Comparing Chronic Pain Treatment Seekers in Primary Care versus Tertiary Care Settings

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Background: **Patients frequently seek treatment for chronic nonmalignant pain in primary care settings. Compared with physicians who have completed extensive specialization (eg, fellowships) in pain management, primary care physicians receive much less formal training in managing chronic pain. While chronic pain represents a complicated condition in its own right, the recent increase in opioid prescriptions further muddles treatment. It is unknown whether patients with chronic pain seeking treatment in primary care differ from those seeking treatment in tertiary care settings. This study sought to determine whether patients with chronic pain in primary care reported less pain, fewer psychological variables related to pain, and lower risk of medication misuse/abuse compared with those in tertiary care.**

Methods: **Data collected from patients with chronic pain in primary care settings and tertiary care settings were analyzed for significant differences using Wilcoxon rank sum tests, Fisher exact tests, and linear regression. A host of variables among populations, including demographics, self-reported pain severity, psychological variables related to pain, and risk for opioid misuse and abuse, were compared.**

Results: **Findings suggest that primary care patients with chronic pain were similar to those in tertiary care on a host of indices and reported more severe pain. There were no significant group differences for risk of medication misuse or abuse.**

Conclusion: **It seems that primary care physicians care for a complicated group of patients with chronic pain that rivals the complexity of those seen in specialized tertiary care pain management facilities. (J Am Board Fam Med 2014;27:594–601.)**

Keywords: **Chronic Pain, Opioids, Primary Health Care**

Chronic noncancer pain is a debilitating and complicated condition that affects up to one third of adults in the United States and generally lasts for at least 6 months.[1] In many cases, a physical cause of pain cannot be accurately determined and targeted during treatment. Further, the experience of pain is subjective and varies greatly among individuals. Psychological components factor heavily into one's pain experience and can significantly affect treatment. For example, it is estimated that 30% to 60% of those with chronic pain also suffer from major depression, which can exacerbate one's experience of pain.[2] Pain catastrophizing represents another psychological component of pain and is defined as a negative affective and cognitive reaction to perceived or expected pain; it is also referred to as magnification of, or rumination about pain. Prior research supports a robust relationship between such reactions and self-reported pain severity, as well as pain-related disability and emotional distress.[3] Importantly, such magnification has been found to predict pain intensity even when accounting for a patient's physical impairment.[4] As such, chronic pain represents a physically and psychologically complicated condition that can present a challenge to even the most skilled and specialized health professionals.

In recent years, chronic pain management has been further complicated by the sharp increase in opioid prescriptions to treat pain. A recent analysis of data from the National Ambulatory Medical

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Care Survey indicates a 73% increase in opioid prescriptions for chronic pain occurring in the years 2000 to 2010. This growth seems to be specific to opioid treatment; use of nonopioid treatments for chronic pain did not increase significantly over the same time frame.[5] Several explanations abound regarding the increased use of opioids for chronic pain—none of which seem to relate to an increase in pain-related complaints, which have only grown modestly.[6] In the 1990s, restrictions regarding opioid prescribing to patients with pain were loosened, which resulted in a swift upswing of opioid prescriptions.[7] These changes were followed by a new initiative put forth by the Joint Commission on the Accreditation of Health Care Organizations in 2000, which produced more stringent standards regarding the treatment of pain.[8] Both events were compounded by increasing pressure placed on physicians to adequately assess and manage their patients' pain.[9]

While undoubtedly alleviating the suffering of many, the increased use of therapeutic opioids have had many deleterious effects as well. Namely, overdose deaths related to opioid use have increased commensurately with the rates of prescribing, and deaths from opioid overdose now surpass deaths attributable to those of some illegal drugs, including heroin and cocaine combined.[7] Such a situation poses a challenge for health care providers who are tasked with accurately and confidently identifying individuals at increased risk for opioid abuse or misuse. As such, successful treatment of chronic pain conditions includes diagnosing, if possible, the physical cause of pain, considering psychological factors that may affect the pain experience, as well as determining potential risk for abuse and misuse of opioid medications.

