Nursing Standard

Evidence and practice
Pain

Why you should read this article:
- To understand the burden of post-operative pain on patients
- To develop an effective method of assessing a patient's pain
- To recognise the barriers that can hinder an assessment of pain

The nurse's role in the assessment and management of post-operative pain

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Citation

Coll AM, Jones R (2020) The nurse's role in the assessment and management of post-operative pain. Nursing Standard. doi: 10.7748/ns.2020.e11530

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Peer review

This article has been subject to external double-blind peer review and checked for plagiarism using automated software

Conflict of interest

None declared

Date accepted

13 February 2020

Published online

???? 2020

Abstract

While post-operative pain is a common consequence of surgery, evidence suggests that the levels of post-operative pain experienced by patients are unnecessarily high. In the past two decades, evidence has also indicated that nurses' knowledge of the assessment and effective management of pain is suboptimal. This article considers the nursing assessment of post-operative pain, and why many patients' post-operative pain is not assessed, as well as the elements required for effective post-operative pain assessment. The article also provides an overview of the main pain management interventions available to nurses.

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Keywords

analgesics, clinical, drug administration, medicines, medicines management, pain, pain assessment, post-operative pain

Key points

- ***Post-operative pain is a common and unavoidable consequence of surgery, but evidence suggests levels of post-operative pain experienced by patients are unacceptable***
- ***Nurses and patients can hold misbeliefs about pain, which act as a barrier to the nurse assessing a patient's pain***
- ***An assessment of pain should consider its severity, as well as its quality, timing, duration, and aggravating and alleviating factors***
- ***Effective pain assessment requires the use of a pain scale***
- ***Opioids remain the gold standard choice for pain management, and can be administered via a variety of different routes***

Introduction

There is consensus in the literature that post-operative pain is a common and unavoidable consequence of surgery (Sin and Chow 2015, Wikström et al 2016). However, evidence also suggests that the levels of post-operative pain experienced by patients are unacceptable (Bell and Duffy 2009, Mackintosh-Franklin 2014, Ingadóttir and Zoëga 2017). Estimates of the prevalence of post-operative pain remain high. For example, levels of 'moderate-to-severe' pain cited in the literature range from 30% (Maier et al 2010), to 50-90% (Tocher et al 2012, Rizalar and Őzbaş 2016). Furthermore, van Ransbeeck et al (2018) stated that 20% of patients who experience persistent post-operative pain subsequently experience chronic pain, while Kehlet et al (2006) estimated that in 2-10% of patients with severe post-operative chronic pain, the pain would have had a neuropathic element due to the surgical injury of major peripheral nerves.

The consequences of unrelieved post-operative pain are commonly cited in the literature and can affect the patient physiologically and psychologically. The physiological effects of unrelieved post-operative pain include increased heart rate and/or respiratory rate, and increased arterial blood pressure and oxygen consumption (Burns et al 2010). In turn, these factors can lead to: myocardial infarction due to increased cardiac workload (Mann and Carr 2009); atelectasis (collapsed lung) due to excessive coughing and suppressed deep breathing (Sin and Chow 2015); and deep vein thrombosis and pulmonary embolism due to immobilisation (Mann and Carr 2009). Psychologically, the evidence suggests that the incidence of anxiety, depression and anger is increased in patients with unrelieved post-operative pain (Dunwoody et al 2008, Shen et al 2008).

These physiological and psychological factors can result in delayed discharge, recovery and rehabilitation (Rognstad et al 2012). Furthermore, with day case surgery accounting for up to 70% of all surgery undertaken (British Association of Day Surgery 2020), the likelihood of patients experiencing unacceptable levels of pain at home has increased (Ingadóttir and Zoëga 2017).

Assessment of post-operative pain

A high incidence of moderate-to-severe post-operative pain continues to be reported even though there have been significant technical advances in pain management, including patient-controlled analgesia (PCA) (Francis and Fitzpatrick 2013), local anaesthesia and regional nerve block injections (Rognstad et al 2012). Possible barriers to the effective assessment of pain include: the challenge of defining and assessing the complex and multidimensional concept of pain; and

the dynamics of the nurse-patient relationship where nurses and patients can hold misbeliefs about pain (McGillion et al 2011) and express negative attitudes towards pain (McNamara et al 2012, Kiekkas et al 2015). Another barrier to the effective assessment of post-operative pain can be the disparity between a nurse's and a patient's assessment of pain (Jang et al 2019, Kapritsou et al 2019). There is also evidence that suggests that although pain assessment and management is integral to the nursing role and should remain a nursing responsibility, nurses' knowledge of pain assessment and management remains inadequate and has not improved significantly over the past 20 years (McCaffery and Ferrell 1997, Khatib and Razvi 2018, Kapritsou et al 2019).

