Journal of Patient Experience
2017, Vol. 4(3) 144-151

DOI: 10.1177/2374373517706837
journals.sagepub.com/home/jpx
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A Shared Medical Appointment on the Benefits and Risks of Opioids Is Associated With Improved Patient Confidence in Managing Chronic Pain

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Abstract

Objectives: To evaluate a shared medical appointment (SMA) on opioids in the treatment of chronic pain. **Research design:** This prospective study was conducted at an ambulatory clinic within a health-care delivery system. The SMA is a single 90-minute encounter, led by a physician. We included adult patients who attended the SMA and completed an immediate pre–post survey. Survey items were measured on a scale from 0 (worst) to 5 (best). Mean differences in pre–post responses were assessed by a paired *t* test. **Results:** A total of 130 patients were included in the analysis. Patients showed improvements in confidence in self-managing pain (+0.44; 95% confidence interval [CI]: 0.29-0.59; $P < .001$) and their providers' ability to help manage pain (+0.28; 95% CI: 0.14-0.43; $P < .001$). Most patients (81%) were very/extremely satisfied with the SMA. **Conclusions:** An SMA on the benefits and risks of opioids was associated with prompt improvements in patients' confidence in self-managing pain and in their health-care providers' ability to help manage pain. Such confidence can lay the foundation for increased patient engagement and activation in pain management.

Keywords

chronic pain, opioid use, shared medical appointments

Introduction

More than 100 million adults in the United States have some type of pain, with an estimated 25.3 million people experiencing pain daily (1). Over the last 2 decades, opioids have increasingly become a common treatment for both episodic and chronic pain (2). Recent guidelines from the Centers for Disease Control and Prevention (CDC), however, recommend against long-term opioid use due to lack of evidence supporting effectiveness beyond 90 days, as well as the high potential for addiction, abuse, and risks of dose-dependent serious adverse effects (3).

Patient education is crucial for mitigating inappropriate and dangerous use of prescription drugs. In a routine office visit, however, physicians are challenged with providing comprehensive information on the benefits and risks of opioids, assessing appropriateness of treatment and making well-informed decisions with the patient about a care plan. Group encounters, during which a provider simultaneously sees multiple patients with similar health conditions, are a promising disease management approach. Such visits are typically 60 to 120 minutes in duration and allow more time for education on disease management compared to a routine 15-minute individual appointment. Group encounters can supplement one-on-one encounters, encourage self-management skills, and empower patients to take an active role in their care (4). A shared medical appointment (SMA) is a type of group encounter that differs from other types of group or educational sessions, in that it is a billable

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appointment within a health-care practice and integrated with a patient's routine medical care (5). Often, the SMA model includes components of one-on-one visits, thus allowing for each patient's unique medical needs to be addressed, while promoting a community of support among individuals who face common medical challenges.

Shared medical appointments have been developed for numerous chronic conditions and have been associated with patient satisfaction (6–8), achievement of treatment goals (9–11), and receipt of recommended prescription medications or follow-up care (12,13). Group encounters for pain disorders—not necessarily involving the SMA framework—have been associated with improvements in pain severity (14–17), depressive symptoms (14,15), and quality of life (15). Group visits in previous studies typically have focused on patient empowerment through physical activities (eg, yoga, group exercise), complementary medicine (eg, massage, acupuncture), cognitive behavioral therapy, and patient education. In a study of patients with headaches/migraines, group patient education was associated with an increased use of antimigraine medications among nonusers, a decreased use of antimigraine medications among overusers, and a decrease in headache/migraine-related emergency department visits (13).

Group encounters for chronic pain most commonly described in literature have been composed of a series of weekly sessions, many of which were carried out at academic medical centers. These studies have several limitations, as they have included a small number of participants ($n < 70$), were conducted in restricted populations—women, elderly individuals, and those with specific pain conditions (eg, headache/migraine or pelvic pain), and did not necessarily focus on educating patients about appropriate medication use. Although different types of group encounters for chronic pain have been described in literature, little is known specifically about the role of the SMA model for pain-related conditions, especially for education on opioids. Given the burgeoning opioid epidemic in the United States and new opioid prescribing guidelines put forth by the CDC, it is imperative to identify innovative ways to better educate patients with various chronic pain conditions on the benefits and risks of opioids, while improving their knowledge about pain and pain management options, confidence in managing pain, and satisfaction with their care. The SMA group-encounter model may well serve this purpose.

