

BRIEF REPORT

Improving First-Year Family Medicine Residents' Confidence in Safe Opioid Prescribing Through a Multiactivity Educational Program

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ABSTRACT

Background and Objective: It is documented that some of the opioids prescribed to manage chronic pain are diverted and used for nonmedical purposes. We investigated whether a skill-based, chronic pain management (CPM) educational program could improve first-year family medicine residents' comfort, knowledge, and concerns in assessing and managing patients who use opioids for chronic noncancer pain.

Methods: A total of 72 first-year residents (four cohorts of 18) participated in a 3-month CPM training intervention that consisted of didactic lectures, objective structured clinical examination (OSCE) activities, and post-OSCE debriefing with faculty, one being a behavioral health specialist, between 2017 and 2020. We used a single-sample, pre/post design. At three points in time (baseline, 3-months, and 6-months postintervention), participants completed a set of measures assessing comfort, knowledge, and concern. We used repeated measures analyses to assess changes in outcome measures.

Results: Participants reported improvements compared with baseline at both follow-up time points. At 6 months postintervention, the participants had significantly better scores on measures of comfort ($F[1, 71]=65.22; P<.001$), knowledge ($F[1, 71]=22.38, P<.001$), and concern ($F[1, 71]=37.89, P<.001$) in prescribing opioids for chronic noncancer pain.

Conclusion: A multiactivity CPM educational program for first-year residents was associated with improvement in perceived sense of comfort, knowledge, and concerns in assessing and managing patients who use opioids for chronic noncancer pain. CPM training interventions may be an effective tool to educate first-year residents to implement best practices for pain management with the goal of reducing the chances of inappropriately prescribing controlled substances or denying analgesia.

INTRODUCTION

Chronic pain affects between 18% and 34.5% of the US population and has been a common complaint of many patients who seek primary care.¹⁻⁴ An estimated 20.5% (50.2 million) US adults reported suffering from chronic noncancer pain (CNP),^{4,5} many of whom were prescribed opioid analgesics.^{6,7} A reported 254 million opioid prescriptions were dispensed in the United States in 2014.⁶ Though the number has fallen to 142 million in 2020, the dispensing rate is high in some parts of the country.⁸ Opioid analgesics are the most commonly prescribed therapeutic class of medication in the United States to relieve acute pain and improve function,⁹ but they have been associated with diversion, nonmedical use, and increasing overdose deaths.^{7,10-12} Roughly 29% of patients who are prescribed

opioids to manage chronic pain use them for nonmedical purposes.^{13,14} To assist clinicians to deal with opioid misuse, the US Department of Health and Human Services (HHS) and the US Centers for Disease Control and Prevention (CDC) created guidelines and best practices for safe and effective opioid prescribing,^{15,16} but utilization of these guidelines remains low among clinicians.¹⁷⁻¹⁹

Lack of confidence in prescribing opioids safely, difficulty in detecting nonmedical use or an emerging use disorder, lack of knowledge in negotiating a controlled substance agreement with patients, and inadequate training in the proper use of opioids for chronic pain are some of the physician concerns in managing patients seeking controlled substances for CNP.^{20,21} Resident physicians have acknowledged in prior studies that

they are not comfortable assessing and managing ambulatory patients requesting controlled substances for chronic pain as the issue can be complex.^{20,22}

We adapted the educational approach by Alford and colleagues (2016)²⁰ to create a skill-based intervention to train the residents to safely prescribe opioids for chronic pain management (CPM). The purpose of the current study was to provide and evaluate whether the skill-based, CPM educational program improved first-year family medicine residents' perceived comfort, knowledge, and concerns in assessing and managing patients who used opioids for CNP.

METHODS

The University of Kansas School of Medicine-Wichita (KUSM-W) Institutional Review Board approved the study, which utilized a single-sample, experimental design comparing pre-, post-, and 6-months postintervention (9-months after baseline) scores on outcome measures. We used a convenience sample of 72 family medicine first-year residents (four cohorts of 18) to assess the effectiveness of a multiactivity CPM training program developed by faculty of the KUSM-W Family Medicine Residency (FMR) at Ascension Via Christi (AVC) Hospitals, between 2017 and 2020. The FMR program is an urban, academic, clinic- and hospital-based program that operates two outpatient sites which serve as the continuity clinics for culturally diverse low-income patients.

