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Assessment of Chronic Pain Management in Primary Care Settings

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ABSTRACT
Chronic pain management is a complicated field that frequently calls for the fusion of numerous clinical, psychosocial and financial aspects. Primary care physicians, or PCPs, are frequently at the forefront of managing long-term pain and are frequently the ones to start pharmacological pain relief treatments. Little is currently known about PCPs' approaches to treating pain. The knowledge determination and adherence to evidence-based guidelines were assessed based on the survey replies. When it was feasible, answers to the evidence-based knowledge questions were classified as true or false if well-defined knowledge material was found in peer-reviewed sources. The majority of the sample was comprised of middle-aged, male physicians with an average of 19 years in practice, primarily practicing in suburban settings treating an average of 20 chronic pain patients a week. In descending order osteoarthritis, back and neuropathic pain were the most common pain states treated. Only 68% of respondents referred to pain management guidelines. This study sheds light on the methods PCPs use to treat chronic pain and identifies areas that need more education. The report also outlines the significance of raising patient awareness of chronic pain management.

INTRODUCTION

A 2003 survey conducted to gauge the perception of pain sufferers reported that most pain sufferers (63%) had seen their family doctor for help[1]. Furthermore, a large percentage of a PCPs' practice will involve some management of chronic pain since the prevalence of chronic pain is more than the combined incidences of diabetes, heart disease and cancer in the United States (US)[2].

The knowledge base of a PCP is critical to guiding appropriate pain management care. The management of chronic pain is complex and involves the integration of multiple clinical, humanistic and economic factors[1]. Primary care physicians are often involved in the initiation of pain management therapy, especially phar-macologic therapy. Appropriate treatment of chronic pain involves accurate patient assessment, adherence to evidence-based treatment guidelines, appropriate patient monitoring and specialized physician knowl-edge of treatment interventions.

In the US, opioid prescriptions by PCPs has been increasing since 2007 without corresponding evidence for their widespread use for chronic noncancer pain[2]. Recognizing the importance of PCPs in the manage-ment of pain and the opioid epidemic, the Center for Disease Control and Prevention (CDC) in March of 2016 issued PCP opioid prescribing guidelines [2-5]. Some of the key action statements in the guidelines include: 1) preference for non-opioid medication for chronic pain treatment., 2) risks and benefits should be considered before opioids., 3) treatment goals for opioid therapy should be established., 4) consider lowest possible dose and consider risks when increasing to 50 morphine mil-ligram equivalents or more per day., 5) avoid multiple opioids or benzodiazepines with opioids., 6) continued assessment at a minimum of every 3 months and review drug monitoring data for high risk patients., and 7) provide treatment options for patient with opioid use disorder.

The association of co-morbidities with chronic pain needs to be studied further. Determin-ing comorbid pattern in chronic pain while controlling for co-occurring physical and mental disorders is important as pain is now viewed both as an independent entity and also a symp-tom of underlying illness[3]. A study, which examined this in a nationally representative sample of adults in New Zealand, reported that only six out of fifteen examined physical/medi-cal disorders were associated independently with chronic pain. Further, the presence of anxiety and or depression independently increased the odds of reporting chronic pain[4].

Majority of patients with chronic pain are treated in primary care, where multimorbidity is common[5,6]. In developing countries, the proportion seeking services in primary care is likely to be higher as tertiary care pain clinics are non-existent. The higher prevalence of chronic pain in non-western communities implies that the burden of chronic pain in primary care in low-and middle-income countries (LAMIC) is likely to be higher. Management of these clinically challenging patients may be further compromised as in most developing coun-tries, primary care physicians have a heavy patient load. In India, the estimated consultation time in primary care is 3 minutes[7]. Most primary health centers (PHC-(Government- owned general practices), especially in rural and/or remote locations, are further constrained by minimum access to investigations. For medical professionals working in these resource constrained settings, an improved understanding of chronic pain and its independent comor-bidities (physical and mental health) will help in focusing clinical care and improving out-comes. It is important as world over the management of chronic pain is generally unsatisfactory, with most patients reporting persistence of symptoms and disability for many years[8].

Given the important role PCPs play in the management of chronic pain, it is surprising to note that the assessment, prescribing and monitoring of chronic pain patients in a primary care setting has not been extensively studied raising concerns regarding ap-propriate treatment. The aim of this study is to assess the knowledge and practice of PCPs in treating chronic pain patients. Specifically, the research will assess the knowledge of PCPs regarding the therapeutics of pain medication, assessment and patient monitoring prac-tices, within the framework of both evidence-based medicine and professional association guidelines for chronic pain treatment.