The primary objective of this study was to conduct a formative evaluation of a pilot SMA program focused on the risks and benefits of opioid use for treatment of chronic pain within a community-based ambulatory health-care delivery system. We examined immediate effects of the SMA on patients' understanding of their pain condition(s), confidence in managing pain, and satisfaction with care received for pain. We explored heterogeneity in response to the opioid SMA as a function of baseline patient characteristics to better understand which populations may derive the most benefit from this program.

Methods

Study Design and Setting

This prospective study was performed at a multispecialty community-based ambulatory health-care delivery system, which serves approximately 1 million patients annually throughout 4 regional divisions in Northern California: Alameda, San Mateo, Santa Clara, and Santa Cruz. The organization is a mixed-payer system and contracts with the majority of commercial health-care payers in the region, and Medicare and Medicaid. This study was approved by the organization's institutional review board and was conducted in accordance with Health Insurance Portability and Accountability Act standards.

Subject Eligibility Criteria

Patients were eligible for the opioid SMA if they were referred by a physician from the health-care system. Physicians were invited to refer patients to the SMA if their patient was already taking an opioid for chronic pain, but could benefit from additional education on safe opioid use, or if they were considering initiating long-term opioid therapy. Patients were included in this study if they attended the SMA and completed a pre-visit survey. Patients were also recruited to participate in a 6-month follow-up survey to assess longer-term outcomes, which is underway.

Shared Medical Appointment Program

The pilot opioid-use SMA was launched at a clinic in the Santa Cruz Division, with the intention of expanding and implementing the program throughout the system. The program began in February 2016. The SMA is based on the Noffsinger model of group medical appointments (18) and is a single 90-minute session facilitated by a primary-care physician for groups of up to 20 patients. The goal of the opioid-use SMA is to educate patients on the benefits and risks of opioids, obtain informed consent for those remaining on or initiating long-term opioid therapy, and to build a community of support for patients with chronic pain.

Upon check-in at the opioid SMA, patients meet one-on-one with a medical assistant who records vitals and asks whether the patient has any specific concerns about their condition(s) or medication(s). The physician then delivers the core curriculum of the SMA, which provides information on (i) trends in opioid use in the United States; (ii) evidence—or lack thereof—supporting long-term opioid use for treating noncancer chronic pain; (iii) drug diversion, safeguarding medications, and safe disposal of unused medication; and (iv) side effects associated with short- and long-term opioid use, including impaired driving abilities, respiratory depression, sexual dysfunction, hyperalgesia, dependence, addiction, and overdose-related death; (vi) availability and the potential importance of having a prescription for an opioid antagonist; and (v) contraindications for opioid use. During the session, patients are encouraged to ask questions and share

experiences. At the end, patients have the option to briefly meet one-on-one with the physician to address specific questions. The physician then documents information in the electronic health record (EHR) that needs to be communicated to the patients' referring/treating physicians, such as agreed upon functional goals for treatment or concerns about opioid-related side effects or risks. All patients receive a take-home "companion guide to managing chronic pain," which highlights the educational components of the curriculum, lists alternative nonopioid treatment options, and provides community resources for pain management.

Data Collection

Patients were administered an anonymous survey immediately before and immediately after the SMA. The pre-visit survey collected data on patient demographics, pain conditions, and medication use (see Online Supplemental Appendix). Data were also collected on patient-reported pain intensity and functional interference, which was measured using the validated PEG 3-item questionnaire (19). The questionnaire asks patients to report, on average during the last week, their intensity of pain (P), how pain has interfered with enjoyment of life (E), and how pain has interfered with general activities (G). Each PEG item uses a scale from 0 (no pain/no interference) to 10 (pain as bad as you can imagine/complete interference).

The pre-visit survey asked patients to rate 4 patient-experience domains: (i) understanding of their pain condition, (ii) confidence in ability to self-manage pain, (iii) confidence in their health-care providers' ability to help manage pain, and (iv) satisfaction with care received within the health-care system for pain management. Domains were measured on a scale from 0 (not at all well/not at all confident/not at all satisfied) to 5 (very well/extremely confident/extremely satisfied). Patients were asked to rate these domains again in the post-visit survey. The post-visit survey also collected information on other aspects of the patients' experience, including (i) satisfaction that the SMA provides information, skills, and tools to help patients understand and manage pain and (ii) likelihood that attending the SMA will change how patients manage pain. These domains were measured on a scale from 0 (not at all satisfied/not at all likely) to 5 (extremely satisfied/extremely likely).

