

Research Article

Patient's perception of the benefits of long-term opioids: Reinforcement associated with short-term effects

James P Robinson*

Department of Physical Medicine and Rehabilitation, University of Washington, Seattle, WA, USA

The appropriateness of opioid therapy for patients with Chronic Non-Malignant Pain (CNCP) has been questioned by a variety of researchers and policy makers [1-3]. One comprehensive review concluded that the benefits of such therapy for pain relief and functional improvement are modest at best and that opioid therapy is associated with significant harms including various symptoms (e.g., headache, nausea, sedation), development of opioid use disorder, fractures and death from overdose [3].

Surprisingly, research on the perceptions of opioids among CNCP patients has been sparse [3]. The research that is available suggests that in contrast to the skepticism about opioid therapy among some prescribers, researchers, legislators and regulators, many patients seem to be more positive about its benefits of it. For example, in a web-based survey of fibromyalgia patients, 75% of respondents who had been prescribed hydrocodone/acetaminophen reported that the medication was "helpful", and 67% of those prescribed oxycodone/acetaminophen found that medication is helpful [4]. These ratings can be contrasted with clinical practice guidelines for fibromyalgia that recommend against the prescription of opioids [5]. One large-scale study involved telephone interviews of over 1,100 patients from a managed care facility [6]. The interviews included a 15-item Prescribed Opioid Difficulties Scale (PODS) to assess concerns that the patients had about opioid therapy. Consistent with the previously mentioned web-based survey of fibromyalgia patients, the investigators found that 61% of participants reported that opioids were "very helpful" or "extremely helpful" in relieving their pain. Similarly, Watson and colleagues [7] studied a cohort of 84 CNCP patients prescribed opioids and found that the patients generally indicated that their medications were effective, with the majority reporting that their opioids provided at least a 50% reduction in their pain. Patients reported few significant long-term adverse effects of opioid therapy. Robinson, et al. [8] found that patients on long-term opioid therapy gave generally positive global ratings of their medications, and were particularly

emphatic in endorsing the idea that opioids gave them some control over their pain. Patients who were working tended to emphasize that their opioids permitted them to function better, whereas work-disabled patients were more likely to emphasize that their opioids facilitated changes in emotional functioning. Finally, qualitative studies have suggested that many CNCP patients report benefits from opioid therapy, although they often feel criticized by others because of the therapy [9-11]. The insistence by patients that they are deriving benefits from opioid therapy is frequently seen in clinical practice and creates stress for physicians as they try to negotiate the chasm that often exists between the beliefs and preferences of their patients and the expectations and demands from laws and regulations designed to curb opioid use [12-14].

One possible explanation for the apparent disconnect between the enthusiasm that many patients describe for their opioids and the unimpressive results of research on opioid therapy is that patients are rationalizing because they are addicted to their medications [15]. Although this is probably an adequate explanation for some patients, it almost certainly does not apply to all of them. Moreover, there is a danger that observers who attribute patients' positive statements about opioids to addiction might fail to appreciate more persuasive reasons for the beliefs and preferences of the patients.

The general purpose of this essay is to promote the idea that the beliefs and values of patients receiving opioids for

More Information

*Address for correspondence:

James P Robinson, MD, PhD, Department of Physical Medicine and Rehabilitation, University of Washington, Seattle, WA, USA, Email: jimrob@uw.edu

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CNCP should be studied rather than ignored because they are attributed to addiction. The specific hypothesis outlined below is that many CNCP patients may value opioids because of short-term positive changes that they experience after taking doses of their medications. These changes might occur even if opioids do not lead to long-term changes in average pain levels or foster long-term benefits such as a return to work.

The proposed hypothesis is consistent with abundant research demonstrating that immediate reinforcement promotes the development of conditioned responses [16]. Moreover, there is evidence that when individuals are under stress, they are especially prone to placing high value on immediate rewards [17]. This has been demonstrated in patients with anxiety or depressive disorders [18,19], and in people subjected to economic stress [20] or experimentally induced social stress [21]. Thus, the general tendency for immediate reinforcers to be more potent than delayed ones is magnified among individuals who are experiencing various kinds of stress. Since pain is stressful, it is likely that CNCP patients will demonstrate preferences similar to that seen in other highly stressed groups.