Physicians practicing at tertiary care facilities often have focused training in treating pain, including the completion of fellowships specializing in pain management. Further, they may have established relationships with mental health care specialists who are able to complete opioid risk evaluations and make appropriate recommendations regarding the patient's suitability for opioid treatment. In contrast to specialized providers, primary care physicians (PCPs) do not receive such focused training but still are often responsible for managing a patient's chronic pain. Despite lacking a specialized fellowship in pain, PCPs possess several advantages in the treatment of chronic pain. Compared with most pain physicians, PCPs are able to have a more continuous and in-depth relationship with their patients. More frequent appointments provide PCPs with increased opportunities to evaluate patients, including follow-up of pain symptoms and evaluation of ongoing risk and side effects that can occur with opioid use.[10]

In addition, research indicates that PCPs voice more stringent criteria for "successful" treatment outcomes after opioid therapy. For example, significantly more PCPs indicated that no improvement in a patient's pain would indicate an unsuccessful opioid treatment outcome, whereas significantly fewer pain specialists were in agreement. Similar results were obtained when asking PCPs and pain specialists whether failure to return to work indicated an unsuccessful treatment outcome; more than 90% of PCPs indicated that this was an unsuccessful outcome, whereas fewer than 80% of pain specialists voiced a similar opinion.[10] In addition, PCPs are well-versed in psychological variables related to medical conditions—such as chronic pain—and are frequently the sole treatment provider for those with psychiatric issues.[11] This strength is invaluable when treating a condition such as chronic pain, which has been found to be largely influenced by psychological factors. In fact, a large proportion of patients with chronic pain seek treatment from their PCP. While some present at tertiary care facilities, research has suggested that >50% of patients with chronic pain are managed by PCPs.[12]

Given the complicated nature of managing chronic pain in general, as well as risk for opioid abuse more specifically, health care providers may lack the confidence to accurately assess and treat chronic pain. Several studies found that PCPs voice several concerns regarding the care of patients with chronic pain.[13] Specifically, PCPs frequently endorse low scores on assessment items such as "I am confident in my ability to manage chronic pain."[14] Similarly, PCPs report feeling that their education and training programs have not adequately prepared them for treating chronic pain; less than half report satisfaction with their pain-related training.[13] Other studies, however, indicate that PCPs and pain management specialists do not report significant differences in the adequacy of their training programs in preparing them to treat chronic pain. More specifically, hesitation to prescribe opioids for chronic pain was positively correlated with

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inexperience in prescribing such medications and was not related to physician specialty.[15] However, pain management specialists reported more frequent use of opioids in their practices, a greater belief in the efficacy of opioids in treating pain, less concern about potential impediments related to prescribing (eg, concerns related to patient tolerance of medications), and less avoidance of schedule II opioids compared with PCPs.[15]

While patients may have different motivations for seeking treatment in a primary care versus tertiary care settings, it is largely unknown whether these 2 patient populations differ on important indices. To our knowledge, no prior studies have examined chronic pain patient characteristics in those seeking treatment within primary care settings as compared to tertiary care settings. For these reasons, we sought to compare these 2 groups on a host of variables, including demographics, pain severity, pain-related psychological variables, and risk for opioid misuse and abuse.