The release of the CDC guideline for prescribing opioids in chronic pain¹⁶ was a major impetus in developing the multiactivity CPM training program. A group of faculty members, including a clinical pharmacist and physicians conversant with chronic pain and opioid prescribing, collaborated to develop the program with the purpose of both educating residents on the clinic protocol and on the CDC guidelines. The 3-month intervention consisted of several activities including reading assignments on pain management, prework activities that involved information on the CDC's guidelines for prescribing opioids for chronic pain¹⁶ and information regarding risks and benefits of opioid therapy,²³ two lectures, two objective structured clinical examination (OSCE) sessions, and debriefing with faculty members. OSCEs have been shown to be an effective approach in teaching and evaluating medical trainees' safe opioid prescribing skills as well as pain and addiction management practices.^{20,24,25}

Participants completed three assessment surveys during the study: at baseline (during orientation), immediately after the CPM OSCE session at 3 months (survey 2), and at 9 months (survey 3). Each assessment measured perceived comfort,^{20,22,23} knowledge,²⁴ and concern.²³

Comfort

We measured the residents' perceived level of comfort in assessing and managing patients with CNP. A 7-item measure was developed based on the goals of the study, review of literature,^{20,22,23} and inputs from physicians conversant with chronic pain and opioid prescribing. The residents recorded how each question applied to them on a 5-point Likert-like

scale (1=very uncomfortable, 5=very comfortable). We summed scores of the 7-item questions with a possible score ranging from 7 to 35. This measure has adequate internal consistency (Cronbach α , range 0.76–0.80; see Appendix Table 1) and test-retest reliability (0.89) is a validated measure of perceived comfort.^{22,25}

Knowledge

A set of questions assessed the residents' perceived knowledge on the current best practices for CPM and the residency program's CPM protocols as well as their knowledge regarding controlled substance prescription guidelines. We developed an 8-item measure based on the goals of the study, review of literature,²⁴ and inputs from physicians knowledgeable about chronic pain and opioid prescribing. The residents recorded how often they followed current CPM protocol when prescribing controlled substances for CNP on a 6-point Likert-like scale (0=never, 5=always). The scores of the 8-item questions were summed with a possible score ranging from 0 to 40. This measure has adequate internal consistency (Cronbach α , range from 0.88–0.94; see Appendix Table 1) and test-retest reliability (0.91) and is a valid measure of perceived knowledge.²⁵

Concerns

We measured residents' perceived concerns regarding prescribing controlled substances for CNP using statements by Broth and colleagues that we modified slightly.²³ We measured the 11-item statements on a 5-point Likert-like scale (0=none, 4=great deal). We summed the scores of the 11-item statements with a possible score ranging from 0 to 44.

We used standard descriptive statistics, one-way analyses of variance (ANOVA)/Kruskal-Wallis tests, and repeated-measures ANOVA to estimate the effect of the CPM OSCE program on the outcome variables. All analyses were two-sided with an α of 0.05.

RESULTS

Comfort

As Table 1 shows, the residents' perceived level of comfort assessing and managing patients on opioids for CNP was moderately high at baseline. The comfort scores of each scale item on the 3-month and 9-month surveys significantly increased from baseline. Specifically, the residents' ability to comfortably negotiate controlled substances agreement with a patient as well as deny analgesia to those who do not need controlled substances statistically improved at the end of the study. In addition, the residents reported significant improvement in perceived comfort in assessing and managing patients using controlled substances for CNP ($F[1, 71]=65.22$; $P<.001$; $\eta^2_p=0.48$; Table 1).