The nurse's role in the assessment of post-operative pain

Pain is possibly the most common symptom experienced post-operatively and has been recognised as the fifth vital sign (Berry and Dahl 2000). In the UK, The Code: Professional Standards of Practice and Behaviour for Nurses, Midwives and Nursing Associates (Nursing and Midwifery Council (NMC) 2018) stipulates that nurses should communicate clearly when responding to a patient's health needs, for example by using terms that people in their care, colleagues and the public can understand. Therefore, nurses have a responsibility to communicate effectively with patients when attempting to meet their pain needs, as well as providing the appropriate care based on an in-depth assessment (Bell and Duffy 2009).

Any assessment also needs to consider the patient holistically so that the psychological, emotional and spiritual effects of pain are considered alongside the physical sensation of pain (Yüceer 2011, McCabe 2017).

The primary objective of the pain assessment process is to determine the severity of the patient's pain, both before and after administration of the most appropriate analgesia. The aim is to maintain the patient's pain at an acceptable level, meaning they can undertake their required activities of daily living (Macintyre et al 2014). The quality, location, timing and duration of pain, as well as any aggravating and alleviating factors, should also be considered by the nurse.

Pain should be assessed at rest and on movement to evaluate the patient's functional status (Yüceer 2011). The severity of the pain should be measured empirically by using a validated pain scale so that the assessment is reliable and reproducible; pain scores should also be documented to evaluate the effects of pain management (Ingadóttir and Zoëga 2017, van Ransbeeck et al 2018). Furthermore, the nurse should consider the patient's self-report of pain. It is well established that the experience of pain is personal and subjective. The patient's self-report of pain should be regarded as the gold standard for pain assessment, following McCaffery's (1968) seminal definition, 'Pain is whatever the experiencing person says it is, existing whenever he/she says it does.'

Use of a validated pain scale

The literature suggests there can be a disparity between the patient's perceived level of pain and the nurse's assessment of pain (Chatchumni et al 2016, van Dijk et al 2017, Jang et al 2019). Pain is a complex phenomenon that can be subjective and challenging to accurately communicate and categorise; therefore, the literature recommends the use of validated pain scales (Wikström et al 2014, Aziato et al 2015, Khatib and Razvi 2018). There is a consensus in the literature that effective pain measurement requires the consistent use of valid and reliable pain scales (Shugarman et al 2010), and that this will assist in ensuring that pain assessments are reliable and reproducible and have been documented to allow ongoing evaluation of the effects of pain management. In addition, the use of pain scales can provide a common language between the patient and the nurse, enhancing communication and quantifying a subjective phenomenon into objective terms (Wikström et al 2014).

The most commonly cited pain scales include the Visual Analogue Scale, Numerical Rating Scale and Verbal Rating Scale, all of which focus on the intensity of pain (Aziato et al 2015, Faculty of Pain Medicine et al 2019, Kapritsou et al 2019). These scales are reliable and valid, two important methodological principles to consider when establishing the quality of an assessment scale (Polit and Beck 2018), and are also easy to administer and score, taking less than a minute to complete (Shugarman et al 2010, Khatib and Razvi 2018, Faculty of Pain Medicine et al 2019). Figure 1 details three commonly used pain scales.

Figure 1. Commonly used pain scales

Nurse barriers to effective pain assessment

Having established the main principles of a post-operative pain assessment, it is important to understand why nurses often find it challenging to identify, measure and evaluate patients' pain, despite the fact that they spend more time with patients than any other professional group (Bell and Duffy 2009, Ingadóttir and Zoëga 2017, Khatib and Razvi 2018). Ene et al (2008) undertook a two-part, cross-sectional, descriptive study of 218 patients and 41 nurses in two urological surgical wards and found that pain evaluation was inadequate and that nurses failed to ask appropriate questions when administering pain relief. Nurses were more likely to be influenced by patients' behaviour than their self-report of pain, particularly when making decisions about the administration of opioids; nurses also failed to prevent what could be termed 'foreseeable pain' (Ene et al 2008).

