Abstract

Objective. To describe characteristics of older adults who received opioids for chronic non-cancer pain (CP), ascertain types of opioid treatments received, and examine associations between patient characteristics and treatment outcomes.

Design. Retrospective cohort study.

Setting. Primary care practice in New York City.

Patients. Eligible patients were ≥65 and newly started on an opioid for CP.

Outcome Measures. Patient characteristics and provider treatments, as well as duration of opioid therapy, proportion discontinuing therapy, and evidence of pain reduction and continued use of opioid for more than 1 year. Other outcomes included the presence and type(s) of side effects, abuse/misuse behaviors, and adverse events.

Results. Participants (N = 133) had a mean age of 82 (range = 65–105), were mostly female (84%), and white (74%). Common indications for opioid treatment included back pain (37%) and osteoarthritis (35%). Mean duration of opioid use was 388 days (range = 0–1,880). Short-acting analgesics were most commonly prescribed. Physicians recorded side effects in 40% of cases. Opioids were discontinued in 48% of cases, mostly due to side effects/lack of efficacy. Pain reduction was documented in 66% of patient records, while 32% reported less pain and continued treatment for ≥1 year. Three percent displayed abuse/misuse behaviors, and 5% were hospitalized due to opioid-related adverse events.

Conclusions. Over 50% of older patients with CP tolerated treatment. Treatment was discontinued in 48% of cases, mostly due to side effects and lack of analgesic efficacy. Efforts are needed to establish the long-term safety and efficacy of opioid treatment for CP in diverse older patient populations.

Key Words. Opioid Analgesics; Chronic Non-Cancer Pain; Elderly; Safety; Efficacy; Abuse/Misuse

Introduction

Recent research has demonstrated that use of opioid medications for the treatment of chronic non-cancer pain (CP) is increasing [1–5]. One study found that 18% of adults ages 65 years or older enrolled in an Ontario drug benefit program received one or more prescriptions for an opioid in 2005 [1]. Investigations conducted in the United States also reveal a high prevalence of opioid use among...
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older persons with CP [2–5]. In one community-based study [2] of older adults with chronic pain and a mean age of 82 years, one in four participants reported using an opioid medication for pain.

Little information is currently available regarding the types of older adults who receive opioid treatment for CP, clinicians’ prescribing patterns, and treatment-related outcomes. In prior studies [6–9] that included participants of all ages, back pain and osteoarthritis were the two most common disorders prompting initiation of opioid treatment. The vast majority of participants was prescribed short-acting, low-to-medium potency opioids. Data on prescribing patterns (e.g., scheduled vs as-needed dosing) were provided in only one investigation. In this study [6], 90% of participants received daily doses, and the remaining 10% received as-needed doses of an opioid. None of the studies reported on efficacy or safety outcomes.

In a review of published literature, only two articles were identified that focused on opioid prescribing practices in older populations. One study [10] analyzed Medicare beneficiary data on individuals with either rheumatoid arthritis, osteoarthritis, chronic low back pain, or ischemic heart disease who were enrolled in a state-run drug benefit program. Short-acting, low-to-medium potency opioids were the most commonly prescribed type of opioid for each of the above disorders. Information on prescribing patterns was not provided. Another study [11] examined clinicians’ prescribing patterns for persistent pain in nursing home residents. Clinicians prescribed mostly short-acting, low-to-medium potency opioids on an as-needed basis, while no treatment outcome data were provided [11].

Prior systematic reviews of short-term clinical trials [12–15] that did not focus on older populations or report age-stratified results reported that opioids reduce pain scores among patients with osteoarthritis [12–14] and neuropathic pain [12,16], but not chronic back pain [15]. One systematic review [17] analyzed long-term outcomes of oral opioid treatment from uncontrolled observational studies (N = 7) with follow-up times that ranged from 6 months to 18 months and included participants of all ages. A significant minority (33%) of participants discontinued therapy due to side effects, and 12% stopped treatment because it was ineffective. Significant reductions in pain scores were found in the subgroup of patients who tolerated opioid therapy. Finally, a recent meta-analysis examined outcomes of opioid treatment among older persons with CP [18]. Opioid use was associated with significant reductions in pain intensity and improved physical functioning, but decreased mental health functioning. Of note, the vast majority of studies were clinical trials that followed patients for short periods of time (8 weeks or less), excluded prospective participants with comorbidity, and examined treatment outcomes associated with fixed doses of long-acting opioids, limiting generalizability of the data.