Methods

Participants

Participants were 233 individuals presenting for chronic pain risk evaluations. Of these, 114 participants were evaluated at the Clark K. Sleeth Family Medicine Center, a primary care facility that is part of the West Virginia University health care system. These 114 individuals were seeking treatment for chronic pain from their PCP and underwent a risk evaluation at the Family Medicine Center before being considered for treatment. The remaining 119 participants were evaluated at the Chestnut Ridge Center, a mental health center that is also part of the West Virginia University health care system and partners with West Virginia University's Pain Management Center (PMC). Like those at the Family Medicine Center, all patients seen at the PMC also undergo a risk evaluation, which takes place at Chestnut Ridge Center. These appointments occur after intake with a physician and before treatment decisions are made at either facility. As such, all data used in this study were collected either at the Clark K. Sleeth Family Medicine Center (primary care patients) or at the Chestnut Ridge Center (tertiary care patients) as part of a standard psychological evaluation. Both PCPs at the Family Medicine Center and pain management physicians at the PMC then use the risk evaluation to inform their treatment decisions. Patients are not rejected from either treatment facility based on the evaluation. Rather, the psychological evaluations are discussed in the context of opioid use specifically, and overall treatment goals more generally, with patients during a follow-up appointment. If a patient is not deemed appropriate for opioid medication, other treatment possibilities are considered with the patient.

Procedure

Data were collected from participants between October 2010 and September 2012. All patients presenting for a chronic pain risk evaluation at either clinic during this time frame were invited to take part in the study. Participants in this study included those regularly scheduled for chronic pain risk evaluation appointments at either the Clark K. Sleeth Family Medicine Center or the Chestnut Ridge Center. Patients presenting at these appointments had already met with a physician regarding an initial pain complaint and, as is standard procedure at both settings, were completing risk evaluations as the next step in their treatment planning. As such, subjects were not randomized to a particular site. When presenting for evaluation at either facility, participants were escorted to an examination room, where they were provided with a clipboard and paperwork to complete. The study measures were collected in addition to the standard battery of paperwork given to patients at each facility. At both sites, the study measures included a demographics sheet, as well as the 6 questionnaires described below. Given that each facility has its own unique intake procedures, the entirety of the packet was not identical between the 2 sites. An explanation of the questionnaire packet—including the potential inclusion in research—was provided to each patient by a health care provider. Participants then were given an opportunity to ask questions. Informed consent was obtained, and participants were assured that they could discontinue the questionnaires at any time without penalty. At the Clark K. Sleeth Family Medicine Center, informed consent was obtained by a clinical psychologist, a clinical psychology postdoctoral fellow, or a clinical psychology predoctoral intern. At Chestnut Ridge Center, informed consent was obtained by a clinical psychologist or a clinical psychology predoctoral intern. Patients then completed the questionnaire packet before their psychological evaluation con-

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ducted by a provider. All procedures were approved by the West Virginia University Institutional Review Board.

Measures

Demographics

Participants were asked to indicate their age, sex, race, and employment status. Significant differences in demographic variables between sites were adjusted for in subsequent analyses.

McGill Pain Questionnaire–Short Form

The McGill Pain Questionnaire (MPQ) Short Form[16] is designed to assess the subjective experience as well as the intensity of one's pain. Respondents are asked to indicate which of 15 words describe their pain (eg, throbbing). They also are asked to describe the intensity of each qualitative word on a 4-point Likert-type scale. Scores were obtained by totaling the Likert-type scale scores, which ranged from 0 to 45.

Pain Disability Index

The Pain Disability Index[17] is a self-report measure designed to assess a patient's perceived disability in 7 arenas, such as family/home responsibilities, occupation, and self-care. Patients indicate on a scale from 0 to 10 their level of disability in each category, and scores in each arena are totaled for an overall score.

Pain Catastrophizing Scale

The Pain Catastrophizing Scale (PCS)[18] is a 13-item self-report questionnaire designed to assess catastrophic thinking related to pain. The measure assesses 3 dimensions related to this type of thinking: rumination, magnification, and helplessness. For the purpose of this study, an overall score was obtained by summing all items.

Current Opioid Misuse Measure

The Current Opioid Misuse Measure (COMM)[19] is a widely used 17-item measure that has demonstrated reliability and validity in distinguishing patients with chronic pain who are currently misusing their opioid medications.[20] The COMM uses a 5-point Likert-type scale and includes questions such as, "In the past 30 days, how often have you needed to take pain medications belonging to someone else?" A score of ≥9 on the COMM is used to identify those who are likely misusing their medication. Research has suggested that a score of ≥9 accurately identifies 77% of individuals currently misusing their medication.

