

EDUCATION & TRAINING SECTION

Original Research Article

From Opiophobia to Overprescribing: A Critical Scoping Review of Medical Education Training for Chronic Pain

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Abstract

Background. Chronic pain is a significant health problem strongly associated with a wide range of physical and mental health problems, including addiction. The widespread prevalence of pain and the increasing rate of opioid prescriptions have led to a focus on how physicians are educated about chronic pain. This critical scoping review describes the current literature in this important area, identifying gaps and suggesting avenues for further research starting from patients' standpoint.

Methods. A search of the ERIC, MEDLINE, and Social Sciences Abstracts databases, as well as 10 journals related to medical education, was conducted to identify studies of the training of medical students, residents, and fellows in chronic noncancer pain.

Results. The database and hand-searches identified 545 articles; of these, 39 articles met inclusion criteria and underwent full review. Findings were classified into four inter-related themes. We found that managing chronic pain has been described as stressful by trainees, but few studies have investigated implications for their well-being or ability to provide empathetic care. Even fewer studies have investigated how educational strategies impact patient care. We also note that the literature generally focuses on opioids and gives less attention to education in nonpharmacological approaches as well as nonopioid medications.

Discussion. The findings highlight significant discrepancies between the prevalence of chronic pain in society and the low priority assigned to educating future physicians about the complexities of pain and the social context of those afflicted. This suggests the need for better pain education as well as attention to the "hidden curriculum."

Key Words. Scoping Review; Medical Education; Chronic Noncancer Pain; Opioids

Introduction

Chronic pain is a significant global public health concern associated with risk of depression, anxiety, unemployment, and opioid abuse [1]. Worldwide, approximately 20% of people experience some form of pain [2]. A recent Canadian study found the prevalence of chronic pain in adults to be 18.9% [3]; using different measures, the Institute of Medicine estimates that half of all American adults live with some form of chronic pain [4]. In a study of 15 European countries and Israel, where an average prevalence of 19% was

found, 61% of adults living with chronic pain reported being unable to work outside the home, 19% reported they had lost a job, and 21% reported being diagnosed with depression [5].

While chronic pain can be devastating, common treatments also carry significant risk. Addiction is a major concern, and deaths from prescription opioids are on the rise [6]. In a cohort of 32,499 patients started on chronic opioids in Ontario, Canada, between 1997 and 2010, 58 (0.2%) had succumbed to opioid-related death at the end of data collection in 2011, with a median of 2.6 years from initial prescription to death. The small subset (1.8%) of patients who were escalated to high-dose therapy were 24 times more likely to die than those who stayed on lower doses [7]. Canadian pharmacies dispensed 23% more high-dose opioids in 2006 than 2011 [8]. Prescription opioid use continued to rise in Canada, with the exception of Ontario, between 2010 and 2013 [9]. While opioids are now considered an inappropriate or less optimal treatment for many cases of chronic pain and are well-known causes of other significant health issues for patients such as addiction, our review casts a unique and important light on the history of how we arrived at what is now commonly referred to as an opioid epidemic.

Some physicians report having inadequate training in management of chronic conditions; others who underwent additional training reported it had a positive effect on their attitudes toward caring for people with chronic disease [10]. These findings have led to recommendations that medical schools and residency programs modify their curricula [10], in particular by including chronic noncancer pain training early in all residency programs, in order to foster compassion [11].

As part of a larger ethnographic study of Chronic Pain Management in Family Medicine (COPE) [12] funded by the Canadian Institutes for Health Research, we set out to describe the current literature on chronic pain management training in undergraduate and postgraduate medical education. Going beyond typical scoping review methodologies that “map” the literature and identify gaps [13,14], we took a critical approach to scoping the literature, using a historical lens and bringing in theoretical concepts to arrive at a more contextual understanding of the body of literature we explored. This review presents a “history of the present” [15] that demonstrates at least partially how an addictive pharmacological treatment became the lynchpin of medical care for those with chronic pain. This historical emphasis on pain medication as the treatment of choice may have led to an underemphasis on the provision of alternative treatments as well as compassionate communication.

