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Scholarly Report Title: Postoperative pain management among Dominican and American health-care providers: A qualitative analysis

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Postoperative pain management among Dominican and American health-care providers: A qualitative analysis

Christopher A. Devine, MPhil, Amy Yu, BS, Rachel G. Kasdin, Laura M. Bogart, PhD, Aileen M. Davis, PhD, Luis Alcántara Abreu, MD, Roya Ghazinouri, DPT, MS, Thomas S. Thornhill, MD, Jeffrey N. Katz, MD, MSc

Purpose: US practitioners have prescribed increasing amounts of opioid analgesics in recent years, contributing to what the Centers for Disease Control (CDC) has declared an opioid epidemic. Opioids are used frequently in the preoperative and postoperative periods for patients undergoing total joint replacement (TJR) in the US and other developed countries, but cross-cultural comparisons of this practice are limited. An international medical mission such as Operation Walk Boston (OpWalk), a humanitarian program that provides TJR surgeries to financially vulnerable patients in the Dominican Republic (DR), offers a unique opportunity to compare postoperative pain management approaches in a developed and developing nation.

Methods: We interviewed American and Dominican surgeons and nurses (n = 22 total) during OpWalk 2015. We used a moderator’s guide with open-ended questions to inquire about postoperative pain management and factors influencing prescribing practices. Interviews were recorded and transcripts were analyzed using content analysis.

Results: Providers highlighted differences in the patient-provider relationship, pain medication prescribing variability, and access to medications. Dominican surgeons emphasized their adherence to standardized pain protocols and employed a paternalistic model of care, while their American counterparts reported prescribing variability and described shared decision-making with patients. Dominican providers described limited availability of potent opioid preparations in the DR, in contrast to Americans who discussed opioid accessibility in the US.

Conclusions: Our findings suggest that cross-cultural comparisons provide useful insight into how opioid prescribing practices, approaches to the patient-provider relationship, and medication access inform distinct pain management strategies in American and Dominican
surgical settings. Integrating lessons from cross-cultural pain management studies may yield more effective pain management strategies for surgeries performed in the US and abroad.
Contribution to the work

In December 2014, Dr. Katz and I jointly conceived the project and formed a collaboration with experienced qualitative researchers and Universidad Iberoamericana medical students in Santo Domingo, Dominican Republic. In concert with the Pursuing Inquiry in Medicine course, I composed a comprehensive proposal, moderator’s guide for patient interviews, and post-operative observation guide. In March 2015, the Dominican medical students, Amy Yu, Rachel Kasdin, and I conducted interviews and observations during the week-long Operation Walk Boston mission in Santo Domingo. Interviews were transcribed by an independent company. During the summer of 2015, I analyzed the data (coding for themes and hypotheses), wrote the manuscript, and completed edits to address reviewer comments. This occurred under the supervision of Dr. Katz in the Orthopaedic and Arthritis Center for Outcomes Research (OrACORe) at Brigham & Women’s Hospital. Amy Yu contributed to the qualitative coding process, as content analysis requires multiple reviewers to identify codes, subcodes, and themes in the primary interview data. Co-authors with qualitative research expertise (Laura Bogart and Aileen Davis) provided additional guidance and review of the analysis. Luis Alcántara Abreu, Roya Ghazinouri, and Thomas Thornhill were critically involved in the Operation Walk Boston mission and contributed to patient selection and manuscript review. My work was supported by the Rheumatology Research Foundation Medical Student Preceptorship. All other aspects of the project including manuscript submission, cover letter writing, and communication with reviewers were completed by me. The manuscript was published in June 2016.


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Postoperative Pain Management Among Dominican and American Health-Care Providers
A Qualitative Analysis

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Investigation performed at the Brigham and Women's Hospital, Boston, Massachusetts, and the Hospital General de la Plaza de la Salud, Santo Domingo, Dominican Republic

Background: U.S. practitioners have prescribed opioid analgesics increasingly in recent years, contributing to what has been declared an opioid epidemic by the U.S. Centers for Disease Control and Prevention (CDC). Opioids are used frequently in the preoperative and postoperative periods for patients undergoing total joint replacement in developed countries, but cross-cultural comparisons of this practice are limited. An international medical mission such as Operation Walk Boston, which provides total joint replacement to financially vulnerable patients in the Dominican Republic, offers a unique opportunity to compare postoperative pain management approaches in a developed nation and a developing nation.