For discrete responses, when patients chose multiple values, the higher of these values were used. Patients' pain conditions were coded as back/neck pain, joint/bone pain, neurological (nerve) pain, muscle pain, and headaches/migraines. Other pain conditions, without a known etiology, were categorized as unclassified pain, including abdominal pain, fibromyalgia, gynecological pain, and pelvic pain.

Statistical Analysis

Descriptive statistics were calculated for all survey responses. Among the 4 patient-experience domains measured before and after the SMA, we used the last-observation-carried forward (LOCF) method to handle missing responses to the post-visit survey. Sensitivity analyses were performed to assess whether outcomes were robust to data imputation. We did not impute missing values for any pre-visit survey questions or other post-visit survey questions. Mean differences in patient-experience ratings and 95% confidence intervals (CIs) were calculated. We assessed statistically significant differences in pre–post responses for each domain by a paired *t* test.

We used logistic regression models to explore differences in survey responses by baseline patient characteristics (Table 1). The models included the following binary dependent variables (yes/no): improvement in pre–post patient-experience domain and "top-box" rating (response of $\geq$4 out of 5) for satisfaction with the SMA and likely behavioral change as a result of the SMA. In models that included changes in patient-experience ratings as the dependent variable, we controlled for baseline responses. Correlation between domains was also assessed by a χ^2 test of independence. For all tests of hypotheses, a P value <.05 was

Table 1. Patient Baseline Demographics and Characteristics.[a]

Age, n (%)	
18-29	3 (2.3)
30-49	37 (28.5)
50-64	51 (39.2)
65+	39 (30.4)
Sex, n (%)	
Male	57 (43.8)
Female	73 (56.2)
Pain conditions, n (%)	
1	47 (36.2)
2	31 (23.8)
3	27 (20.8)
4+	25 (19.2)
Pain conditions[b], n (%)	
Back/neck	96 (73.8)
Joint/bone	67 (51.5)
Nerve	57 (43.8)
Muscle	37 (28.5)
Headache/migraine	16 (12.3)
Unclassified[b]	13 (10.0)
Cancer	1 (0.8)
Using any pain medications, n (%)	
No	31 (23.8)
Yes	98 (75.4)
Missing	1 (<0.1)
Using an opioid medication, n (%)	
Yes	70 (53.8)
Not reported	60 (46.2)
PEG score, mean (SD)	
Pain intensity	6.0 (1.9)
Enjoyment of Life	6.1 (2.4)
General activity	5.9 (2.5)

Abbreviations: SD, standard deviation.
[a]n = 130.
[b]Pain conditions are not mutually exclusive. Unclassified pain includes fibromyalgia, pelvic pain, gynecological pain, and abdominal pain.

Table 2. Pre–Post Visit Survey Responses for Each Patient-Experience Domain.

	Mean Response (SD)	Mean Difference (95% CI)[a]
How well do you feel that you understand your pain? (0 not well → 5 very well), n = 127		
Pre-SMA	4.20 (1.0)	Reference
Post-SMA	4.31 (0.85)	0.10 (−0.04-0.24); $P = .159$
How confident are you that you can manage your chronic pain so that you can enjoy life and do what you need and want to do? (0 not at all confident → 5 extremely confident), n = 127		
Pre-SMA	3.44 (1.42)	Reference
Post-SMA	3. 88 (1.14)	0.44 (0.29-0.59); $P < .001$
How confident are you that your healthcare providers can help you manage your chronic pain? (0 not at all confident → 5 extremely confident), n = 127		
Pre-SMA	3.68 (1.30)	Reference
Post-SMA	3.96 (1.17)	0.28 (0.14-0.43); $P < .001$
How satisfied are you with the care you have received for your chronic pain? (0 not at all satisfied → 5 extremely satisfied), n= 125		
Pre-SMA	4.02 (1.10)	Reference
Post-SMA	4.01 (1.14)	−0.01 (−0.14.12); $P = .903$

Abbreviations: CI, confidence interval; SD, standard deviation; SMA, shared medical appointment.
[a]Statistically significant differences assessed by paired *t* test, after last-observation carried forward method of imputation of post-survey responses.

considered statistically significant. Analyses were performed in Stata 13.0 (Stata Corp; College Station, Texas).

