



Editorial comment

Pain management in the Emergency Department – Still a long way to go?



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In this issue of the *Scandinavian Journal of Pain*, Lars Stureson and his co-workers report on patients' experiences with pain management in the emergency department of a general hospital in Stockholm, Sweden [1]. The authors found that after the intervention, requiring mandatory documentation of patients' pain intensities, performed by registered nurses (RNs) in the emergency department (ED), there was increased administration of analgesics by RNs, but the intervention did not affect the patients' satisfaction with their pain management. In this hospital the RNs in the ED are able to administer non-opioid and opioid analgesic drugs according to nurse- and physician-developed guidelines.

1. Why did increased use of analgesic drugs not improve the patients' reported pain intensities and satisfaction with pain management?

This paradoxical finding calls for an explanation. A conventional explanation would be that the instruments used for measuring pain did not have the necessary sensitivity (resolution) and validity, thus not capturing the decrease in pain that the patients nevertheless must have experienced.

Pain-intensity measurement is important, but the problem probably has deeper roots than that. If we attempt to pragmatically break down the issue of pain reporting into its constituent parts, the following components may be identified: *pain signal*, *pain perception*, and *pain rating*. A further step could be the conversion, by the patient, of their pain rating into *satisfaction* with pain management.

Satisfaction with pain management would be affected by all the antecedent and contextual factors mentioned below.

The *pain signal*, loosely defined, consists of nociception or neuropathic pain processes in the somatosensory system. This pain signal can only be indirectly inferred in a clinical situation, and is therefore of limited interest in that context.

Pain perception, on the other hand, is poorly defined. In the framework of Cognitive Behaviour Theory (CBT), it would be construed as the *patient's thoughts, feelings, and actions in response* to a pain signal. The determinants of these reactions in the patient are the *antecedents* and *contextual cues* that are the subject matter of CBT and Acceptance and Commitment Therapy (ACT).

The *pain rating* finally, being at the top of the chain of events, is subject to anything that can influence the different parts of the process from pain signal, via pain perception to pain rating. In a clinical setting the pain rating is practically also our only access to the whole phenomenon of the patient's pain. *Nonverbal pain behaviour* can help us to evaluate the pain perceived by the patient, but such cues are of limited value in adult ED patients, and can also be misleading.

2. Signs and symptoms of pain

That physicians rely more on signs than symptoms has also been pointed out as a major problem in the under-treatment of pain in the ED [2]. It is conceivable and indeed often suspected, that the patients' pain ratings are biased due for example to *malingering*. The pain ratings would thus not properly reflect pain perception. There are reasons to believe, however, that patient pain ratings often are an accurate reflection of activity in brain areas consistently correlated to pain perception [3]. Thus, provided the pain ratings we use are sufficiently robust, we can, in most cases, assume that they mirror the patient's pain perception. We have known, however, at least since the time of Fordyce that the perception of pain is subject to *respondent* and *operant conditioning* [4].

3. Expectation strongly influences pain perception

In experimental studies on healthy volunteers, expectations have been shown to significantly impact pain perception [3]. Identical pain stimulation and remifentanyl infusion lead to pain reports varying almost two-fold depending solely on the expectations of the subjects. ED patients also appear to have greater expectations of pain relief than patients with postoperative pain [5]. They expect both a faster as well as a greater degree of pain relief. It must also be pointed out that pain is the chief complaint of patients in the ED,

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and that it often is undertreated, meriting the term “oligoanalgesia” [6].

4. Chronic pain and opioid-use among patients in an emergency department

Lars Sturesson and co-workers conclude that further studies on patient experiences with pain management in the ED, “exploring additional factors”, are needed. Against the background presented above, I would argue that these additional factors are not completely unknown. I think it is safe to say that the factors involved are those that influence the perception of pain. Two such factors are the intensity as well as the type of pain involved. We do not know the percentage of the patients in the study in question that were suffering from chronic pain, or if they were on opioids. This is important, partly because the ability to rate experimental pain has been found to be high in healthy controls without pain, but poor in chronic pain and in healthy volunteers administered opioids [7].

5. Multiple factors, in addition to nociception, determine pain perception and pain behaviour

It has furthermore been proposed that measuring pain intensity in chronic pain patients is not only misguided, but also potentially harmful for the patient [8]. This view is difficult to accept for many pain clinicians, and has been challenged [9]. The message here I believe is not that the patients' pain ratings are a biased reflection of their pain perception, but that their pain perceptions to a large extent reflect factors other than nociception. The interplay between these factors is probably orchestrated by the prefrontal cortex, the main player in pain processing in humans [10]. The diverse contextual inputs to the brain along with antecedent factors such as learning history determine behaviour.

Making sense of confusing facts such as the findings of Lars Sturesson and co-workers [1] as well as improving pain management in the ED arguably requires a better understanding of why we human beings behave the way we do. This understanding would include the physicians, as well. General practitioners' beliefs about fear-avoidance can negatively influence their following of treatment guidelines [11]. I would therefore suggest that the future research called for above, should be based in contextual behavioural science [12].

Returning to the study in question [1], how can we interpret the results in the conceptual framework presented above? First, did the analgesics not significantly diminish the pain signal? If the initiating mechanisms of the patients' pain were relatively resistant to conventional analgesics, that would be possible. Such would be the case if the pain were for example mainly neuropathic. I would

say that the pain in unselected ED patients is not likely to be unresponsive to conventional anti-nociceptive analgesics. So, the pain signal was probably attenuated. Skipping to the final step, was the perception of pain reliably rated by the patients? In view of the evidence from imaging studies (see above) we can probably assume that on the group level there was no bias in the ratings, i.e. the pain ratings relatively accurately reflected the patients' pain perception.

Summing up, we are left with the conclusion that even though the pain signal was diminished, the patients' perception of pain was not markedly influenced by the increased use of analgesic drugs. Other factors, such as the patients' expectations of degree and timing of pain relief, probably dominated. In this analysis, the paradox found by Lars Sturesson and co-workers has been narrowed down to the connection between the pain signal and the patient's perception of pain. Exploring this connection requires a joint venture of pain clinicians and behavioural psychologists.

Conflict of interest

None declared.

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