Methods: We interviewed American and Dominican surgeons and nurses (n = 22) during Operation Walk Boston 2015. We used a moderator’s guide with open-ended questions to inquire about postoperative pain management and factors influencing prescribing practices. Interviews were recorded and transcripts were analyzed using content analysis.

Results: Providers highlighted differences in the patient-provider relationship, pain medication prescribing variability, and access to medications. Dominican surgeons emphasized adherence to standardized pain protocols and employed a paternalistic model of care, and American surgeons reported prescribing variability and described shared decision-making with patients. Dominican providers described limited availability of potent opioid preparations in the Dominican Republic, in contrast to American providers, who discussed opioid accessibility in the United States.

Peer review: This article was reviewed by the Editor-in-Chief and one Deputy Editor, and it underwent blinded review by two or more outside experts. The Deputy Editor reviewed each revision of the article, and it underwent a final review by the Editor-in-Chief prior to publication. Final corrections and clarifications occurred during one or more exchanges between the author(s) and copyeditors.

Disclosure: Two authors of this study (C.A.D. and A.Y.) received a grant from the Rheumatology Research Foundation Medical Student Preceptorship; funds were used to pay for salary stipends. On the Disclosure of Potential Conflicts of Interest forms, which are provided with the online version of the article, one or more of the authors checked “yes” to indicate that the author had a relevant financial relationship in the biomedical arena outside the submitted work.
Conclusions: Our findings suggest that cross-cultural comparisons provide insight into how opioid prescribing practices, approaches to the patient-provider relationship, and medication access inform distinct pain management strategies in American and Dominican surgical settings. Integrating lessons from cross-cultural pain management studies may yield more effective pain management strategies for surgical procedures performed in the United States and abroad.

Opioid analgesics are among the most effective medications for pain relief. They are often used alone or in combination with local anesthetics and nonsteroidal anti-inflammatory drugs (NSAIDs) to manage preoperative and postoperative pain. U.S. practitioners increased the number of opioid prescriptions by >600% from 1997 to 2007. However, opioids also pose substantial risks of toxicity, addiction, and diversion. The U.S. Centers for Disease Control and Prevention (CDC) reported that drug overdose fatalities, principally due to prescription opioids, outnumbered deaths from homicides and road accidents in 2014. Although the increase in opioid diversion and abuse has slowed recently, more than 9 million Americans report long-term medical opioid use and 5 million take opioids for non-prescribed reasons. In response to these sobering data, the CDC has declared an opioid epidemic.

Opioids are commonly used in connection with surgical procedures. Because unrelied postoperative pain can result in severe physiological and psychological complications, treating postoperative pain is critical to patient care. Yet high rates of prescription opioid use in the preoperative and postoperative periods may lead to overdose, addiction and/or abuse, and, ultimately, diversion to illicit use. Such observations have heightened interest in efficacious, safe surgical pain management approaches. Although research continues to focus on optimal pain management in U.S. surgical settings, cross-cultural comparisons are limited. International medical missions such as Operation Walk Boston offer a unique opportunity to compare the postoperative pain management practices of two nations.

Operation Walk Boston has provided total joint replacements to patients in the Dominican Republic since 2008. American clinicians participating in Operation Walk Boston noted that Dominican patients use substantially less opioid medication for postoperative pain than American patients undergoing the same surgical procedures. An overview of total joint replacement pain pathways from Operation Walk Boston-affiliated hospitals in the United States and the Dominican Republic further supported this observation (Table I). As a result, Operation Walk Boston has modified its pain protocol for Dominican patients over the last 8 years to diminish opioid use. To investigate this observation systematically and to develop hypotheses for further study, we conducted a qualitative study to understand differences in postoperative pain management decision-making between American and Dominican health-care providers.

Materials and Methods

Setting

The Dominican Republic is located in the Caribbean and roughly 41% of its 10.3 million citizens live below the poverty line. The per-capita gross domestic product (GDP) is $12,800, or 23.4% of that in the United States, and health-care expenditures account for 5.4% of the country’s GDP. For the past 8 years, Operation Walk Boston has partnered with providers at Hospital General de la Plaza de la Salud in Santo Domingo to provide free total joint replacements annually for approximately 45 patients with advanced arthritis who could not otherwise afford surgical procedures.