Given the limitations of the current evidence base, studies focusing on the epidemiology of and outcomes associated with opioid use in older populations are particularly needed. This retrospective cohort study sought to describe the characteristics of older adults who received opioids for chronic non-CP, to ascertain the types of opioid treatments received, as well as to assess for potential associations between patient characteristics and treatment outcomes.

Methods

Study Setting

Study participants included individuals receiving longitudinal care at a geriatric care practice located in New York City. The practice serves as a medical training site for medical students, residents, and fellows, and provides primary care to over 3,000 older adults. The practice’s electronic medical record provided information on participants’ demographic and clinical characteristics, pharmacy data, and study outcomes, which were abstracted from clinicians’ computerized notes of each patient encounter. The Weill Cornell Medical College Institutional Review Board approved the study.

Study data were collected over a 6-year period (July 1, 2001–June 30, 2007). This interval was selected to ensure identification of an adequate number of eligible patients (as described below) who were newly started on an opioid for CP. Prescribers consisted of attending physicians (boarded in geriatric medicine) and four fellows in geriatric medicine (two per year in a 2-year training program), as well as two nurse practitioners (NPs). NPs renewed prescriptions during the study period for physicians who were not present in the outpatient practice on any given day. However, NPs did not initiate opioid treatment for any study patient because they do not provide longitudinal patient care in the practice. In 2001 (the first year of the study), six geriatric medicine attendings provided 1.9 full-time equivalents (FTE) in the practice. In 2007, the last year of the study, 12 attendings provided 2.7 FTE.

Study Patients

Eligible subjects included practice patients who were ages 65 years and over, and newly started on opioid treatment for CP. We excluded patients already taking an opioid for CP to examine treatment outcomes in an opioid-naïve patient population and those newly started on tramadol because while some studies classify the medication as an opioid, most do not.

To identify eligible participants, the practice’s computerized pharmacy records were searched to identify all patients who received at least one opioid prescription during the study period. The computerized medical records of patients identified in this search were subsequently reviewed to determine if the patient was age eligible, newly started on the medication, and if the
medication was prescribed for treatment of a CP disorder. Of 4,325 unique patients seen during the study period, 727 received at least one opioid, and 594 were excluded for the following reasons: 1) patient was less than 65 years of age (N = 90); 2) opioid was prescribed for a condition other than CP, such as acute or cancer-related pain (N = 305); 3) evidence of ongoing opioid use before the study’s start date or patient enrolled in the practice after the start date already on an opioid (N = 166); 4) no follow-up observations, e.g., patient received an opioid prescription but was admitted to a long-term care facility and no longer required outpatient care (N = 32); and 5) enrolled in a methadone program (N = 1). A total of 133 patients met the eligibility criteria and formed the cohort. Patients were followed from the start of opioid initiation to either the end of the study period, death, or disenrollment from the practice.

Data Abstraction

Three investigators (MP, YO, MCR) abstracted data from patients’ electronic medical records. Although standardized templates were available for recording patient encounters, over 95% of the records were non-template in nature and typed into the computerized record by physicians themselves. One of the three chart abstractors (MCR) was also a prescriber during part of the study (2003–2007).

Patient-Level Data

Demographic data included participant age, gender, race/ethnicity, and marital status. Participants’ records prior to the start of opioid therapy were reviewed to ascertain their clinical, psychiatric, cognitive, and functional status at time 0 (i.e., date of opioid initiation). We abstracted the number and type of patients’ chronic medical conditions and calculated a comorbidity score for each patient using the Charlson comorbidity index [19]. The total number of prescription medications at the time of opioid initiation was recorded.