Methods

For study selection and data extraction, we relied on the team-based method recommended by Levac and

colleagues [16], which builds on Arksey and O’Malley’s seminal framework for scoping reviews [14]. Given our focus on education research as well as practice, the availability of relatively recent reviews of curricula that fall within our scope [17], and our desire to engage critically with the existing research, we used a narrower scope than that recommended by Arksey and O’Malley, searching only for peer-reviewed studies and excluding grey literature.

We applied a critical, historical lens to our review in order to capture conceptual changes occurring over time and bring in contextual evidence to challenge foundational assumptions of the literature we scoped. Critical research can be seen as a means of “making strange” the assumptions of a particular field of knowledge [18]. Making strange brings to light the historically contingent power relations that coordinate daily life yet are often taken for granted in everyday conversation. Analyzing the statements, or discourses, through which knowledge is constructed enables everyday assumptions to be problematized [19]. Seeing the “everyday world as problematic” [20] enables one to imagine and make arguments about how it might be organized differently, which is a crucial step toward imagining social change. Thus, critical discourse analysis, and critical thinking in general, can be seen as both a rigorous form of analysis with deep philosophical roots and a means of imagining innovative solutions to the most pressing social problems [21]. Our critical approach proceeds from this rationale, and it is reflected in our findings, which are organized thematically according to potential lines of further critical research and avenues for change in education and practice.

Context

Although there is a vibrant tradition of critical scholarship in the social sciences, including medical education, we were unable to find guidance on how to incorporate critical perspectives into scoping reviews [13,14,16]. To address this limitation, we considered the critical approaches commonly used in other types of studies, particularly the use of historical and conceptual frameworks [18]. In recent years, Macdonald and Lang [22] have applied social science theory to interpret scoping review findings, and Martimianakis and colleagues have used team-based, critical discourse analysis methods similar to our own [23]. We see our study as another step toward scoping reviews that not only identify gaps, but interrogate the space between gaps where concepts are commonly accepted rather than met with questions such as “why” and “in whose interest?”

Literature Search

We searched ERIC and Social Sciences Abstracts using the following terms: (medical education OR curriculum) AND (chronic pain OR opioids OR analgesics). We

searched MEDLINE using the following terms: medical education (graduate medical education OR undergraduate medical education OR internship and residency) OR curriculum (competency-based education OR interdisciplinary studies OR mainstreaming education OR problem-based learning) AND pain (musculoskeletal pain OR chronic pain) OR analgesics (non-narcotic analgesics OR short-acting analgesics OR narcotics OR opioid analgesics).

A further search using the broad terms (opioid OR pain OR analgesics) was conducted of 10 key journals: 1) *Academic Medicine*; 2) *Medical Education*; 3) *Advances in Health Sciences Education: Theory and Practice*; 4) *Postgraduate Medical Journal*; 5) *Simulation in Healthcare*; 6) *Advances in Physiology Education*; 7) *Journal of Continuing Education in the Health Professions*; 8) *Journal of Surgical Education*; 9) *Evaluation and the Health Professions*; and 10) *Medical Teacher*. Reference lists of articles identified in the database search were also hand-searched for potentially relevant titles.

All titles and abstracts were screened by one researcher (SB) for primary research pertaining to undergraduate or postgraduate medical education in chronic noncancer pain. Searches were limited to articles published in English in the past 20 years. Case reports, news, editorials, and commentaries, as well as studies of training related to acute, cancer, and palliative pain management, were excluded, as were studies focused on continuing medical education in already-licensed physicians or on training in other health care professions. The primary author (FW) screened the titles and abstracts of all short-listed articles for relevance, as well as approximately 5% of all titles and abstracts to ensure concordance and quality. Articles that met the criteria for inclusion in the critical scoping review were divided among three authors (SB, FW, EO) for extraction of key data points: publication year, population, purpose, design, and intervention.

Critical Review

Once full-text articles had been filtered for relevance, the senior author and other members of the study team reviewed all articles included in the final scoping study. In a series of face-to-face meetings, the study team discussed the research findings, identifying key concepts including historical trends in the data and potential avenues for critical research. Data were then reorganized, and points related to these themes clarified with reference to the full-text articles. These thematic findings are presented alongside the descriptive results of our scoping review.