Participants

During the Operation Walk Boston mission in March 2015, investigators identified 22 health-care providers to be interviewed. All American providers from Operation Walk Boston were interviewed (5 orthopaedic surgeons and 5 nurses), and the majority of these providers work at academic tertiary care hospitals in Boston and have previously volunteered for the program. One surgeon works in a private practice in the Southern United States and admits patients at an academic hospital. The 12 remaining participants were Dominican providers working at a teaching hospital in Santo Domingo and included 2 orthopaedic surgeons, 1 general surgeon, 1 gynecological surgeon, 2 medical interns, 4 nurses, and 2 nurse assistants. All surgeons in the study oversee pain management for their patients. These individuals were selected on the basis of their availability and willingness to participate in interviews during Operation Walk Boston. All study activities were approved by the institutional review board at Brigham and Women's Hospital.

Procedures

Following group discussions to ensure interview standardization, trained teams of medical students from Harvard Medical School and Universidad Iberoamericana conducted interviews in English and Spanish during Operation Walk Boston 2015. All interviewers followed a moderator’s guide (Table II). To ensure that interview questions would accurately reflect the study objectives, the guide was developed by investigators with a broad set of backgrounds and experience, including Operation Walk Boston clinical investigators from the United States and the Dominican Republic, as well as experienced qualitative researchers who have utilized this methodology in prior work. Cross-cultural comparisons are limited. International medical missions such as Operation Walk Boston offer a unique opportunity to compare the postoperative pain management practices of two nations.

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One investigator synthesized reviewers’ notes from the 5 transcripts to produce a coding scheme consisting of 9 main codes and 27 subcodes representing 3 themes. Two investigators identified all of the themes after a second open reading of 10 randomly selected transcripts. No new themes emerged after reading 5 additional transcripts, and investigators finalized the coding scheme together. One investigator then coded all 22 interviews using the final coding scheme, extracting representative quotations and organizing interview content into the 3 themes. Another investigator subsequently coded 5 randomly selected transcripts with the final coding scheme to evaluate interrater reliability of assignment of quotations to specific themes. The Cohen kappa was 0.84 (95% confidence interval, 0.73 to 0.95), suggesting excellent interrater reliability. These 2 investigators met to review and to resolve all discrepancies.

**Results**

**Theme 1: Patient-Provider Relationship**

Participants commented on the ways in which the patient-provider relationship informs postoperative pain management. American providers emphasized shared decision-making, patient satisfaction, and patient autonomy, while Dominican providers discussed a paternalistic care model in which patients did not contribute to decisions regarding their own care. Table III provides quotations that supplement the results described below.

American surgeons engaged in shared-decision making, with comments such as one by a U.S. surgeon: “I try to meet the patient’s needs, but I try to get them off narcotics as fast as possible...and gently negotiate a termination of narcotics.” They also described the importance of tailoring care to individuals; according to another U.S. surgeon, “The important thing is to listen to the patient. You have to individualize accordingly. I don’t find there’s a good cookie cutter for everyone.” This approach was captured by one U.S. nurse’s explanation: “I try to
collaborate with patients to optimize their care, and we make sure they understand what their options are.”

U.S. providers also commented frequently on patient satisfaction and how it affects prescribing choices; according to one U.S. surgeon, “There’s tremendous pressure from a physician’s standpoint to give patients medication.” American providers also described how patient autonomy guides their practice, often allowing patients to “choose the level of pain they are comfortable with” (according to a U.S. nurse) or to operate a “patient-controlled analgesia device the evening of surgery” (according to a U.S. surgeon).

In contrast, Dominican providers’ comments suggested a paternalistic model of the patient-provider relationship; according to one Dominican orthopaedic surgeon, “Patients choosing? That’s a concept I don’t manage very well. Patients don’t choose. Patients are given medication orally when they go home.” None of the Dominican providers mentioned shared decision-making, stating that they tend to choose pain regimens with little patient input; according to a Dominican nurse, “Patients don’t decide what medication to take. The doctor gives them the treatment they should have.”