Psychiatric diagnoses recorded in patient’s problem list and/or medical history were also abstracted. Given the retrospective nature of the investigation, no attempt was made to determine whether the recorded disorder was active or in remission. Participants were considered to be cognitively impaired if any of the following disorders/descriptors—“dementia,” “memory loss,” “cognitive impairment,” or “cognitive deficit”—appeared in the patient’s medical history and/or problem list. Information regarding participants’ functional status was abstracted to include clinician-recorded deficits in any of seven basic (e.g., eating, dressing, grooming) activities of daily living (BADLS) or seven instrumental (e.g., using the telephone, handling finances, managing medications) activities of daily living (IADLS). When no cognitive or functional deficits were recorded, the participant was assumed to be cognitively intact and independent in their BADL/IADLs. All practice patients undergo an initial, comprehensive geriatric assessment that includes screening for cognitive and ADL deficits. Given that the practice focuses on delivering comprehensive geriatric care, practice physicians update this information routinely (e.g., annual exams) and when the clinical history warrants reassessment of cognitive and ADL function. While it is possible that some study patients had unrecognized cognitive or ADL disabilities, it is not likely that persons with recorded deficits were either cognitively or functionally intact.

Study Outcomes

We recorded the types of CP present for each patient and indication for initiation of opioid therapy (e.g., osteoarthritis of hip, low back pain, diabetic neuropathy). In cases where more than one CP condition was present, the most frequently recorded condition was selected as the “principal” CP disorder and deemed to be the likely indication for initiating opioid therapy.

Data regarding clinicians’ prescribing patterns were abstracted to include opioid medication type/frequency of use; dosing pattern (e.g., scheduled vs as-needed use); whether dose escalation occurred over time; whether the medication was started by a practice physician or another physician (e.g., rheumatologist), or during a recent hospitalization; and any evidence that the patient had taken opioids for CP in the past. For participants whose opioid was discontinued, the reason for discontinuation was recorded.

Four treatment-related outcomes were specified a priori and included total days of opioid use. This outcome was calculated as the difference between time 0 and either the date the medication was stopped, the patient was lost to follow-up, or the end of the study period. For patients who discontinued the medication (e.g., because of lack of efficacy), we operationalized a stop date as the date midway between the last office visit the patient was noted to be taking the opioid and the visit where the patient was no longer taking the analgesic. For schedule II controlled substances (fentanyl, morphine, hydromorphone, and oxycodone with acetaminophen), monthly dispensing data were reviewed to determine if a patient was continuing to receive an opioid prescription. We also reviewed physicians’ medication lists, which physicians updated at each visit to determine whether patients were still reporting use of the medication. The remaining opioids prescribed to patients during the study included both schedule III (hydrocodone with acetaminophen and codeine with acetaminophen) and schedule IV (propoxyphene with acetaminophen) controlled substances, which could be dispensed with multiple refills. We reviewed physicians’ medication lists to determine whether patients were taking these medications at each patient encounter. Because patients used multiple external pharmacies, there was no feasible way to determine whether prescriptions were actually filled.

The remaining three treatment outcomes included short-term use (defined as discontinuation of opioid treatment before 90 days) and discontinued use (defined as discon-
Reliability Appraisals

Two raters (MCR and MP) independently reviewed 40 randomly selected records to determine inter-rater reliability. For patient-level outcomes, kappa coefficients ranged from a low of 0.72 for a depression diagnosis to 0.94 for marital status, while the intra-class correlation coefficient for participant age was 1.0. For physician prescribing-level outcomes, corresponding kappa coefficients were 1.0 for type of opioid prescribed and 0.92 for physician initiating treatment. For treatment-related outcomes, kappa coefficients ranged from 0.77 for evidence of treatment benefit to 0.94 for opioid discontinuation to 1.0 for presence of side effects and opioid abuse/misuse, respectively. The intra-class correlation coefficient for duration of opioid therapy was 0.91, indicating substantial concordance between the two raters.