Results

Description of Study Cohort

Between February and August 2016, 188 patients were referred to the opioid SMA and 135 (72%) had an SMA encounter documented in the EHR. There were 14 SMA sessions (2 per month), with an average of 9 to 10 patients per session. Among attendees, 130 (96%) completed a pre-visit survey and 127 of these completed a post-visit survey. The majority of patients were 50 years of age or older (69.6%) and more than half were female (56.2%; Table 1). The most prevalent chronic pain condition was back/neck pain (73.8%). The majority of patients had more than 1 chronic pain condition (63.8%). Ninety-eight (75.4%) patients reported using over-the-counter and/or prescription medications to manage pain and 70 (53.8%) reported using an opioid. On average, patients reported 6 out of 10, each, for pain intensity, functional interference with enjoyment of life, and functional interference with general activities.

Changes in Pre–Post Patient-Experience Ratings

In LOCF analyses, patients' confidence in self-managing pain and confidence in their health-care providers' ability to help manage pain improved significantly between the pre- and post-SMA survey responses, with mean increases of 0.44 (95% CI: 0.29-0.59; $P < .001$) and 0.28 (95% CI: 0.14-0.43; $P < .001$), respectively (Table 2). Approximately 36% of patients reported improved confidence in self-managing pain and 28% reported improved confidence in their health-care providers' ability to help them manage pain (Figure 1B-C); less than 5% of patients reported decreased confidence in each domain. There were no statistically significant changes in patents' understanding of, or satisfaction with care received for, their pain condition (Table 2). Results were similar in the absence of imputation of missing data (data not shown).

In an examination of differences in pre–post survey responses by baseline patient characteristics, we found that older patients were less likely to report an improvement in their understanding of pain (odds ratio [OR]: 0.50; 95% CI: 0.26-0.95) and confidence in self-managing pain (OR: 0.46; 95% CI: 0.27-0.79; Table 3).

Post-SMA Patient-Experience Ratings

On average, patients were very satisfied (mean rating 4.1; median 4) that the opioid-use SMA provided the information, skills, and tools to help them better understand and manage pain; 80.8% of respondents were very or extremely satisfied (rating ≥ 4; Figure 2A). On average, patients reported that it was likely to somewhat unlikely (mean rating 2.6; median 3) that attending the opioid SMA would change how they manage pain; 35.5% reported that it was very or extremely likely (rating ≥ 4; Figure 2B).

No differences in post-SMA survey responses were found by baseline patient characteristics (Table 3). For example, patients who reported receiving opioid therapy had a similar likelihood of indicating they were very/extremely likely to change how they manage their pain compared to those who did not report receiving opioid therapy. There was a trend toward woman more often than men reporting that they were very/extremely like to make changes in how they manage pain as a result of the SMA (OR: 2.16; 95% CI: 0.99-4.68).

Patients who were very/extremely satisfied with the SMA were significantly more likely to report being very/extremely likely to change how they manage pain compared to those who were not very/extremely satisfied (42.0% vs