American providers noted that time pressure often compromises the patient-provider relationship in the United States; according to one U.S. surgeon, “If I want to spend time discussing [pain management] with my patients, it takes a lot of time. If you want to just dish out the medication, it’s a lot easier.” Moreover, American providers felt that financial pressures incentivize American physicians to reduce the length of stay; according to another U.S. surgeon, “Because direct and indirect costs are so high, we need to push patients out of the hospital as soon as possible.” Dominican providers did not raise the issue of time constraints.

Theme 2: Prescribing Variability

American physicians cited numerous reasons that they deviated from their pain protocols or guidelines. Providers described individualized decision-making for patients with variable pain tolerance; according to one U.S. surgeon, “People who have been on pain medicine almost certainly will have more pain requirements…and some [patients] who cannot be satisfied within reason.” Many also cited past experience influencing their decision-making; according to one U.S. nurse, “I think variability is definitely dependent on the nurse, and also the nurse’s years of experience.” In some cases, providers described aggressive patient opioid-seeking behavior that prompts prescribing variability, yet most stated that pain management is provider-dependent; according to one U.S. surgeon, “Everyone has their own magic formula.” Therefore, American providers frequently stated that there are discrepancies in analgesic prescribing practices; according to one U.S. surgeon, “The variability—it’s immense. Some patients go home with nothing or just Tylenol, and others come back to see you in a month and they’re asking for more narcotics.”

Dominican providers’ comments on prescribing practices contrasted with their American counterparts. Five Dominican physicians reported that all providers follow a standardized protocol and rarely change their pain management strategy on the basis of patient characteristics or provider preferences; according to one Dominican orthopaedic surgeon, “We have a protocol and we stick to that protocol.” Other surgical specialists also shared this view, and only 2 Dominican physicians explicitly stated that patients’ pain tolerance had an impact on pain management; according to a Dominican general surgeon, “Some have higher tolerance, others lower, and you have to give medication differently than you normally would.” However, all
Dominican providers reported that any pain unsuccessfully controlled by the surgeon using the pain protocol is referred to in-hospital pain management specialists.

American and Dominican providers both endorsed the value of opioid-sparing approaches to pain management. Side effects such as nausea, vomiting, constipation, and urinary retention were commonly mentioned as reasons to limit opioid therapy. Providers also said that they weaned patients from opioids as quickly as possible to minimize the risk of addiction and adverse postoperative outcomes; according to one U.S.