In order to assess the validity of the hypothesis that CNCP patients value their opioids because of the short-term benefits they perceive after taking doses, it is necessary to assess these short-term effects and measure the value that patients place on their medications. Short-term changes in subjective state and neurophysiologic functioning following opioid doses have been studied among CNCP patients receiving opioid therapy [22-25] as well as among pain-free volunteers [26-29] and heroin addicts [30-33]. But these studies have not included assessments of the value that subjects placed on their opioids.

The hypothesis proposed here could be tested by having CNCP patients take doses of a short-acting opioid, assessing changes in their pain levels and stress levels over the hour following a dose and associating their responses with assessments of the value the patients place on opioids. The value assessments could be obtained by making use of well-established techniques that have been used extensively by behavioral economists. They have measured the value that people place on various commodities by determining the size of monetary rewards that individuals require in order to relinquish something (here, opioids), or the amount of money they are willing to pay in order to obtain something (here again, opioids) [34-38].

This hypothesis focuses attention on the ways in which opioids affect patients in the minutes to hours after a dose. It is entirely possible that patients experience relief from some combination of analgesia, sedation, and reduced emotional distress during the period when an opioid dose is acting even if they do not demonstrate cumulative improvements over weeks or months of opioid therapy. In fact, as shown in Figure 1, it is possible for a patient's condition to deteriorate

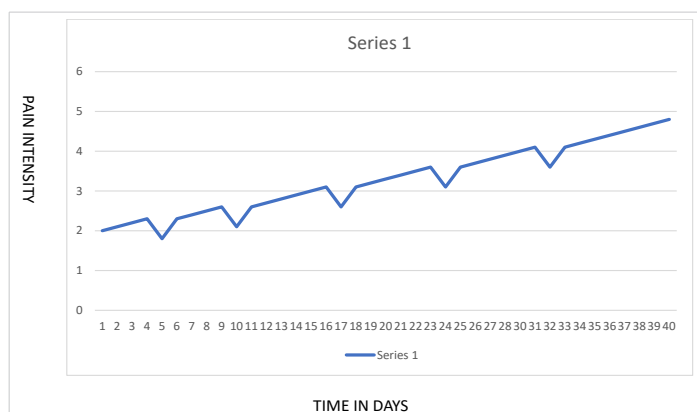


Figure 1: Short term effects of opioid doses vs. long term changes in pain among CNCP patients.

over time (perhaps because of opioid-induced hyperalgesia), but for the patient to be convinced of the benefits of opioids because of repeated episodes of short-term symptomatic relief.

This hypothesis highlights the possible mismatch between the long-term outcomes (such as return to work) emphasized in research on opioid therapy and the moment-to-moment experiences of pain patients. It also highlights the general issue that all of us – whether we suffer from chronic pain or not – must seek ways to balance out short-term rewards with longer-term ones. The point to emphasize here is that pain patients are by no means unique in their hypothesized valuation of short-term rewards. As an example of the trade-offs we all make between short and long-term rewards, consider ice cream consumption. Most of us would readily admit that ice cream is not good for one's health, but we eat it anyway. Why? – because we experience momentary rewards as we consume them.

Conclusion

1. The fact that opioid therapy for chronic pain has few if any long-term benefits does not negate the possibility that patients might have good reasons for valuing it.
2. There is an urgent need to study the reasons why patients value opioids. Their perceptions might offer important insights into how a better balance between positive and negative effects might be achieved for CNCP patients receiving opioids.
3. If such research is done, it is almost certain to demonstrate that different patients have different reasons for valuing opioids. The specific hypothesis outlined above – that patients value opioids because of short-term relief following a dose – is likely to be valid for some patients, but certainly not for all of them.
4. The above hypothesis is amenable to empirical confirmation or disconfirmation and should be studied.
5. The hypothesized analogy between consuming opioids



and consuming ice cream suggests a strategy that might be applicable to patients with chronic pain. Most people consume ice cream only occasionally – e.g., to celebrate some special occasion. This occasional use allows them to experience the rewards of ice cream consumption without suffering the ill effects of excessive consumption. By analogy, it's possible that many CNCP patients can avoid the pitfalls of excessive opioid consumption by limiting their consumption to “special occasions” – that is, times when their pain is especially difficult to control.

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