Belle Zaccari was supported by grant K12 HS026370 from the Agency of Healthcare Research and Quality during the preparation of this manuscript. The views expressed in this article are those of the authors and do not represent the views of the United States Department of Veterans Affairs, the United States Government, or Agency of Healthcare Research and Quality.*

Data Availability *The datasets during and/or analyzed during the current study are available from the corresponding author on reasonable request.*

Declarations

Conflict of Interest *All authors have no conflicts of interest to disclose.*

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