MATERIALS AND METHODS

Study Design: The cross-sectional questionnaire survey assessed the pain management treatment practices of PCPs, taking into account patient obstacles and challenges for appropriate chronic pain treatments, as well as adherence to evidence-based guidelines for chronic pain management, patient monitoring, knowledge and educational resources. The University Institutional Review Board gave the study approval.

The knowledge determination and adherence to evidence-based guidelines were assessed based on the survey replies. When it was feasible, answers to the evidence-based knowledge questions were classified as true or false if well-defined knowledge material was found in peer-reviewed sources. A question was categorised as having conflicting or inconclusive evidence when there was any available data about it. Furthermore, prior to publication in 2016, practice compliance was assessed by comparing the responses to the opioid prescribing survey with the 12 opioid prescribing guidelines outlined in the CDC Guideline for Prescribing Opioids for Chronic Pain. For the

evidence-based knowledge questions, a criterion of >or equal to 75% adherence rate to evidence-based research was used in order to discuss the results.

Statistical Analysis: For patient demonstration and practice features, such as evaluation and monitoring procedures, descriptive statistics were used. Categorical variables were represented by n (%), while continuous variables were given as mean and standard deviation (SD). Six information sources-published literature, pharmaceutical drug representatives, expert opinion, medical liaisons, clinical experience and academic detailers-were asked to be ranked by the respondents. Version 22.0 of the Statistical Package for Social Sciences (SPSS Inc., Armonk, NY: IBM Corp.) was used for all statistical analyses.

RESULTS AND DISCUSSIONS

A total of 68 useable responses were received for a response rate of 17%. Table 1 summarizes physician demographic and practice characteristics. The majority of the sample was comprised of middle-aged, male physicians with an average of 19 years in practice, primarily practicing in suburban settings treating an average of 20 chronic pain patients a week. In descending order osteoarthritis, back and neuropathic pain were the most common pain states treated. Only 68% of respondents referred to pain management guidelines. The major source of educational information was published literature (59.2%) with clinical experience as the second highest rated source (32.5%). Educational information from drug representatives (3.4%), medical liasons (5.3%), and academic detailers (5.3%) accounted for the least referenced educational sources.

Table 1: Physician Demographic and Practice Characteristics

Characteristic	n (%)
Gender	
Female	23 (33.8)
Male 45 (66.1)	
Age, mean+ SD	49.97 (12.44)
Years in Practice, mean+ SD	20.16 (12.43)
Type of Practice	
Hospital	7 (10.2)
Academic	6 (8.8)
Private Practice	36 (52.9)
Other	19 (27.9)
Location of Practice	
Urban	28 (41.1)
Suburban	36 (52.9)
Rural	2 (2.9)
Other	2 (2.9)
No. Chronic Pain Patients per Month, median, mean+ SD	21.00, 31.52(31.39)
Referral to Guidelines for Therapy	
Yes	26 (38.2)
No	42 (61.7)
Diseases Treated for Chronic Pain*	
Cancer	40 (58.8)
Migraine	32 (47.0)
Neuropathic Pain	45 (66.1)
Nociceptive Pain	21 (30.8)
Osteoarthritis	48 (70.5)
Multiple Sclerosis	22 (32.3)
Radicular Pain	41 (60.2)
Mixed Types of Pain	32 (47.0)
Fibromyalgia	39 (57.3)
Back Pain	48 (70.5)
Visceral Pain	22 (32.3)

Table 2 presents assessment practices for chronicpain. Approximately 52% of surveyed PCPs used pain assessment scales for chronic pain and continued their utilization at time of follow-up. For opioid pain management, greater than 63% of surveyed PCPs did not utilize opioid risk assessment tools either prior to initiation or at follow-up for opioid therapy.

Table 2: Assessment of Chronic Pain (n=68)

	Yes n (%)	No n (%)
Use of Opioid Risk Assessment Tools before Treatment	25 (36.7)	43 (63.2)
Use of Assessment Tools for Follow-up	21 (30.8)	35 (51.4)a
Use of Pain Assessment Scales for Chronic Pain	36 (52.9)	32 (47.0)
Use of Pain Assessment Scales for Follow-up Care	35 (51.4)	24 (35.2)b

Table 3 presents PCPs perceived importance of pro-cedures/activities before initiating chronic pain therapy. Assessing physical history and discussing the risks and benefits of treatment were rated as highly important by 100% of the sample. Assessing psychiatric and medi-cal comorbidities, medication history, identifying bar-riers and discussing non-pharmacological treatment were rated as extremely important by over 90% of the sample. Furthermore, assessing pain duration, utilizing a written contract and categorizing pain based upon biological mechanism was extremely important to the majority of the sample. Using a pain rating scale for every visit was rated as low importance by slightly over half of the sample.