Screener and Opioid Assessment for Patients with Pain–Revised

The Screener and Opioid Assessment for Patients with Pain-Revised (SOAPP-R)[21] is a measure designed to assess potential opioid abuse in patients with chronic pain. The SOAPP-R is a 24-item measure that uses a 5-point Likert-type scale. The SOAPP-R includes questions such as, "How often have you felt consumed by the need to get pain medication?" A score of ≥18 on the SOAPP-R is commonly used to differentiate between high and low risk; those scoring ≥18 are considered as high risk status for misuse/abuse. Prior research has suggested that a cutoff score of 18 identifies 81% of those who are actually at high risk for misuse or abuse.

Beck Depression Inventory II

The Beck Depression Inventory II[22] is a 21-item self-report measure designed to assess symptoms of depression. Respondents are asked to circle a statement for each item that best describes their experience within the past 2 weeks; total scores range from 0 to 63.

Statistical Methods

Descriptive statistics of basic demographic data (age, sex, employment, etc.) and each measure were calculated for the primary care and tertiary care settings. Statistically significant differences between the sites were tested using the Wilcoxon rank sum test for comparisons of means, the Fisher exact test for comparisons of percentages, and linear regression modeling. Given that age varied by site, simple linear regression was performed on each outcome to estimate the difference in means between sites both adjusting and not adjusting for age. For measures where a significant difference was observed, estimates were calculated adjusting for each significant measure. Analyses were performed using either SAS/STAT software version 9.4 of the SAS System for Windows (SAS Inc., Cary, NC) or SPSS Statistics version 20.0 (IBM, Chicago, IL).

Results

Study data were obtained from 233 patients. Participants had an average age of 49 (standard devia-

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Table 1. Patient Characteristics by Site

Variable	Patients in Primary Care (n = 114)	Patients in Tertiary Care (n = 119)
Female sex	56%	45%
Age (years)*		
18–44	44%	24%
45–4	53%	62%
>64	3%	14%
Currently employed	22%	27%
White	94%	92%
Married	49%	56%

*$P < .01$.

tion [SD], 11.55), and ages ranged from 19 to 82 years. The median age of participants was 50 years. Of all participants, 51% were female (n = 119), whereas 49% were male (n = 114). The patient population was quite racially homogenous; participants identified primarily as white (94%) and African American (3%). Data on race/ethnicity was not provided by 3% of patients. Patients presenting at primary care were significantly younger (mean age, 46 years; SD, 10.71 years) than those in tertiary care (mean age, 52; SD, 11.03 years; $P < .001$) (Table 1).

In addition to age, only the MPQ ($P = -.009$) and PCS ($P < .001$) scores differed significantly between the primary and tertiary care facilities (Table 2). These differences were maintained when adjusting for age ($P = -.0209$ and <.001, respectively). Patients in primary care were estimated to have a 4.37-unit higher average MPQ score than those in tertiary care, adjusting for age. However, patients at primary care had a 8.57-unit lower PCS score than the tertiary care facility when adjusting for age. When adjusting for both PCS score and age, the average difference increased to 7.62 ($P < .0001$). Results were similar when adjusting for MPQ score and age: −12.12 ($P < .0001$). This indicates that the differences on MPQ scores between sites was not attributable to PCS score, and vice versa. In addition, these models indicate that there was a positive association between MPQ and PCS scores when adjusting for age and that this association was even greater for those in primary care, as illustrated in Figure 1.