Analyses

Descriptive statistics were computed for all variables. Bivariate associations between patient-level factors and the four dependent variables were examined in linear models including only single independent variables. Because around-the-clock medication dosing is recommended in those unable to report/request pain medication (e.g., those with cognitive impairment), we assessed for a potential association between cognitive status (impaired vs intact) and dosing pattern.

Potential associations between the patient-level variables and the four treatment outcomes were examined in models that included eight independent variables specified a priori: Age (in years), sex of patient, primary pain condition (back pain vs osteoarthritis/other types of CP), cognitive impairment (yes vs no), depression diagnosis (yes vs no), BADL deficits (one or more deficits vs none), IADL deficits (three or more deficits vs less than three), and comorbidity score (0–8 scale) were included in all models. The number of days a patient was observed was included as a covariate to control for differences in opportunity to observe effects of and responses to the medication. A general linear model was specified for the duration of opioid use outcome. Short-term use, discontinued use, and the efficacy outcome were analyzed in a logistic linear model with binomial error. An examination of interactions among classification factors, and between classification factors and covariates (homogeneity of regressions) was carried out in all models. The final models presented are the a priori main effects models; no interactions were significant at the 0.05 level.

Results

Table 1 shows that participants had a mean age of 82 (range = 65–105), were mostly female (84%), and white (74%). Almost half of all patients (48%) had a recorded diagnosis of depression, whereas smaller but
Table 2  Indication for opioid use, type prescribed, and dosing pattern employed

<table>
<thead>
<tr>
<th>Indication</th>
<th>Type of opioid†</th>
<th>Dosing pattern</th>
<th>Escalated dose during treatment period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back pain</td>
<td>Oxycodone</td>
<td>PRN use only</td>
<td>59%</td>
</tr>
<tr>
<td>Osteoarthritis</td>
<td>Codeine</td>
<td>Scheduled use only</td>
<td>19%</td>
</tr>
<tr>
<td>Other*</td>
<td>Hydrocodone</td>
<td>PRN use with transition to scheduled use</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td>Fentanyl</td>
<td>Both PRN and scheduled use</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Propoxyphene</td>
<td>Escalated dose</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>with acetaminop</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>en</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Morphine sulfate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metyrapone</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydromorphone</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† Some patients were prescribed more than one opioid medication.

PRN = as needed.

Dosing pattern

PRN use only 59
Scheduled use only 19
PRN use with transition to scheduled use 13
Both PRN and scheduled use 8
Escalated dose during treatment period 25

* Category includes patients with postherpetic neuralgia, diabetic neuropathy, chronic abdominal pain, chronic headache, fibromyalgia, and rheumatoid arthritis.

Still substantial numbers of participants had documented impairment in IADLs (33%) or carried a diagnosis of cognitive impairment/dementia (19%).

In 71% of the sample, the opioid medication was initiated by a practice physician, in 21% by a non-practice physician (e.g., rheumatologist), and in the remaining 8%, the medication was initiated during a recent hospitalization (Table 2). With few exceptions, patients were prescribed short-acting, low-to-medium potency opioids. High-potency opioids were administered to 15% of study patients. The most common prescribing pattern was as-needed use. Clinicians prescribed both scheduled and as-needed doses of an opioid to 8% of the sample. Dose escalation occurred in only 25% of cases. Dosing pattern (i.e., around-the-clock vs as-needed dosing) was not associated with cognitive status (P = 0.92).

Patients were reassessed, on average, 7 days (range = 1–42 days) after initiating opioid therapy. The mean duration of opioid use was 388 days (range = 0–1,889). Two patients received opioid prescriptions for a CP condition but reported that they did not fill them. In 24% of cases, the medication was discontinued before 90 days. The medication was stopped in an additional 24% of cases after 90 days. Reasons for discontinuing treatment at any point during the study included side effects (in 25% of cases), lack of efficacy (24%), improvement of pain over time (20%), patient non-adherence (11%), patient concerns about long-term use (3%), physician concern about causing harm (3%), physician uncertainty about whether medication was providing benefit (3%), abuse/misuse behaviors (3%), and no stated reason in the chart (8%). For the 13 patients who discontinued opioid therapy on account of pain improvement, there was no evidence that opioids were stopped as a result of initiating non-opioid therapies.