A cross-sectional study by Rognstad et al (2012) investigated the self-reported pain management competence of 795 doctors and nurses across five Norwegian hospitals, with 95% of the doctors and 86% of the nurses reporting via a questionnaire that their patients received satisfactory pain relief 'often' or 'very often'. However, these findings contrast with other similar studies (Ene et al 2008, Fredheim et al 2011, Lewthwaite et al 2011), and Rognstad et al (2012) concluded that healthcare professionals may be underestimating patients' pain levels. Furthermore, Rognstad et al's (2012) findings should be treated with caution because the questionnaire administered was not tested for reliability and validity before its administration.

Other studies have also noted examples of suboptimal pain knowledge among healthcare professionals, such as:

- Suboptimal knowledge of pain among nurses (Mackintosh-Franklin 2014).
- Suboptimal use of appropriate pain assessment tools and documentation (Yüceer 2011, Eriksson et al 2014, Chatchumni et al 2016).
- Suboptimal knowledge of the action of analgesics and the associated addiction risks, which contribute to a reluctance to administer opioids (Mackintosh-Franklin 2014, Kiekkas et al 2015).
- A tendency to underestimate patient-reported pain severity and a preference for relying on personal judgement as opposed to patients' self-report (McNamara et al 2012, Kiekkas et al 2015).
- Negative attitudes towards patients' self-reporting of pain (McNamara et al 2012, Kiekkas et al 2015).

Other influential factors that can negatively affect healthcare professionals' pain competence include a lack of time, workload, prioritisation of other tasks and staff shortages (Eriksson et al 2014, Chatchumni et al 2016).

Patient barriers to effective pain assessment

Within the dynamics of the nurse-patient relationship, patients can develop barriers that prevent the effective assessment and management of post-operative pain. Wikström et al (2016) explained that an individual's experience of taking pain medicines in the past can have a negative effect on their future attitudes to analgesia. Furthermore, patients may be reluctant to request analgesics because of concerns about being labelled 'weak' or 'difficult', or being regarded as having a low pain threshold (Bjørnnes et al 2016). Manias et al's (2006) study of patients' pain-related decision-making found that 60% of participants waited to be asked about their pain before requesting analgesia, while other studies found that patients did not want to burden busy healthcare professionals and wanted to be regarded as 'good' patients (Yin et al 2012, Wikström et al 2016).

Another major patient barrier to effective pain assessment relates to their perceptions of the addictive properties of opioids and the side effects of analgesics (Yin et al 2012). Moreover, some patients believe that the effectiveness of analgesics is limited and that they may not continue to work when pain increases (Ingadóttir and Zoëga 2017). It has also been noted that some patients are unable to communicate effectively about their pain due to anxiety about being in hospital, having undergone surgery and experiencing pain. This anxiety will not only affect their cognitive ability, but also their motivation to learn about managing their pain more effectively (Sin and Chow 2015, McCabe 2017). Ingadóttir and Zoëga (2017) maintain

that if patients are equipped with sufficient information about how to deal with their pain, they are likely to experience reduced pain and fewer side effects from taking analgesics.

Management of post-operative pain

Nurses' role in the management of post-operative pain

The evidence suggests that the assessment and management of acute pain are inadequate, a situation that has not improved over the previous two decades (Francke et al 1997, Kapritsou et al 2019).

In the UK, the National Institute for Health and Care Excellence (NICE) has not published specific guidelines on managing post-operative pain. However, in its advice on the use of an opioid analgesic (sufentanil) in moderate-to-severe acute post-operative pain, NICE (2016) recommends that a multidisciplinary approach to acute pain management involving medical consultants and nurse specialists is adopted, which takes into account local policies and protocols (NICE 2016).