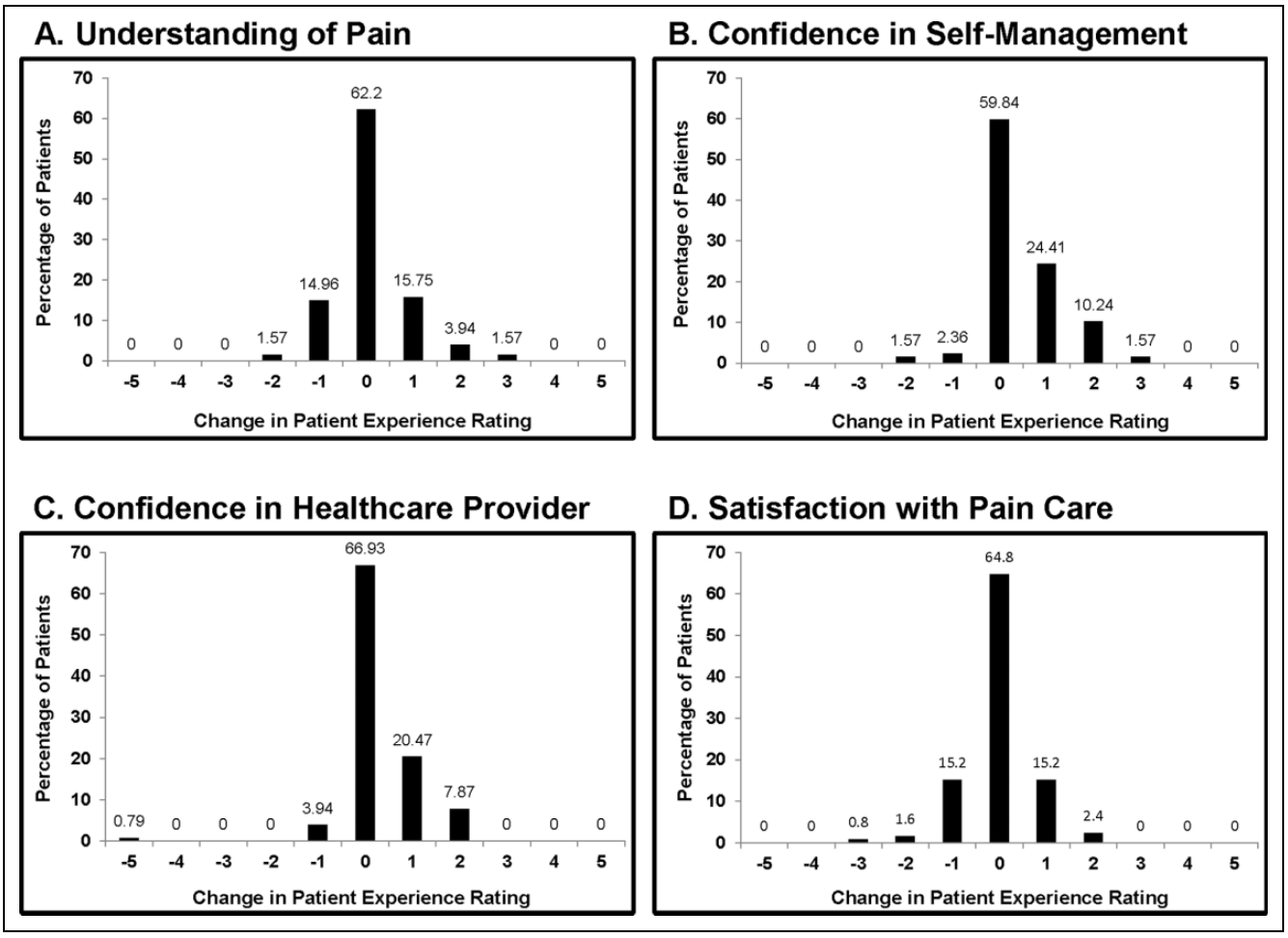

Figure 1. Relative frequency distribution of change in patient-experience rating for each pre–post visit domain. A-C, n = 127; D, n = 125.

8.3%; $P = .002$); however, when stratified by gender this association was significant in women (52.9% vs 0.0%; $P = .001$) and not men (29.6% vs 15.4%; $P = .308$). There were no associations between patients reporting to be very/extremely likely to change how they manage pain and reporting improved confidence in self-managing pain or in health-care providers' ability to help manage pain (data not shown).

Discussion

In this formative evaluation of an SMA on the benefits and risks of opioids, patients attending the program represented various chronic pain conditions, with most patients having at least 2 types of pain, and more than half reporting the current use of an opioid. Patients reported, on average, improved confidence in self-managing pain and in their health-care providers' ability to help them manage their pain. The majority of patients were very/extremely satisfied with the SMA (81%), but only 35% reported that they were likely to change how they manage chronic pain as a result of the SMA. Those who were very/extremely satisfied were more likely to report that they would change how they manage their pain compared to those that were not very/extremely satisfied (42% vs 8%, respectively); this effect was observed among women but not men. These data are consistent with studies in the literature showing that women are more likely to engage in health promoting behaviors than men (20–22).