Table 3. Importance* of Procedures/Activities Before and After Initiating Chronic Pain Therapy (n=68).

	Low n (%)	High n (%)	Mean	SD
Assessing Physical History		68 (100)	5.92	0.311
Assessing Psychiatric Comorbidities	3 (4.4)	65 (95.5)	5.71	0.538
Assessing Medical Comorbidities	4 (5.8)	64 (94.1)	5.8	0.612
Categorizing Patient Pain Based on Underlying Biological Mechanism	12 (17.6)	56 (82.3)	5.13	0.947
Assessing Medication History	2 (2.9)	66 (97.0)	5.80	0.446
Assessing Pain Duration	8 (11.7)	60 (88.2)	5.47	0.799
Identifying Barriers to Chronic Pain Treatment	5 (7.3)	63 (92.6)	5.51	0.653
Discussing Risk and Benefits of Chronic Pain Treatment		68 (100)	5.70	0.451
Utilizing a Written Contract for Pain Medication	6 (8.8)	62 (91.1)	5.36	0.868
Using a Pain Rating Scale for Every Visit	35 (51.4)	33 (48.5)	4.31	2.242
Discussing Non Pharmacological Therapy	2 (2.9)	66 (97.0)	5.68	0.514

Table 4 reports the frequency of challenges that PCPs face in treating patients with chronic pain. The two most prevalent challenges cited were resistance to non-pharmacological treatment (mean=5.20, SD=0.930) and unrealistic treatment expectations (Mean=5.15, SD=0.860). Poor adherence and cultural beliefs were perceived as less frequent challenges. Chemical dependency, lack of social supports and financial prob-lems were viewed as somewhat more frequent.

Table 4: Frequency* of Challenges Faced in Treating Patients with Chronic Pain (n=68)

	Mean	SD
Unrealistic Treatment Expectations	5.15	0.860
Aberrant Opioid Behavior	4.31	0.103
Poor Adherence	3.81	2.14
Chemical Dependency	4.51	2.08
Cultural Beliefs of the Patient	3.70	2.21
Lack of Social Support	4.56	2.03
Patient Health Literacy	4.21	2.10
Formulary Restrictions	4.17	2.20
Patient's Financial Problems	4.46	2.02
Resistance to Non-Pharmacological Treatments	5.20	0.930

The relevant factors involved in therapeutic agent selection are shown in Table 5. Patient factors including medical and substance abuse history as well as drug ef-fectiveness, safety, cost and drug interactions were all viewed as extremely important. Interestingly, patient preferences and socioeconomic status were rated as less important.

Table 5: Importance* of Assessment Parameters for Selecting Pharmacotherapeutic Treatment in Patients with Chronic pain

	Mean	SD
Drug Effectiveness	5.15	0.560
Drug Safety	5.71	0.591
Drug Cost	5.20	0.76
Patient Preference for Therapy	4.30	2.04
Ease of Drug Administration	5.06	0.822
Patient Socioeconomic Status	4.30	2.208
Drug Interactions	5.51	0.715
Patient Medical History	5.53	0.651
History of Substance Abuse	5.81	0.414

The survey results here pro- vide significant insight into PCP practices and highlight areas for future educational efforts that are needed to enhance pain management. First, educational efforts to enhance PCP understanding of evidence-based guide-lines, pharmacological management, opioid compli-ance monitoring and pain assessment of chronic pain are needed. In addition, the survey highlights the need for patient education on the realities of chronic pain management and the importance of nonpharmacologi-cal treatment.

Our data indicate that PCPs have significant insight into the importance of knowledge acquisition surrounding patients' physical and mental status including medical and psychiatric comorbidities including substance abuse prior to the initiation of chronic pain therapy. Greater than 90% of the surveyed physicians considered assessing physical history, psychiatric co-morbidities, medical comorbidities and medication history highly important prior to the initiation of therapy. These practices are reassuring since managing chronic pain is complex and includes multiple variable assessments during the decision process. A recent claims data analysis examining pain management in 4 cohorts of patients demonstrated that chronic pain patients have on average 4 or more prescribing physicians and greater than 50 prescription claim counts over a 2-year period[9]. Both of these data points further reinforce the importance of the measures taken by PCPs in the survey prior to the initiation of chronic pain therapy.