Pain is a subjective phenomenon and its management should be considered using a person-centred approach, with the development of an individualised treatment plan (Meissner et al 2015, Jang et al 2019). Nurses are well-placed to assess and manage post-operative pain, and this can begin before surgery takes place with a well-conducted holistic assessment, using a multidimensional tool that examines pain intensity and its effect on a patient's ability to function (Pearce 2019). Evidence suggests that well-controlled pain leads to an improved post-operative experience for patients; this supports the need for nurses to inform patients, before surgery takes place, about what may be considered 'normal' or 'expected' pain (O'Donnell 2015, Subramanian et al 2016, McCabe 2017).

Choice of analgesic

Opioids remain the gold standard treatment for moderate-to-severe post-operative pain (Hallingbye et al 2011), although NICE (2016) emphasises that opioids should not be used for longer than necessary; for example, they should be administered for the duration of tissue healing following injury or trauma and discontinued thereafter.

Hallingbye et al (2011) stated that morphine is the most commonly used opioid because it can be administered via numerous routes such as orally and intravenously, is easily titrated, and remains relatively inexpensive. Post-operatively, most patients are administered analgesia using PCA pumps, which are usually opioid-based (Argoff and McCleane 2009). PCAs deliver a measured dose of analgesics that can be controlled by the patient. They have an inbuilt safety function that prevents accidental overdose and are designed to improve the patient's control of their medicines management.

Manworren et al (2018) noted that post-operative pain was well controlled when the assessment and management was undertaken by nurses who used an evidence-based approach. The researchers advocated a 'multi-modal' approach [Q2. Could you detail what elements this multi-modal approach might include?] to pain management that aimed to prevent acute post-operative pain from becoming chronic.

Due to the perceived risks of dependency involved in the use of opioids, there can be a negativity surrounding their administration for pain management (Yin et al 2012). However, Yin et al (2015) suggested that if nurses have a sound understanding of how to titrate opioids as the patient recovers, and accepts the patient's perceptions of their pain, the benefits of opioids far outweigh the risks involved in their use. De Jong and Shysh (2018) supported the theory that a multi-modal approach to the management of post-operative pain is vital, stating that the dose of opioid can be reduced and ultimately replaced by the use of other adjuvants [Q3. Such as – paracetamol for example?] and nonsteroidal anti-inflammatory drugs (NSAIDs).

Martinez et al (2017) conducted a systematic review of 135 randomised controlled trials, which reported that in the 24-hour post-operative period, paracetamol combined with nefopam hydrochloride (a non-opioid and non-steroidal analgesic) led to a reduced requirement for opioid-based pain relief and NSAIDs alone [Q4. We just wanted to check that we have the correct meaning here – that the combination of paracetamol and nefopam hydrochloride leads to less use of opioids or less use of NSAIDs?]; the combination also provided enhanced pain-relieving properties compared with opioid-containing

analgesics. However, Martinez et al (2017) acknowledged that their study included many small-scale trials as well as those that were conducted in single centres.

Argoff (2014) said pain management that actively targets the surgical site provides an effective approach to acute post-operative pain relief, and recommended an individualised treatment plan. Rawal (2016) stated that regional anaesthetic modalities such as perineural techniques (for example epidurals or nerve block injections), and infiltrative devices for wound management (such as transcutaneous electrical nerve stimulation), are largely underused and undervalued, but support diversity in treating post-operative pain [Q5. We have reordered this sentence – is the sense correct?]. Rawal (2016) also commented that opioids remain the gold standard for post-operative pain relief, despite their acknowledged disadvantages such as dependence, and their associated side effects, which include nausea, drowsiness and constipation. Rawal (2016) added that multi-modal approaches to pain relief should be more widely adopted.

In a large, multi-centred randomised controlled trial of 357 patients, Melson et al (2014) compared the efficacy of sublingual sufentanil with traditional PCA using morphine in the 48-hour period following surgery. It was reported by patients and nurses involved in the patients' care that the sublingual sufentanil provided improved pain relief compared with the PCA. In its summary report on a sublingual form of sufentanil, the European Medicines Agency (EMA) (2019) noted that when dissolved under the tongue, sufentanil provides rapid absorption into the bloodstream, thereby providing rapid pain relief. However, the EMA (2019) also advised that sublingual sufentanil should be used for a maximum of 72 hours post-operatively because of the perceived risks of dependency.