**TABLE III Themes and Representative Quotations from Interviews**

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<th>Theme</th>
<th>Representative Quotations (N = 22)</th>
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<td>Theme 1: Patient-provider relationship</td>
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| Shared decision-making and patient satisfaction | “I first identify what’s a good level [of pain] for them, and I let them choose that level, because pain is subjective.” (U.S. nurse)  
“The key thing is to be attentive to their needs. Ask them if they are having pain. Ask them if they are satisfied with the pain medications, and if not, just switch them around.” (U.S. surgeon)  
“I think sometimes it is hard, and to keep the peace in a sense...you just give [patients] what they want.” (U.S. nurse)  
Paternalism | “They [only] use the medication on our recommendation.” (Dominican orthopaedic surgeon)  
“Sometimes patients bring their pain treatment—their medications—but then...the doctor gives orders that the ones they have aren’t needed.” (Dominican nurse)  
Time pressure | “We don’t have the time to really make plans ahead and discuss [other issues surrounding pain management]. If you touch all these things, you talk for three weeks before you do anything. Obama doesn’t pay for that.” (U.S. surgeon)  
“The pain service tends to pile on the pain medicine and they don’t know the patient. They don’t have the time to spend with them.” (U.S. surgeon)  
Theme 2: Prescribing variability |  |
| Pain protocol deviation (U.S.) | “We have a surgeon [in the United States] who really likes the long-acting opioids. He feels like there are fewer side effects.” (U.S. nurse)  
“I’ve been guilty—I think a lot of physicians are—for patients you’ve operated on who are not doing well, if you feel that you didn’t get them the perfect result, you may have a tendency to give them more pain medicine and for longer.” (U.S. surgeon)  
“I like to use hydrocodone in place of oxycodone if possible.” (U.S. surgeon)  
“The manipulative thing that we normally see is that [patients] have allergies to anything they don’t want. They come to us and say, ‘The only thing I can take is Dilaudid [hydromorphone] or Percocet [oxycodone and acetaminophen].’” (U.S. surgeon)  
Theme 3: Access to medications |  |
| Opioid availability (U.S.) | “Normally there is one way or another to manage something, but we almost always follow the same protocol for efficacy and to have a positive effect on pain.” (Dominican gynecological surgeon)  
“Sometimes there are differences between one surgeon and another, like if one prefers nalbuphine over tramadol, but those are both in the protocol.” (Dominican orthopaedic surgeon)  
[Responding to whether pain management is ever changed based on patient characteristics or postoperative complications] “No.” (Dominican orthopaedic surgeon)  
Opioid-sparing approaches to pain management | “I tell them to get off narcotics as fast as you can. Because narcotics screw you up completely, screw up your bowels.” (U.S. surgeon)  
“It’s really important that we don’t overmedicate patients, and it’s really important that they don’t get hooked on these medications, which happens easily.” (U.S. nurse)  
“Patient satisfaction is the worst if they are on narcotics, so you have to do everything to keep them off the narcotics.” (U.S. surgeon)  
Theme 3: Access to medications |  |
| Opioid accessibility (U.S.) | “A lot of patients come in—in the States—and have some dependencies, so Tylenol isn’t going to touch them. We have to go right to the intravenous medications.” (U.S. nurse)  
“We have a pain medical doctor on almost every corner in [this U.S. city] and patients know if they don’t get [opioids] from you, they go literally three clinics over and they get whatever they need from their pain management doctor.” (U.S. surgeon)  
Theme 3: Access to medications |  |
| Opioid accessibility (D.R.) | “With opioids, we don’t really have experience with those, plus the limits that are in place to control those.” (Dominican gynecological surgeon)  
“In order to get morphine and morphine roots, you have to go to the oncology centers which are the only centers licensed to carry them. You have to demonstrate that you have a patient with cancer and they will give you the drugs.” (Dominican orthopaedic surgeon) |
surgeon, “I try to get rid of the narcotics because that’s the worst enemy in our postoperative period.” Finally, many providers in both the United States and the Dominican Republic try to avoid opioids and other painkillers to the greatest extent possible. According to a Dominican nurse, “When a patient says, ‘I’m in pain’, a lot of people run to look for medication, and that’s not appropriate.” According to a U.S. surgeon, “I try to get them off narcotics as quickly as I can.”

**Theme 3: Access to Medications**

American and Dominican physicians provided contrasting descriptions of access to opioids between the 2 nations. For postoperative pain management, one of the primary considerations for American physicians was the patient’s history of opioid use. This could strongly influence decision-making if patients were already using opioids; according to one U.S. nurse, “I ask the patient how much he or she is taking at home prior to coming in. That’s a big component as well.” American providers offered details on the effect of pain clinics on opioid availability in the United States and the requests that they receive for medication; according to one U.S. surgeon, “I’ve stopped prescribing [a patient] medication, but she now has sought out doctors to prescribe Zohydro [hydrocodone] and Vicodin [hydrocodone and acetaminophen] at outside pain clinics, and she’s broken her contract with her pain clinic. Now they’re doing anything—and that means anything—to convince you to give them medication.” Another physician described the problem as particularly acute in one region of the United States: “I would say at least 50% of my patients who refer to me with osteoarthritis are on chronic short-acting opioids, usually Percocet [oxycodone and acetaminophen] or Lortab [hydrocodone and acetaminophen].”

In contrast, most Dominican providers discussed the relative lack of access to opioids. Notably, oxycodone-containing drugs were never mentioned. Providers generally stated that opioids were used infrequently, with less potent formulations and less ready access; according to a Dominican orthopaedic surgeon, “We don’t use opioids in this country very much. It’s about trafficking—we have regulations, so we don’t get opioids here.” One Dominican physician commented on the situation at other hospitals in the country: “They don’t have a written strategy/plan like we have here. Usually you just go with what you know is available because sometimes if you go to a public hospital, you don’t have most of the medication that will work best.”