In 66% of cases, clinicians documented evidence of decreased pain after initiating treatment. In 32% of cases, improvement in pain was noted, and the patient was maintained on the medication for more than a year. Finally, in 33% of cases, physicians recorded statements such as “patient taking less than prescribed amount of medication” or “patient not using the medication everyday as prescribed but only when pain is severe.”

Side effects were recorded in 40% of cases. The most commonly recorded side effects were constipation (for 22% of the sample), mental status changes (16%), nausea (10%), lethargy (9%), and urinary retention (2%). The specific types and prevalences of possible opioid-related adverse events included hospitalization (5%) and falls (3%). Of the seven persons who were hospitalized, five were admitted with altered mental status, one with obstipation, and one with an unintentional overdose. Four participants (3%) met criteria for abuse/misuse behaviors. No physician employed a formal screening tool to assess for possible opioid abuse/misuse during the study period.

We conducted bivariate analyses assessing for associations between the independent variables listed in Table 3 and the four dependent variables. The bivariate results were not substantively different from the multivariate results, and for ease of presentation, only the multivariate results are shown (Table 3). No significant associations were found between the patient characteristics and the four treatment outcomes.

Discussion

This study expands our understanding of opioid treatment practices and associated outcomes among older primary care patients with CP in the following specific ways. First, our study indicates that some geriatricians prescribe opioid medications to patients with advanced age (20% of the sample was 90 years of age or older), with substantial psychosocial comorbidity, and with cognitive and ADL impairments. Although a recent meta-analysis [18] established that short-term opioid therapy is independently associated with reduced pain scores among older adults with arthritis-related and neuropathic pain, the results pertain to the young-old with no comorbidity. Our results provide strong support for future studies that seek to establish the efficacy and safety of opioid therapy in important subgroups of older adults, including those with multiple comorbidities, functional
Table 3  Associations of patient variables with primary outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Days of Opioid Use*</th>
<th>% Discontinuing Treatment Before 90 Days*</th>
<th>% Discontinuing Treatment at Any Time During Study Period*</th>
<th>% With Documented Efficacy and Used Med for ≥1 Year*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td>Prob</td>
<td>Prob</td>
<td>Prob</td>
</tr>
<tr>
<td>Men</td>
<td>427</td>
<td>0.604</td>
<td>0.328</td>
<td>0.449</td>
</tr>
<tr>
<td>Women</td>
<td>378</td>
<td>19%</td>
<td>40%</td>
<td>49%</td>
</tr>
<tr>
<td>Pain type</td>
<td></td>
<td>Prob</td>
<td>Prob</td>
<td>Prob</td>
</tr>
<tr>
<td>Back</td>
<td>419</td>
<td>0.635</td>
<td>0.677</td>
<td>0.681</td>
</tr>
<tr>
<td>OA/other</td>
<td>385</td>
<td>27%</td>
<td>43%</td>
<td>26%</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td></td>
<td>Prob</td>
<td>Prob</td>
<td>Prob</td>
</tr>
<tr>
<td>Yes</td>
<td>400</td>
<td>0.959</td>
<td>0.166</td>
<td>0.790</td>
</tr>
<tr>
<td>No</td>
<td>404</td>
<td>33%</td>
<td>46%</td>
<td>31%</td>
</tr>
<tr>
<td>Depression diagnosis</td>
<td></td>
<td>Prob</td>
<td>Prob</td>
<td>Prob</td>
</tr>
<tr>
<td>Yes</td>
<td>443</td>
<td>0.248</td>
<td>0.977</td>
<td>0.137</td>
</tr>
<tr>
<td>No</td>
<td>361</td>
<td>25%</td>
<td>38%</td>
<td>32%</td>
</tr>
<tr>
<td>One or more BADL deficits</td>
<td></td>
<td>Prob</td>
<td>Prob</td>
<td>Prob</td>
</tr>
<tr>
<td>Yes</td>
<td>441</td>
<td>0.454</td>
<td>0.888</td>
<td>0.886</td>
</tr>
<tr>
<td>No</td>
<td>363</td>
<td>26%</td>
<td>44%</td>
<td>31%</td>
</tr>
<tr>
<td>Three or more IADL deficits</td>
<td></td>
<td>Prob</td>
<td>Prob</td>
<td>Prob</td>
</tr>
<tr>
<td>Yes</td>
<td>324</td>
<td>0.099</td>
<td>0.051</td>
<td>0.552</td>
</tr>
<tr>
<td>No</td>
<td>481</td>
<td>37%</td>
<td>49%</td>
<td>23%</td>
</tr>
<tr>
<td>Age in years</td>
<td></td>
<td>Prob</td>
<td>Prob</td>
<td>Prob</td>
</tr>
<tr>
<td>Yes</td>
<td>0.31</td>
<td>0.948</td>
<td>0.609</td>
<td>0.511</td>
</tr>
<tr>
<td>No</td>
<td>−0.16</td>
<td>0.670</td>
<td>0.10</td>
<td>0.17</td>
</tr>
</tbody>
</table>