Komann et al (2019) considered the efficacy of non-pharmacological interventions such as acupuncture, cold compresses, meditation and distraction techniques in the immediate post-operative period following surgical procedures such as total knee replacement. The researchers found that according to patients' self-reporting, distraction and cold compresses were the most popular of these non-pharmacological interventions. The evidence base suggests that acupuncture and meditation can be challenging to undertake in an acute surgical setting and there is insufficient data demonstrating that acupuncture provides sufficient post-operative pain relief (Lee and Ernst 2014). Komann et al (2019) concluded that non-pharmacological interventions should not replace analgesic interventions that have been clinically proven to provide optimal pain relief. While further research would be useful in this area, it would be challenging to test the efficacy of non-pharmacological interventions in the immediate post-operative period without any analgesics being used.

Conclusion

Suboptimally managed post-operative pain can lead to a delayed recovery, risk of long-term chronic pain and a reduction in patients' quality of life. Patients' self-reporting of their pain should remain a fundamental component of the nurse's assessment because pain is an individual, subjective phenomenon. Approaches to reduce the nurse and patient barriers to optimal post-operative pain relief should include patient education and the use of valid pain assessment tools. The implementation of a multi-modal approach to pain management, as well as the use of opioids post-operatively, remains the gold standard treatment for post-operative pain. There is a need for evidence-based nurse education in post-operative pain assessment and management, particularly in the areas of opioid dependency and side effects.

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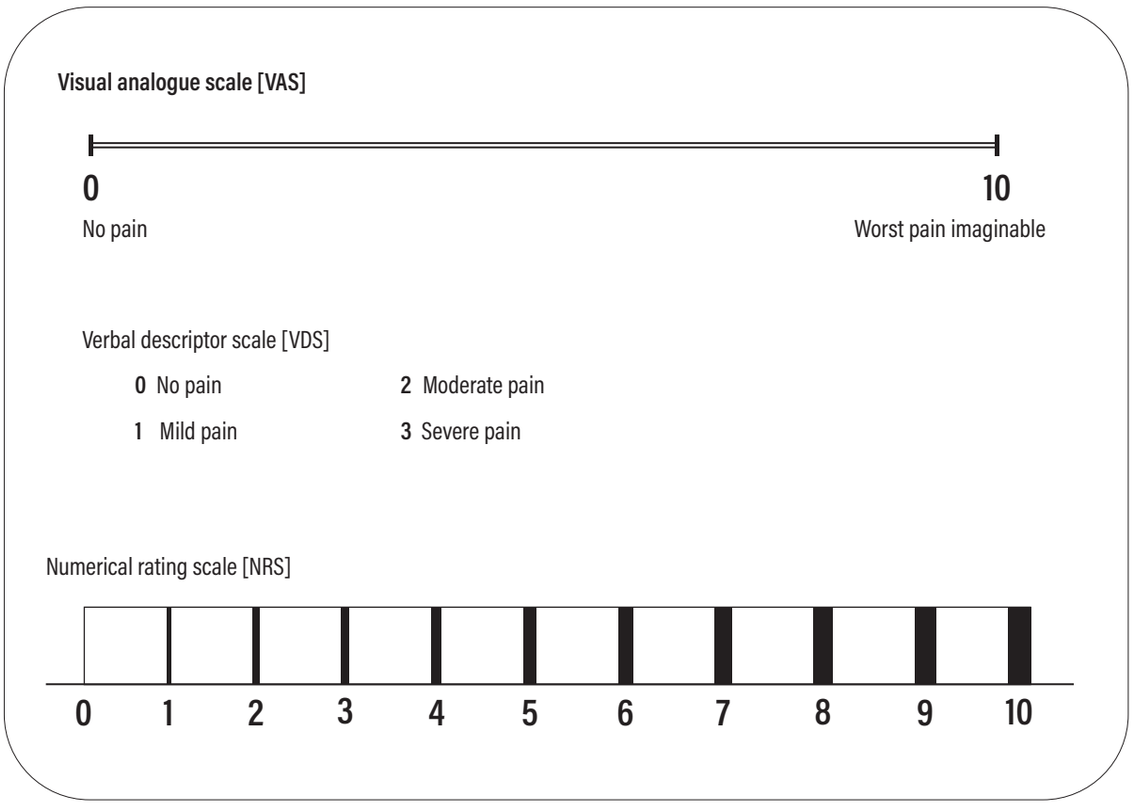
Figure 1.



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