Managing stress and pain to prevent patient discomfort, distress and delayed wound healing

Evidence suggests stress slows the healing of wounds but pain may also play a part. Regular assessment could improve patients’ quality of life and recovery time.

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Acute and chronic wounds can cause considerable pain and discomfort for patients. They can also cause significant stress which is often associated with an individual’s response to physical and emotional threats (Ice and James, 2007). Prolonged stress can have a detrimental effect on health and cause a number of psychological and physiological symptoms, for example, poor coping and reduced immune function.

A recent review of stress and wound healing studies found that stress is associated with impaired wound healing and that this is consistent across a variety of clinical and experimental studies, and acute and chronic wound types (Walburn et al, 2009). Both pain and stress can impact on wound healing and psychological wellbeing (Solowiej et al, 2009); this can also negatively affect patients’ quality of life (QoL).

Although there is considerable evidence suggesting a link between stress and delayed wound healing, little is known about how pain may influence this relationship. This is important because if nurses can reduce pain (and/or stress), patients’ QoL and rate of healing could improve.

EXPERIENCE OF PAIN Experience of pain is highly subjective and can be influenced by psychological, emotional and social factors. Pain is a personal experience, for example, while a dressing change may be excruciatingly painful for some patients, it may be only mildly painful for others.

Wound pain can result from the wound itself but can also be caused by treatments that are administered for the underlying condition (Solowiej et al, 2009). It is well established that psychological factors, including stress and anxiety, can play a role in the perception of pain – for example, under conditions of increased stress, the anticipation of pain at dressing change can lead to an increase in pain severity (Melzack and Wall, 1996).

Kammerlander and Eberlein (2002) conducted a survey of nurses’ views about wound pain and trauma. The majority perceived dressing removal and wound cleansing as the most painful wound treatment procedures. In addition, a multinational survey of the assessment of pain at dressing change from patients’ perspectives revealed similar findings (White, 2008). A consistent trend emerged to suggest that pain levels (measured using the visual analogue scale) increased considerably during dressing removal compared with pain scores taken just before the treatment began. Likewise, results obtained from an international survey of dressing related pain revealed that more than 62% of patients reported their pain took up to two hours to subside after a dressing change (Price et al, 2008). In this study 40% of patients also indicated that the pain at dressing change was the worst part of living with a wound.

Stress and wound healing

The physiological processes involved in wound healing (Ebrecht et al, 2004; Broadbent et al, 2003; Altemus et al, 2001) have also been studied and the impact that stress can have on healing clearly demonstrated. For example, stress can increase the production of the hormone cortisol and, if this increase is maintained, wound healing can be impaired (Sivamaniet al, 2009). Raised levels of cortisol can lead to myopathy, weakness, fatigue and a suppressed immune function (Melzack and Wall, 1996).

It is known that stressors such as pain can cause a set of physiological responses, for example elevated cortisol levels, heart rate, blood pressure and respiration rate, which can impact on skin physiology (Altemus et al, 2001). As a physical and psychological stressor itself, pain may put patients at a greater risk of delayed healing (Christian et al, 2007). Research evidence has shown an association between stress and reduced immune function, which can be detrimental to wound healing. For example, punch biopsy wounds took almost 1.25 times longer to heal in a sample of women caring for a relative with Alzheimer’s disease, than in a matched pair control group (Kiecolt-Glaser et al, 1995). Similarly, Ebrecht et al (2004) found that high stress scores were negatively correlated with the speed of wound healing. In addition to this, results of cortisol samples taken from participants revealed that as cortisol levels increased, the speed of wound healing decreased. These findings suggest that stress can impact on wound healing, and that increased cortisol levels play a role in this.

PRACTICE POINTS

The following techniques can help reduce pain and stress during wound treatments:

● Interacting with, and listening to, patients;
● Encouraging them to articulate their pain experience;
● Implementing coping strategies (focus or distraction techniques);
● Using warm cleansing solutions;
● Encouraging patients to participate in their own dressing removal;
● Ensuring correct selection and application of dressings;
● Regularly reviewing the frequency and necessity of dressing changes.

Source: adapted from Hollinworth (2005)
In studies of patients with acute surgical wounds there is also evidence about the relationship between stress and wound healing. Broadbent et al (2003) found high levels of preoperative stress in patients undergoing inguinal hernia surgery were associated with lower levels of proinflammatory cytokines in the wound fluid. It is known that wound inflammation is needed to clear debris and infection but, if levels of proinflammatory cytokines are reduced, this process may cause damage that delays healing (Bosh et al, 2007). On the other hand, Holden-Lund (1988) demonstrated that surgical patients who had undergone a relaxation intervention experienced significantly less anxiety and lower cortisol levels one day after their surgery compared with a control group. This indicates that implementing an intervention to reduce stress could be associated with faster wound healing.