* The mean (standard deviation) number of days of opioid use for the entire sample was 384 (428); prevalence rates for the remaining three outcomes are % discontinuing treatment before 90 days (24%); % discontinuing treatment at any time during the study period (48%); and % with documented efficacy and used medication for at least 1 year (32%).

The four outcomes were analyzed in separate models. Total days of opioid use was analyzed in a general linear model that included sex, pain type, cognitive impairment, depression, BADL deficits, and IADL deficits as classification factors and age, comorbidity, and number of days observed as covariates. The models for short-term use, discontinued use, and efficacy were analyzed using logistic linear models with binomial error that included the same classification factors and covariates.

Adjusted means are reported in column 1 (total days of opioid use); for the remaining columns (short-term use, discontinued use, and efficacy), adjusted percentages are reported. The last two rows of the table show the regression coefficients for the age and comorbidity covariates.

OA = osteoarthritis; BADL = basic activity of daily living; IADL = instrumental activity of daily living.
impairment, cognitive deficits, as well as those taking multiple medications.

Second, our findings shed light on physicians’ opioid prescribing patterns with respect to older patients with CP. With few exceptions, patients were prescribed short-acting, low-to-medium potency opioids on an as-needed basis. This finding is consistent with the one prior study that reported on opioid prescribing patterns among older nursing home residents [11]. Our study further documents that only one in four patients had their dose of opioid escalated during the observation period. Study patients were administered an around-the-clock opioid with an as-needed opioid medication for breakthrough pain in fewer than 10% of cases. The reasons for the prescribing patterns observed in the current study are unclear but may reflect clinicians’ unease prescribing high-potency, long-acting opioids among older patients with substantial functional and psychiatric comorbidity. This “unease” may also explain the low rate of dose escalation observed in this study. These observations may also be explained by lack of pain management education on the clinician’s part. Alternatively, this result may reflect appropriate caution given the limited evidence base regarding the use of opioid medication as a treatment for CP in older adults. Finally, we were unable to discern whether (and to what extent) study patients had constant or intermittent pain. Long-acting opioid medications would not be appropriate for older patients whose pain was not constant in nature.

Opioid therapy was discontinued in almost half (48%) of all cases. The most common reasons for discontinuation included side effects and/or lack of efficacy. Clinicians should anticipate side effects and remain vigilant about assessing for and treating them. Possible reasons for lack of efficacy are numerous and include genetic polymorphisms [22], underdosing on the part of clinicians, as well as patients taking smaller amounts of medication than prescribed by their clinician. It is interesting to note that a significant minority of patients (33%) took less than the prescribed amount of opioid medication, with clinicians noting that patients used the medication only when pain was severe. Factors responsible for this pattern of use are likely complex and include patient concerns about medication side effects, cost, fear of addiction, and fear of making other chronic conditions worse, such as constipation or gait/balance problems.