Knowledge

Appendix Table 1 summarizes findings of the residents' knowledge about best practices and guidelines for safe opioid prescribing at baseline and specific times postintervention. From

TABLE 1. Outcomes Scores at Each Survey With Comparison to Baseline (N=72)

Scale (Possible Range)	Time Point ^a			Change, ^b Mean Difference (95% CI)	F	η^2_p
	Baseline	3 Months	9 Months			
Comfort ^c (8–40)	19.4 (18.4–20.5) -	24.3 (23.4–25.2) [<.001]	24.5 (23.5–25.5) [<.001]	5.10 (3.42 to 6.77) [<.001]	65.22	.48
Knowledge ^d (0–40)	28.9 (26.9–30.9) -	30.9 (29.2–32.5) [.134]	33.8 (26.9–30.9) [<.001]	4.90 (2.09 to 7.71) [<.001]	22.38	.24
Concern ^e (0–44)	29.7 (27.9–31.5) -	30.9 (29.1–32.8) [.340]	24.4 (23.4–25.5) [<.001]	-5.28 (-7.90 to -2.64) [<.001]	37.89	.35

^aValues shown are mean score (95% CI) [P value]. P values were calculated with the repeated measures ANOVA and denote the significance of F value

^bChange from baseline to 9 months (95% CI) [P value].

^cHigher scores indicate greater comfortability of assessing and managing patients suffering from noncancer pain.

^dHigher scores indicate greater knowledge on policies and procedures in assessing and managing patients suffering from noncancer pain.

^eHigher scores indicate greater concerns/feelings about assessing and managing patients suffering from noncancer pain.

baseline to the end of the study, there was an improvement in residents' knowledge on ensuring that noncontrolled regimens are given before prescribing controlled substances for pain management and ensuring that the relative risks/benefits associated with a given controlled substance are communicated to a patient. As Table 1 shows, the residents reported significant improvement in perceived knowledge about regulations that govern opioid use for CNP ($F[1, 71]=22.38, P<.001, \eta^2_p=0.24$).

Concern

There was a statistical improvement in the residents' skills in handling angry and demanding patients at the end of the study (Appendix Table 1). Overall, the residents expressed moderately high concerns assessing and managing patients using controlled substances for CNP at baseline ($M=29.7; 95\% \text{ CI}, 27.9-31.5$; Table 1). These concerns significantly decreased at the end of the study ($F[1, 71]=37.89, P<.001, \eta^2_p=0.35$).

DISCUSSION

The use of a multiactivity CPM educational program for multiple cohorts of first-year residents demonstrated an improvement in residents' perceived comfort, knowledge, and concerns regarding the assessment and management of patients using controlled substances for CNP. Our study's activities expanded upon the findings from Alford and colleagues.²⁰ For example, the post-OSCE debriefs allowed for resident reflection and discussion on the complexities and challenges of CPM. This was especially important since the OSCE case was designed to create a situation in which opioid prescribing was inappropriate and the resident was supposed to deny the patient's request for an opioid prescription.

The overall scores of perceived comfort, knowledge, and concern all significantly improved by the end of the study, however there were differences in the rate of change. Perceived comfort was the first aspect to significantly improve at the 3-month survey with little additional improvement at the 9-month follow-up survey. The specific skill of refusing a prescription to a patient who does not need a controlled substance showed the most additional benefit at the 9-month period compared to the 3-month point, indicating that the

CPM OSCE improved comfort in this skill but additional real-world experience after the education program was needed for further improvement. The OSCE case in a standardized patient setting offered a safe space to practice these conversations. Perceived knowledge also improved with additional time and experience,¹⁹ however scores at the 3-month survey only trended toward improvement and did not significantly improve until the 9-month survey.

Interestingly, the degree of concern was highest at the 3-month survey, which was given immediately following the CPM OSCE, then lowered to a significant level at the 9-month survey. At the CPM OSCE, residents likely realized the complexity of chronic pain but had not yet learned to develop a rapport with patients to alleviate concerns. An additional 6 months of experience allowed residents to observe and learn from outcomes of real-world patient interactions and clinical decisions that ultimately decreased their concerns. Results of the study may indicate that of the three outcomes, concern is the hardest measure to improve. Future areas of research include assessing longitudinal confidence in providing safe and effective patient care for chronic pain postintern year and even into licensed practice.

Our study has limitations. First, the design did not include a control group, reducing the ability to infer causation. Second, our results may not be generalized to other medical centers that differ in size, mission, or location. Third, recall bias may have occurred within the retrospective nature of the surveys. Fourth, we did not assess the cost of implementation nor the total resident/faculty/administration hours required to implement this curriculum. Finally, we did not measure variability in residents' real-world experience with managing patients' chronic pain.

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