In addition to the above-mentioned statistical tests, further analyses were completed to determine whether interrelationships between psychological distress (scores on the Beck Depression Inventory II) and pain differed between the groups. First, pain severity (as measured by the MPQ) predicted psychological distress in both patient populations (primary care: $\beta = 0.33$ [$P = .02$]; tertiary care: $\beta = 0.35$ [$P < .001$]). Similarly, PCS scores predicted psychological distress in both groups (primary care: $\beta = 0.63$ [$P < .001$]; tertiary care: $\beta = 0.67$ [$P < .001$]). To further explore the relative contributions of pain severity and catastrophizing in predicting depressive symptoms, MPQ and PCS scores were entered simultaneously in a linear regression model. Results suggested that pain catastrophizing continued to predict depressive symptoms, whereas pain severity did not (primary care: $\beta = 0.54$ [$P < .001$]; tertiary care: $\beta = 0.62$ [$P < .001$]). In other words, when including both PCS and MPQ scores in the model, the relationship between pain severity and depressive symptoms was no longer significant (primary care: $\beta = 0.163$ [$P = .247$]; tertiary care: $\beta = 0.09$ [$P = .242$]).

Discussion

Overall, results indicated that the patient populations in primary care versus tertiary care were quite similar. Demographically, patients differed only on age; those presenting at primary care were 6 years younger, on average. Primary care patients also reported more severe pain than their counterparts at tertiary care. However, tertiary care patients reported more pain-related catastrophizing than those in primary care. Given that pain magnification and self-reported pain tend to be strongly related, it was unexpected that the group reporting more severe pain (primary care) did not also report more pain-related rumination.

Table 2. Average Patient Scores by Site

Variable	Primary Care (n = 114)	Tertiary Care (n = 119)	*P* Value
MPQ-SF	23.08	18.40	< .01
PDI	40.60	41.53	NS
PCS	12.91	21.43	< .001
COMM	6.93	6.71	NS
SOAPP	16.94	14.75	NS
BDI	14.24	12.94	NS

BDI, Beck Depression Inventory; COMM, Current Opioid Misuse Measure; MPQ-SF, McGill Pain Questionnaire–Short Form; PCS, Pain Catastrophizing Scale; PDI, Pain Disability Index; SOAPP, Screener and Opioid Assessment for Patients with Pain.

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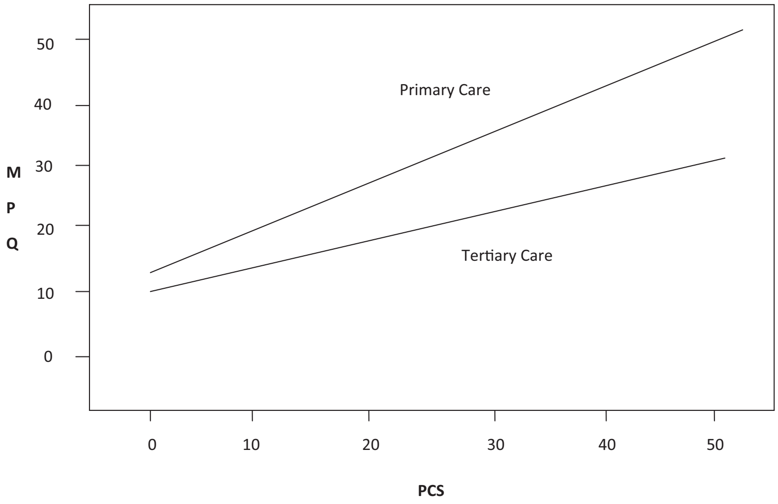
Figure 1. Relationship between pain severity and pain catastrophizing by site. MPQ, McGill Pain Questionnaire; PCS, pain catastrophizing scale.



Although we would expect these measures to correlate more strongly within each setting, there may be several reasons that this relationship was not supported. First, patients in tertiary care were significantly older than those in primary care, and it may be the case that these individuals feel more hopeless about their pain, given their increased age. This type of reaction could be captured by a measure such as the PCS, accounting for their increased scores. Similarly, they may have exhausted all other conservative treatments. If they have seen many other physicians and have not received adequate pain relief, pain-related catastrophizing may increase. Furthermore, patients who have a tendency to magnify their pain may be more likely to seek specialized treatment or request a referral to a tertiary care clinic.