Our results also provide evidence that a substantial proportion of older patients with CP tolerate opioid therapy. In 66% of cases, physicians documented evidence of decreased pain following treatment, and approximately one in three had documented reductions in pain and continued to use the medication for more than 1 year, suggesting that opioid therapy may provide benefit to some groups of older patients with CP. The absolute amount of pain reduction experienced by patients could not be quantified because this outcome was recorded in almost all cases by clinicians in a dichotomous manner, i.e., documenting treatment efficacy with statements such as “patient reports less pain on hydrocodone.” Furthermore, because clinicians did not document a pain assessment in every note, we cannot be certain that long-term benefit occurred even though the medication was continued. Most appraisals regarding treatment efficacy occurred shortly after initiation of treatment and decreased over time, as often occurs after the start of any new therapy. In the absence of a control group, this study cannot shed light on whether opioid use confers benefit to older adults with CP. However, the finding that certain older patients tolerate opioid medication and may experience decreased pain with opioid treatment supports future efforts to rigorously establish treatment efficacy.

An important question in many clinicians’ minds when weighing the risks and benefits of initiating opioid therapy is the possibility of abuse/misuse [23–25]. Clinicians recorded abuse/misuse behaviors in 3% of the sample. This rate likely underestimates the true occurrence of abuse/misuse given that prescribing physicians did not systematically screen for abuse/misuse among study patients and given the restricted number of abuse/misuse behaviors that were assessed as part of the study. Other types of behaviors that have been incorporated into formal screening instruments [20,21] include taking medication for reasons other than pain, borrowing opioid medications from family or friends, and time spent thinking about pain medications. Documentation of opioid-related adverse events was found in 11 (8%) patient records, including hospitalization for seven patients and falls in another four. Given the potential for significant morbidity and mortality associated with opioid-related adverse events in this age group, prospective studies with vigorous surveillance methods are needed to establish the extent and types of adverse events that occur as a consequence of opioid therapy.

In this study, patient factors including age, gender, type of CP, comorbidity score, and presence of a depression diagnosis were not associated with any treatment outcome. Given the retrospective nature of our study, we were unable to discern whether study patients had active depression at the time they received opioid treatment. Thus, we cannot exclude the possibility that an active depressive disorder moderates treatment-related outcomes in this patient population. Other variables including medication-level (e.g., type, dose, and method of titrating opioid) and provider-level (e.g., comfort level prescribing opioids for CP) factors may be associated with treatment outcomes but were not examined.

Our study has several limitations. We studied a largely non-Hispanic white population of older females who receive care in one primary care practice. Our results may therefore not be reflective of other primary care practices. We were unable to ascertain participants’ socioeconomic status, which likely affected patients’ access and ability to pay for opioid medications. One of the study outcomes (treatment discontinuation) included individuals with diverse reasons for stopping therapy (i.e., side effects vs lack of efficacy vs pain improvement). Predictors of opioid discontinuation may well vary as a function of reason for
stopping treatment. However, the relatively modest sample size of the current study precluded our ability to address this question. Because patients used multiple external pharmacies, there was no feasible way to determine whether prescriptions were actually filled. The likelihood of developing outcomes depended upon the period of observation, i.e., those observed longer and with more frequent visits would have a greater chance of having outcomes detected. In an effort to control for this bias, we included the number of days a patient was observed as a covariate in the multivariate analyses. We restricted our sample to patients who were newly initiated on opioid therapy (although in 15% of cases, physicians documented prior opioid trials in these patients). Thus, our results may not generalize to older patients on chronic opioid therapy (i.e., begun in middle age and continued on into older age). Finally, clinicians did not likely record all side effects, adverse events, or cases of opioid abuse/misuse.

In conclusion, our study has shown that approximately 50% of older adults newly initiated on opioid treatment for CP discontinue therapy. Physicians documented reductions in pain for 66% of cases, suggesting that opioids may provide some benefit to older primary care patients with CP. Although infrequent, opioid-related adverse events including falls and hospitalizations were documented in 8% of cases and warrant further attention. Efforts are now needed to establish the long-term safety and efficacy of opioid treatment for CP in diverse older-patient populations.

Acknowledgments

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