Results

The database search identified 545 articles, 23 of which were duplicates; 51 were selected for full-text review (Figure 1), and seven more were identified from reference lists. Of 457 titles and abstracts identified in the

broad search of medical education journals, five were selected for full-text review. Of the 63 articles that underwent full-text review, 39 were included in our critical scoping study (Figure 1).

Findings are grouped into four inter-related themes: 1) the historical shift from concerns regarding opiophobia to overprescribing; 2) the inadequacy of the current chronic noncancer pain training landscape; 3) implications of training for the development of physician empathy; and 4) implications for physician well-being.

The Historical Shift from Concerns Regarding Opiophobia to Overprescribing

Our review identified a recent shift in thinking about the use of opioids. In five older papers (2000–2009), the emphasis was often on teaching medical students and residents that there was a low risk of addiction with opioid pain medications. The term “opiophobia” was sometimes employed to describe physicians who underprescribed [24,25]. Authors were concerned that the percentage of patients with chronic pain whom students believed to be drug seekers increased after clerkship [26] and that residents tended to overestimate the risk of addiction [27].

By contrast, six more recent articles (2009–2014) focused on managing the “inappropriate” prescribing of opioids and monitoring patients for signs of addiction [17,28–32], and we found no mention of “opiophobia” in this period.

Students’ understanding of opioid addiction was found to be lacking [31], as was their ability to interpret urine drug tests [28]. A curriculum review of Canadian and American medical schools critiqued the lack of education in substance abuse and addiction [17]. In 2014, Persaud found that one medical school was offering lectures supported by pharmaceutical companies without disclosing this conflict of interest to students and critiqued medical educators for downplaying the adverse effects of opioids and allowing industry to influence curriculum [32].

After participating in case-based learning aiming to identify opioid use disorder in patients with chronic noncancer pain, residents reported feeling more prepared in identifying illicit substance use [30]. When the charts of residents who participated in training for chronic pain management were reviewed, an emphasis on urine testing and documentation of discussions around use of a controlled substance was evident [29]. Hence there is some evidence that management strategies that potentially would have been considered opiophobic would now potentially be considered best practice. However, within the medical education literature, this has not been accompanied by research or commentary on the need for guidance on alternative approaches in light of

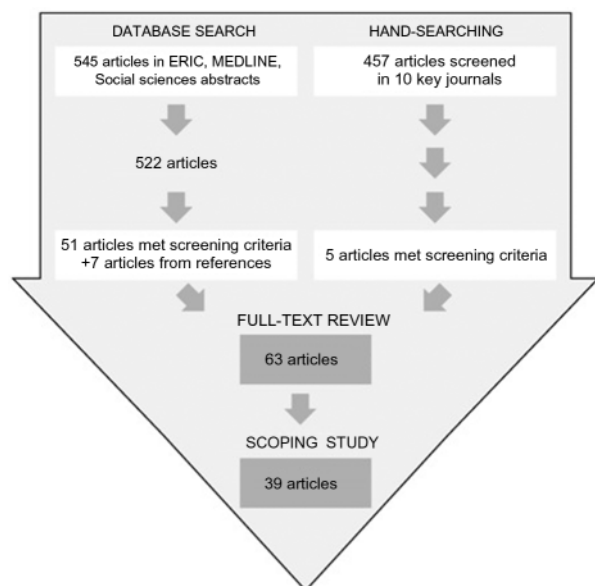


Figure 1 Results of the modified scoping review process.

the growing recognition of the drawbacks of prescribing opioids.

The current emphasis on the rise of deaths from opioids often sidesteps the important issue of why so many highly addictive and dangerous drugs were prescribed in the first place. The discursive shift from “opiophobia” to “inappropriate prescribing” highlights the inherent tensions between the widespread prevalence and debilitating effects of chronic pain, the often unacknowledged role of the pharmaceutical industry in pain-management training, and the conflicted role many physicians face between offering symptom relief with opioids and preventing addiction. Fields [33] constructs this as a “doctor’s dilemma,” contrasting the viewpoint that it would be “unconscionable to withhold adequate treatment from any patient complaining of severe pain” with the viewpoint that “addiction is a significant risk” among chronic pain patients using opioids.