As expected, there was a positive association between this type of thinking and pain severity, even when adjusting for age, and this corroborates past research indicating that pain magnification predicts pain severity independent of physical impairment or injury in the patient.[4] Simply put, as pain-related rumination increased in the current sample, so did self-reported pain severity. Unexpectedly, this association was significantly stronger for primary care versus tertiary care (see Figure 1). This may suggest that while psychological variables—including catastrophizing—are always important in understanding the pain experience, this seems to be particularly relevant for those presenting for treatment in primary care.

Further, the relationship between pain severity and psychological distress seems remarkably similar between groups. Notably, both pain severity and catastrophizing independently predict depressive symptoms in both populations. However, when including both variables in a statistical model, only pain catastrophizing continues to display a significant relationship with depressive symptoms. Of note, even though there were no significant differences between groups in terms of the relationships between pain severity, catastrophizing, and depressive symptoms, it is difficult to determine the directional nature of these variables because depression can affect the pain experience and vice versa.[2]

In terms of group differences, it is unclear why patients in primary care report significantly greater pain severity, but there are several possible explanations for this finding. First, it is possible that these individuals have not been experiencing chronic pain for as long as the tertiary care group, and they may have just recently started seeking treatment for their pain. As such, they may not currently be taking part in treatment aimed at alleviating their pain. Further, it is possible that some of the primary care patients could be "shopping" for opioid medications. As such, they may tend to exaggerate their pain. Given that opioid abuse is negatively correlated with age,[23] the younger age of patients in primary care would tend to support this hypothesis. Certainly, patients also attempt to obtain opioids at tertiary care facilities, but many tertiary care facilities use strict standards for their

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opioid program, and patients may feel that it would be easier (and possibly quicker) to obtain opioids from their PCP. It is important to note, however, that risk for opioid misuse and abuse as measured by the SOAPP-R and COMM did not differ between patient populations.

There are several noteworthy limitations of this study. First, patients were not assessed for physical injury and/or impairment. As such, it is not possible to determine the degree to which physical damage contributed to the current physical and psychological difficulties that patients were reporting. Similarly, the data that we used did not include information regarding ongoing treatments for pain. As such, it could be that significantly more patients in tertiary care were already being treated for pain, which could serve to lower their self-reported pain compared with patients in primary care. In addition, it may be the case that some patients who initially presented for treatment in primary care were eventually referred to the tertiary care setting, in which case they may have completed questionnaires on 2 occasions. Although it is not likely that this would have occurred for a large amount of cases, it remains a possibility, and given the confidential nature of the data (removal of identifiers), we were unable to assess for such cases. Also, while the pain management center in this study requires a psychological evaluation before dissemination of opioid medications, such an evaluation is not standard at all pain clinics and represents a factor that may distinguish this pain center from many others.

Furthermore, data on the duration of patients' pain was not collected. Prior research has produced mixed findings regarding the influence of pain duration on other pain-related variables. For example, one study found that self-efficacy and pain intensity both predicted quality of life measures in patients with chronic pain but that duration of pain did not.[24] On the contrary, alternative research noted that pain duration was correlated with several outcome variables in those with nonspecific spinal pain, including pain expectations and pain catastrophizing.[25] Given the mixed findings regarding pain duration, the lack of information regarding this variable in the current study represents an important limitation. Finally, this study was completed only in one state, and the sample was racially homogenous. As such, generalizability is somewhat limited. Even with the above-mentioned limitations, this study provides novel insight into the similarities between patients seeking treatment for chronic pain in primary care versus tertiary care settings.

Conclusion

The goals of this study were to determine whether patients with chronic pain seeking treatment in primary care settings differed significantly from patients seeking similar care in tertiary care settings. Results suggest few significant differences between the groups. While those presenting to primary care reported greater pain severity, those presenting to tertiary care reported more pain-related catastrophizing. Patients were similar on other measures of psychological distress, as well as those related to current and potential use or abuse of opioid medications. The results suggest that patients with chronic pain seeking treatment in primary care facilities are similar to those presenting at tertiary care facilities and represent challenging cases that require skilled assessment and management.

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