**Discussion**

To our knowledge, this is the first cross-cultural qualitative study to investigate providers’ approaches to postoperative pain management following total joint replacement. Prior research has investigated postoperative pain management among anesthesia residents working in a developed nation to develop practice recommendations⁵, but none has employed cross-cultural comparisons in total joint replacement. Based on 22 interviews with Operation Walk Boston and Dominican healthcare providers, we identified notable differences in American and Dominican views on the patient-provider relationship and postoperative prescribing practices. American providers emphasized patient satisfaction and shared-decision making, and Dominican providers reported a paternalistic model of care with diminished patient agency. This was consistent with Dominican providers’ commitment to practice according to a strict pain management protocol. Additionally, providers discussed differential access to opioid therapy in the United States and the Dominican Republic. These findings generated hypotheses that can be addressed in future work on how cross-cultural views on the patient-provider relationship, prescribing variability, and access to medications contribute to postoperative pain management following total joint replacement.

Our findings contribute to prior literature on international approaches to opioid analgesia, including issues of access and overuse. Dominican physicians’ comments on limited access to opioids are consistent with reports of restricted opioid availability in developing nations due to government concerns over addiction, abuse, and diversion⁶⁻¹⁷. Stringent import restrictions and laws governing the prescribing and dispensing of opioids are often the basis of these limitations. During our interviews, Dominican physicians described specific drugs that were challenging to obtain for orthopaedic surgical procedures and regulations that impeded their use of opioids. In contrast, in the United States, clinicians struggle to diminish pain without overprescribing opioids, and the quantity prescribed has increased dramatically in recent years, from 96 mg of morphine equivalents per person annually in 1997 to 700 mg per person in 2007⁷. Moreover, 76% of non-medical users obtain drugs prescribed to someone else, resulting in substantial increases in opioid-related morbidity and mortality⁸. Interviewees highlighted some of the factors that may contribute to these issues, including prescribing variability and access to opioids at outside pain clinics.

These insights into opioid access and prescribing variability, together with the U.S. shared decision-making model of the patient-provider relationship, illuminate core cultural, practical, and regulatory differences that inform pain management strategies in the United States and the Dominican Republic. The American health-care model emphasizes patient autonomy and values patients’ preferences⁹, but physicians are the primary decision-makers in the Dominican Republic. It is possible that the resources of the United States, including affordable, accessible opioid analgesics, in combination with an emphasis on patient agency, as-needed medications, and pain as the fifth vital sign⁸⁰, may have yielded a culture in which patients are engaged and are authorized to take powerful medications. In contrast, our interviews suggest that the Dominican model represents a care culture in which professional knowledge trumps patient autonomy and in which patients have minimal access and authorization to take potent analgesics. To be sure, unrelieved postoperative pain can result in substantial physiological, psychological, social, and economic complications for patients⁹. Yet the hypotheses generated by the current study suggest that cross-cultural comparisons...
might provide useful insight into optimal pain management approaches.

Several limitations of our study should be noted. American interviewees were primarily limited to Boston practitioners, and Dominican providers were all staff members of a single hospital. Thus, we cannot generalize to the entire United States and the Dominican Republic. Additionally, our interviews were conducted over the course of 4 days during the medical mission, limiting iterative changes to the moderator’s guide that take into account accumulating knowledge over a longer-term study. Finally, observer bias is a limitation in qualitative research; to address this, we worked verbatim from interview transcripts and involved Dominican clinicians throughout the design, execution, and analysis of the study.

In conclusion, we report a qualitative cross-cultural investigation into postoperative pain management strategies between the United States and Dominican Republic. Our work has implications for clinicians’ approaches to pain management. American patients are often given substantial autonomy to self-administer analgesia in the postoperative setting, during which their decision-making capacity may be impaired by pain. Providers might consider discussing patients’ pain preferences during preoperative meetings, such that they may tailor opioid use to patients more effectively. This occurs routinely for pregnant women in many developed countries who make decisions about their pain preferences during childbirth weeks in advance. Programs such as these could be added to standard preoperative assessments done routinely for procedures such as joint replacement. Future studies might examine whether this approach more effectively meets patients’ variable pain requirements, while reducing overmedication, than traditional real-time patient decision-making. Integrating lessons from cross-cultural pain management studies may have important implications for patients undergoing painful surgical procedures both in the United States and abroad.

References