Patients' confidence in self-managing chronic disease is essential for developing self-efficacy and engagement in health promoting behaviors (23). Through self-management, patients can effectively monitor their symptoms and take steps to control or reduce the impact of their condition on quality of life (24). Patients' confidence in their health-care providers can foster trust and improved communication, which has been shown to positively influence follow-through with treatment regimens (25,26). Taken together, improved self-confidence and confidence in health-care providers can lay the foundation for increased patient engagement and activation in pain management.

The opioid SMA did not result in an overall improvement in patients' understanding of their pain condition. This is not surprising, given that the SMA was focused on educating patients on opioids in the treatment of various chronic pain conditions and not on a specific underlying disease or cause of pain. We did find, however, that younger patients were more likely to report improvements

Table 3. Associations Between Survey Responses and Patient Characteristics.[a]

Predictor Variables	Pre–Post Visit Improvements in Patient-Experience Domains				Top-Box Rating for Post-Visit Domains	
	Understanding of Pain	Confidence in Self-Management	Confidence in Provider	Satisfaction With Pain Care	Satisfied With SMA	Likely Behavior Change
	Odds ratios (95% Confidence Intervals)					
Female vs male	1.51 (0.62-4.36)	0.63 (0.27-1.48)	0.67 (0.27-1.67)	0.84 (0.29-2.39)	1.39 (0.57-2.42)	2.16 (0.99-4.68)
Age	0.50 (0.26-0.95)[b]	0.46 (0.27-0.79)[c]	0.97 (0.58-1.64)	0.70 (0.38-1.31)	0.69 (0.39-1.21)	1.41 (0.89-2.23)
N of pain conditions	0.78 (0.51-1.20)	1.08 (0.79-1.49)	1.29 (0.92-1.79)	1.01 (0.68-1.50)	1.37 (0.92-2.03)	1.08 (0.80-1.44)
Taking any medication	1.56 (0.40-6.06)	1.33 (0.47-3.79)	1.10 (0.38-3.25)	0.64 (0.20-2.08)	1.04 (0.37-2.94)	1.25 (0.51-3.06)
Taking an opioid	1.81 (0.61-5.36)	1.36 (0.59-3.15)	1.56 (0.63-3.86)	0.18 (0.41-3.37)	0.59 (0.23-1.47)	1.14 (0.54-2.39)
PEG score						
Pain	1.07 (0.82-1.38)	0.96 (0.78-1.20)	1.11 (0.87-1.41)	0.96 (0.73-1.26)	1.12 (0.88-1.43)	1.17 (0.95-1.45)
Enjoyment	0.93 (0.75-1.16)	0.98 (0.81-1.18)	1.09 (0.90-1.34)	1.01 (0.81-1.26)	0.98 (0.81-1.19)	1.05 (0.89-1.24)
General Activity	0.98 (0.79-1.20)	0.96 (0.81-1.15)	1.08 (0.89-1.31)	0.96 (0.77-1.19)	0.97 (0.80-1.17)	1.00 (0.85-1.17)
Month	1.35 (0.99-1.84)	1.12 (0.89-1.42)	0.86 (0.68-1.09)	1.08 (0.82-1.43)	1.20 (0.94-1.63)	1.08 (0.88-1.32)

[a]Improvement in pre–post visit response defined as change >0; top-box rating defined as response of ≥4, on a scale of 0 to 5. Odds ratios derived from logistic regression models for improved survey response for each patient-experience domain or top-box rating (dependent variable) and each predictor variable. For pre–post improvements in patient-experience domains, statistical adjustment was performed for baseline responses.
[b]$P < .05$.
[c]$P < .01$.