The Inadequacy of the Current Chronic Pain Training Landscape

Most of the curricula were positively evaluated. However, other studies demonstrated that students became “less idealistic” about chronic pain patients during medical school [26] and performed poorly on evaluating the psychosocial sequelae of chronic pain [34]. Two studies found that the number of hours dedicated to pain management during medical school was limited and the lack of a dedicated pain course led to a fragmented training approach [17,35]. Another reported that residents were found to underuse pain scales and opioid-equivalence tables, underprescribe patient-controlled analgesia, and overestimate the risk of

addiction [27]. The focus on underprescription and overestimation of the risk of addiction in this latter study, published in 2005, stands in stark contrast to contemporary concerns about overprescribing.

Twelve surveys were included in our analysis [25,26,28,31,35–41]. Of five surveys of program directors [37,38], two reported that directors believe training in chronic pain to be generally inadequate [40,42], another found directors of programs whose curricula offered little formal pain management training nonetheless reported them to be adequate [39], and the other two found that directors report chronic pain management to be of lower importance and interest to residents than other areas of study [37,38]. Meanwhile, a survey of medical students found that they report a lack of interdisciplinary training and less emphasis on the sociological issues pertaining to pain as compared with its pathophysiology [43]. Another survey found that medical students developed behaviors during training, such as increased authoritarianism, that contributed to suboptimal pain management for patients [24].

Four studies were surveys of medical residents, primarily in internal medicine [11,27,28,36]. Residents in one study reported an absence of chronic pain management teaching in medical school and residency [36]; another found residents felt it was less rewarding to work with patients with chronic noncancer pain [11].

Despite the mostly positive evaluations of curricula, the survey data indicate that students, residents, and educators consider the current training landscape to be inadequate.

It is also worth noting that the literature on pain management in medical education focuses almost exclusively on evaluations of educational outcomes and surveys of learners and educators. The limitations of this approach have been noted in other studies [44]. Few studies have assessed the impact of training on students’ clinical management of patients, with the exception of one pre- and postprescription audit [45] and one study involving evaluation of residents’ charts [29].

Twenty-one studies included in our analysis were evaluations of existing or new chronic pain curricula, 11 at the medical student level [26,34,41,45–52] and 10 at the resident level [25,27–30,53–57]. Twelve of these relied on pre- and post-tests of students’ knowledge to assess the effectiveness of curricula [25,29,30,47–49,51,53–57], while one used a multiple-choice knowledge assessment [52] and three asked students to complete a questionnaire [26–28].

The lack of educational interventions in clinical settings makes it difficult to assess the impact that educational interventions have on patient care. Meanwhile, the discrepancy between survey and post-test data suggests a need for research into the suitability of the latter approach as a standalone assessment mechanism. Given

that care physicians often describe their training in pain management as poor [10], there is a clear need for further investigation of how training in pain management impacts patient-physician interactions, as well as the outcome this has on treatment approaches offered to patients.

Implications of Training for the Development of Physician Empathy

Four studies addressed the psychosocial impact of managing patients with chronic noncancer pain on medical students and residents [11,26,58,59]. Encounters with patients with chronic pain were found to have profound and often unacknowledged effects on future physicians' attitudes toward complex patients, their role as caregivers, and the profession of medicine itself [26]. A review of reflective journals written by 86 medical students found that their opinions of chronic pain patients were mostly negative; they worried about patients' trustworthiness and identifying those who had "true pain" vs "drug seekers" [58]. Again, this highlights the historical reliance on opioids, as the question of whether or not patients are drug seekers only becomes relevant when addictive medications are offered as standard treatment. The importance of empathy in the provision of high-quality clinical care has been frequently advocated, and yet training in "compassionate care" has been shown to be absent [60]. This review demonstrates that few articles on education in the management of chronic pain touch on this important area of research.