To disentangle the effect of various co-occurring conditions on chronic pain we have taken two approaches. The first, we assumed that the pathophysiological effects of a specific disorder on chronic pain can be estimated after controlling the differential effects of other coexisting disorders. In the second, we assumed the effects of pathophysiology of a single disease on chronic pain is better discerned after adjusting cumulative effect of number of disorder and their interactions. Both these approaches have been attempted in the past and has its votaries and disadvantages[10]. Given this, we have attempted to disentangle whether each of the examined conditions have independent effects using both methods.

In doing so, among the most commonly encountered physical illness among our primary care attendees, we report that hypertension, diabetes mellitus, tuberculosis, arthritis, asthma and others (residual category of varying chronic physical conditions grouped together) to have independent effects. Similarly, when mental health conditions were examined, depression, anxiety and tobacco use had independent association. Our findings are robust as we could rep-licate it at all stages of our stepwise approach to control for socio-demographic factors, physical/mental illness load and interaction between physical and mental illness. Further, the results held true when we controlled for occurrence of individually co-occurring physical/mental health conditions. The increased expression of chronic pain with an increased number of physical disorders and mental health conditions suggests an additive effect. The strength of association of pain with the examined individual disorders varied in each step of the logistic regression analysis possibly implying that the expression of chronic pain is influenced by bio-logical, psychological, and social factors that may have both independent, additive and inter-action effects.

Subjects with arthritis had the highest odds of reporting chronic pain among our primary care patients. Chronic pain is common among subjects with arthritis being closely linked to disability, functional recovery and quality of life[11]. Both central and peripheral pain mecha-nisms have been reported to mediate expression of pain in patients with arthritis[12]. The independent association of diabetes mellitus and hypertension with chronic pain among our patients have been reported prior[13,14]. Shared risk factors of obesity, low levels of physical activity, poor muscle mass and low-grade systemic inflammation help explain this association. In addition in hypertension, it has been hypothesized that mechanisms impaired in chronic pain dysregulate both pain responsiveness and blood pressure[15]. Tuberculosis, common among our

primary care patients, was associated with chronic pain. In addition to chronic pain being the presenting symptom in musculoskeletal manifestations of tuberculosis, pain can also be the side-effect of certain anti-tubercular drugs[16,17]. Another disorder which had independent association with chronic pain in most of our examined models with chronic pain was asthma. This finding has been reported prior, with breathlessness and consequent overuse of muscles involved in breathing heightening the experience of pain[18]. In variance to prior studies, our patients with chronic pain did not report an association with chronic dermatological conditions and epilepsy[19,20]. The association of chronic pain have been reported with specific dermatological conditions like psoriasis, suggesting that our assessment by grouping all chronic dermatological conditions as a single entity may have not have appro-priate to examine this relationship[19]. We speculate that patients attending primary care and self-reporting epilepsy may have been regularly on anti-epileptic medications which are by themself useful in chronic pain thus reducing its likelihood. Studies reporting the association of epilepsy with chronic pain have reported physical inactivity, bone injuries and high co- occurrence of migraine to mediate the relationship between epilepsy and chronic pain[20].

As with any survey, limitations exist. First, the re-sponse rate was 16%. Although low, this response rate is comparable to response rates of 14% and 13% for other chronic pain management topics including anti- coagulation and prescription patterns for chronic pain physicians[21,22]. In addition, greater than 50% of the respondents were from private practice; therefore, the results may not pertain to other practice settings including academic and hospital-based practices. Even though the survey has limitations, it still provides sig-nificant insight into PCP pain management practices in the community setting for a group of physicians with an average of approximately 20 years in clinical prac-tice that treat on average greater than 30 individuals dealing with chronic pain per month. In addition, the responding physicians treated a wide variety of pain states including neuropathic, nociceptive, osteoarthri-tis, radicular, fibromyalgia, and back and cancer pain. The survey is representative of the primary care practice setting where the predominance of care is provided to patients in the US, the community and outpatient setting.

CONCLUSION

In summary, this study sheds information on the methods PCPs use to treat chronic pain and identifies areas that need more research. The report also outlines the significance of raising patient awareness of chronic pain management. When guidelines are released, PCPs as well as pain management doctors should be the target audience for educational initiatives. Improvements in understanding will eventually impact pain management outcomes and therapy, as PCPs are frequently at the forefront of this field.

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