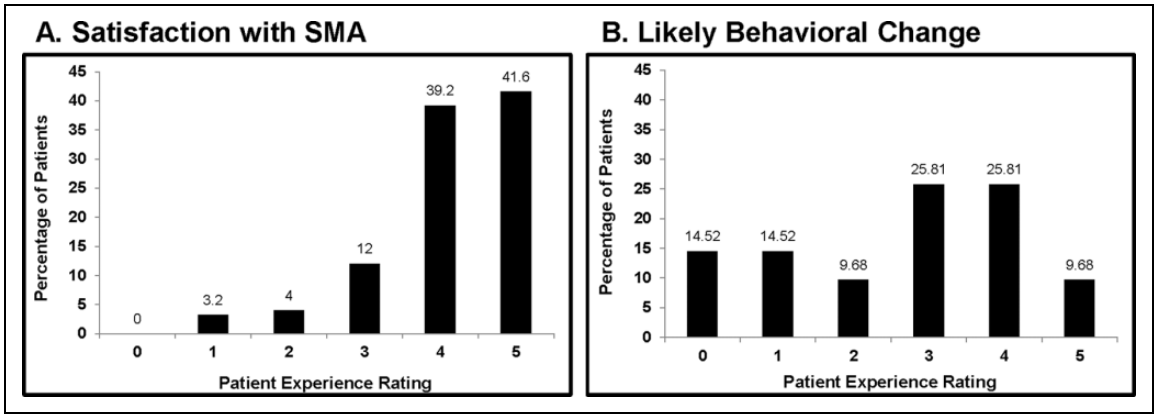

Figure 2. Relative frequency distribution of patient-experience rating of each postvisit domain. Patient-experience ratings are shown (0 = not at all satisfied/not at all likely; 5 = extremely satisfied/extremely likely). A, n = 124; B, n = 117.

in an understanding of pain and confidence in self-managing pain than older patients, even when controlling for baseline responses. Thus, the SMA curriculum may need to be tailored to older individuals, who may have specific pain management needs.

We also found that the SMA did not improve patients' overall satisfaction with pain care at the organization. Because the SMA was only a single 90-minute session, this may have not been sufficient time to change patients' perception of their care. Likewise, a single 90-minute session may have been insufficient to influence changes in patients' behavior, explaining the aforementioned low rating of this domain. Additional SMAs are in development in our health system that will focus on the underlying causes of pain and the management of pain. Newer SMAs will complement the opioid SMA and will hopefully motivate patients to make changes in how they manage pain.

This study has several limitations. First, this was a small pre–post evaluation of a pilot program in which only short-term outcomes were evaluated. Without a control group, we cannot know how the observed outcomes compare to usual care. However, given that the SMA reaches multiple patients simultaneously, this model is likely more efficient in achieving outcomes than more traditional approaches (ie, one-on-one encounters). We cannot know whether the observed statistically significant improvements are a direct result of the SMA, clinically meaningful, or whether they will be sustained long-term and translate into improvements in clinical outcomes. The examination of differences in survey responses by baseline patient characteristics was hypothesis generating; we did not have a priori hypotheses or expected effect size. This study was conducted in a community-based ambulatory setting in the United States and we cannot know whether results are generalizable to other health-care

settings. The system, however, is similar to many health-care delivery systems in the nation in terms of payer mix and provider reimbursement; thus, these outcomes will likely translate to other similar settings.

This study has several strengths. To our knowledge, it is the first to prospectively evaluate an SMA on the benefits and risks of opioids. In addition to educating patients on opioids, the SMA serves as an innovative and efficient way to provide informed consent for opioid use, as recommended by the CDC guidelines (3). The SMA model has several advantages over other types of group encounters, in that it is integrated with patients' routine care and includes components of one-on-one visits. For this SMA, in particular, patients are referred by their treating provider, and pertinent information can be communicated through the EHR to these providers by the physician who facilitates the SMA, thereby promoting care coordination.

A 6-month follow-up evaluation of the SMA program is in process. This follow-up evaluation will assess whether the observed changes in this study are sustained and whether objective measures, such as changes in opioid utilization and dosing, are also improved among patients completing an SMA as compared with a contemporaneous matched control cohort. Lastly, we plan to evaluate the factors that influence a patient's willingness to make behavioral chances as a result of the SMA.

Conclusion

In an ambulatory care setting among patients with various chronic pain conditions, an SMA targeting the risks and benefits of opioids was associated with prompt improvements in patients' confidence in self-managing pain and their health-care providers' ability to manage pain. Such confidence can lay the foundation for increased patient engagement and activation in pain management.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Robert J. Romanelli has previously received research funding from Pfizer, Inc in the area of chronic pain, unrelated to specific drug products.

Funding

The author(s) disclosed receipt of the following financial support for the research and/or authorship of this article: This study was funded by an Independent Grant for Learning and Change from Pfizer, Inc in partnership with the California Academy of Family Physicians and California Association of Physician Groups. The funding organization was not involved in the study design, data analysis, or development of the manuscript.

Supplemental Material

Supplementary material for this article is available online.

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