Implications for Physician Well-Being

Corrigan and colleagues have found that uncertainty is central to medical students' attitudes toward chronic pain patients [58]. Indeed, uncertainty is a common element of all aspects of chronic pain, and opioid treatment adds new dimensions of uncertainty. Worries about the trustworthiness of chronic pain patients and the potential of being manipulated by drug seekers suggest a profound unease with the uncertainty of pain treatment. These worries initially gave rise to the now-abandoned discourse of "opiophobia" and continue to be captured in surveys of attitudes and beliefs about chronic pain patients. Given the inadequacy of pain curricula, it is unsurprising that students find dealing with the clinical realities of chronic pain management challenging and exhausting [58]. More fundamentally, the dominance of issues surrounding opioids in discussions about pain management suggests that learners may not be receiving adequate guidance in the full range of strategies for helping patients manage pain, including both alternative forms of symptom relief and helping patients find ways to cope with the limitations of pharmacological approaches.

In addition to the risk of creating unnecessary strain in the patient-physician relationship, the lack of early and comprehensive pain education may also affect medical

students' perceptions of the profession as a whole. The finding, cited above, that internal medicine residents found caring for chronic pain patients to be less rewarding than other types of medical work, was accompanied by the finding that 58% of those surveyed indicated that chronic nonmalignant pain patients negatively influenced their opinion of primary care as a career option [11]. As students become less idealistic toward the medical profession in general during training, they begin to place more faith in pharmaceutical interventions than patient-dependent therapy [26]. Aside from being an important issue in its own right, the impact of uncertainty on physician well-being is also closely related to the quality of patient care.

Discussion

Our first theme, the shift from labeling physicians as "opiophobic" when they failed to prescribe opioids to viewing those who do prescribe as "inappropriate prescribers," requires further attention as it informs the current situation of high rates of prescription opioid use [6,7,9] and highlights the need for adequate physician training in this important area. The paucity of evidence around the impact of educational interventions on the clinical performance of students is particularly concerning given the discrepancy we found between the mostly positive results of curriculum evaluation studies and survey research indicating widespread agreement that the training landscape is inadequate.

As well as providing insights about transfer of formal training to the clinic, further investigation of chronic pain education outcomes in clinical settings could establish knowledge about how informal training affects students' and residents' practice and attitudes. In the medical education context, "hidden curriculum" has been used to describe the unwritten, and often unseen, "socialization process of medical training" [61]. Previous studies have demonstrated how the hidden curriculum impacts students' behavior and affects their empathy and compassion [61].

However, our second finding, a theme of perceived inadequacy of the training landscape in much of the literature, can also be extended to the fact that research in chronic pain education largely focuses on formal training. Curriculum reviews, such as Mezei and Murinson's extensive study [17], provide important evidence of the inadequacy of formal training, but there has not been similarly extensive investigation of the informal training landscape. This is especially problematic given the particularities of pain management, which requires compassion and the ability to sensitively communicate complex knowledge on a range of topics, from alternative treatment modalities and lifestyle changes to expectations and the limits of biomedical therapies to the risk and reality of addiction.

Fishman and colleagues' competency-based framework [62], published in 2013, represents an important

advance in developing and disseminating knowledge about the importance of openness to alternatives to pharmacology and understanding of context. We see our review, and call for further research into informal learning, as complementary to this advance. Even if all of the relevant facts are covered in an ideal curriculum, knowing when and how to draw upon them is a skill that learners necessarily develop informally, from the framing of issues in the classroom and from interactions during their clinical training. Research on the impact of the hidden curriculum on perceptions and practice with regard to chronic pain patients could complement further study of the impact of formal pain management curricula in clinical settings.

One area of particular importance for education practice and research is informal learning around the risk of addiction. Some physicians report that they fear facing sanctions as a result of prescribing opioids [63]. Primary care physicians have been found to be especially concerned with causing physical harm when prescribing opioids to their older patients, and have also identified diversion of drugs to family members as a pressing concern [64]. It has been hypothesized that increased scrutiny may lead physicians to reduce their prescribing of opioids without having access to alternative methods of pain relief, thereby undertreating chronic pain [65]. While cases of addiction and overdose death are all too real, the tone and direction of recent concerns about addiction and drug-seeking in patients with chronic pain may nonetheless reflect a moral panic [66,67] in which blame for the institutionalized lack of support and treatment is transferred to the most vulnerable actors in the social organization of care.

When this framing is uncritically accepted, inadequate medical treatment of chronic pain is redefined as being the problem of poorly behaved patients or poorly performing physicians, rather than a complex series of issues pertaining to the largely pharmaceutical-based solutions used in current practice. Among other things, informal training may reinforce perceptions that patients, especially the elderly, are at unacceptably high risk of physical harm if prescribed opioids; that patients divert their medications to addicts or are addicts themselves; and that, in many cases, complaints about pain are in fact drug-seeking behavior. These perceptions in turn lead to a sense that dealing with opioids and the patients who use them is a distinct downside of primary care practice in general, and of chronic pain management in particular. This particular finding reinforces the need for further research extending from our third theme, to address the implications of training for the development of physician empathy toward patients, as well as our fourth theme, the implications of learning and practice surrounding chronic pain for the well-being of physicians themselves.

Evidence from surveys of students' attitudes and reflections, as well as the reflections of experienced practitioners, would seem to suggest that the cautious tone

of today's curriculum is compounded by a formidable hidden curriculum. Hidden curriculum is typically invoked in critical analyses that seek to problematize everyday phenomena, and indeed that is how we have employed the concept here. However, we are also mindful of a tendency, discussed by Martimianakis and Hafferty [68], to portray all informal socialization as an inevitable barrier to humanistic practice. This need not be the case; in reality, informal socialization is inescapable. We see hidden curriculum as a fertile ground for critical reflection on how socialization processes could be better structured and enacted.

In current medical thinking, chronic pain treatment should focus on rehabilitation rather than interventions aimed at symptom relief [69]. As chronic pain typically persists over the long term, opioid treatment involves greater risk of addiction, tolerance, and adverse events [8,70]. Accordingly, several professional organizations have provided physicians with guidelines on safe opioid prescribing to address the ambiguity faced in managing chronic pain.

However, our review suggests that medical education has barely touched on nonpharmacologic approaches to managing pain. While these are less widely researched in a medical education context and less commonly used in mainstream practice, they may offer an effective means of mitigating opioid use on an individual and societal level [71]. Conversely, if research in medical education is limited to the issues emerging from conventional practice, rather than taking a critical perspective on how issues such as over- and underprescribing are framed and what these framings leave out, there is a risk of reinforcing the tendency to conflate prescribing opiates with the humanistic imperative of helping patients manage their pain.

Research surrounding our fourth theme, implications for physician well-being, indicates that trainees find managing chronic noncancer pain stressful and emotionally taxing. An underlying etiology often cannot be found and many patients exhibit high levels of distress [69], making it difficult to apply guidelines intended to determine who should be given a prescription for acute symptom relief and who should be referred to a biopsychosocial approach. As concern about addiction and adverse events has increased, the medical profession has fallen under scrutiny. Practitioners and students worry that they have insufficient skills to identify "drug seekers" and that even "legitimate" pain patients are potential addicts or overdose deaths. As Corrigan and colleagues [58] observed, "[the topic of] 'pain' was painful for students."

Given the high prevalence of chronic pain, as well as the medical and ethical importance of safely providing care to the subset of opiate users who do experience addiction, there is a clear need for research on how to teach students about chronic pain management, particularly the full range of available treatment strategies and

the importance of empathy toward patients. We see our critical scoping review as a first step in identifying new avenues of research to meet this need.

Authors' Contributions

FW conceived of the study and led the design, data collection, analysis, and drafting of the manuscript. SB participated in study design and conducted data collection and analysis and drafting of the manuscript. EO participated in data analysis and drafting of the manuscript. FW, SB, EO, JK, SD, and CM participated in analysis and contributed to the manuscript. All authors read and approved the final manuscript.

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