A study investigating the impact of stress on chronic wound healing demonstrated that delayed healing was associated with higher anxiety and depression scores (Cole-King and Harding, 2001). Patients who were categorised in the top 50% of scores were found to be four times more likely to experience delayed healing than those in the bottom 50%. Similarly, a study exploring the prevalence of anxiety and depression in people with chronic leg ulceration categorised 27% of participants as being depressed and 26% as suffering from anxiety (Jones et al, 2006).

The findings of these studies suggest stress can contribute to delays in healing. Moreover, stress can affect the healing in both psychological and physiological ways. However, evidence suggests pain can influence the relationship between stress and wound healing.

**ASSESSING STRESS AND PAIN**

The literature provides evidence supporting the relationship between stress and wound healing. Although less is known about the influence of pain in this relationship, it is important for nurses to acknowledge both pain and stress in clinical practice. If pain and stress are assessed and managed effectively during wound care, this could contribute to faster wound healing.

A number of methods are widely used in experimental settings to measure and assess pain and stress; these could be used by nurses as part of routine wound care. It is beneficial to measure pain and stress in patients before, during and after wound treatments such as dressing changes, to determine any differences in symptom severity.

Physiological symptoms of stress, such as increased heart rate, blood pressure and respiration rate, can be measured fairly easily using methods that may already be part of routine wound care. These assessments should be accompanied by other stress measures, however, to eliminate alternative causes (increased heart rate or blood pressure could be due to many factors).

Alongside these physiological indicators, psychological measures of stress can be used, which are designed to obtain emotional responses from patients self-reporting their personal experience of stress. There are many different types of psychological tools for measuring stress, for example the Perceived Stress Scale (Cohen, 1983), which is a self-report questionnaire that measures the extent to which situations in patients’ lives, such as dressing change, are perceived as stressful. This measure has been widely used in experimental settings and is recommended for use in clinical practice. An advantage is that it focuses on patients’ appraisal of stressful situations as opposed to the number of stressful situations experienced by an individual. However, patients are instructed to complete the items with reference to how they have been feeling over the past month, which may not measure stress specifically associated with wound treatments.

Other examples of psychological measures of stress include the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snith, 1983) and the State Trait Anxiety Inventory (STAI) (Speilberger, 1968). Both are suitable for nurses to use to measure anxiety (a reaction to stress) in clinical practice. The STAI consists of items that measure specific causes of anxiety such as dressing change, as well as items that measure more general long-term anxiety traits. Similarly, HADS allows for the assessment of specific anxiety.

If pain, as a stressor, has the potential to contribute to delays in wound healing, then accurate and frequent assessment of pain should be incorporated into routine wound care. A review of pain and wound care studies identified that nurses consistently rated patients’ experiences of pain lower than patients did themselves (King, 2003). This suggests that more attention should be paid to patient feedback during the wound care process.

It is apparent from the literature that both patients and nurses regard dressing change and cleansing as the most painful wound treatments. Pain can be measured using a variety of self-report methods, such as rating scales. These include verbal, numerical, and visual analogue scales (Fig 1), all of which require patients to rate their level of pain using either numbers or describing words, or placing a cross on a line to indicate its severity.

Pain can also be assessed using multidimensional measures, for example the McGill Pain Questionnaire (MPQ) (Melzack, 1995). As well as measuring pain intensity, the items in this questionnaire are designed to assess different components of reported pain, how pain changes over time, and the factors that relieve or increase it. As a result of this, the MPQ is sensitive to treatment-related changes and can produce information on the specific effects of a treatment on the sensory, affective and evaluative dimensions of pain.
Implications for nursing practice
The effect of stress on wound healing has been demonstrated in many studies and this needs to be taken into account when caring for patients with wounds in clinical practice. Despite the limited evidence for the role of pain in this relationship, both stress and pain should be assessed and managed during the wound care process to prevent patient discomfort, distress and delayed healing.

A thorough person-centred assessment is essential to provide sensitive and effective management of wound pain (Hollinworth, 2005). Nurses need to observe patients’ behaviour (both verbal and non-verbal) as well as implementing standard assessments as this can help to identify signs of pain and stress. Such signs are outlined in Table 1.

Both psychological and physiological measures, as well as patient feedback on their perception of stress and pain, can be used to monitor changes associated with stress and pain. Such routine assessments at the start of, and during, treatments should be carried out, to ascertain patients’ individual needs, such as effective pain relief (White, 2008).

In order to maintain patient comfort and trust in nursing care, patients should be encouraged to participate in their wound care. In an international dressing related pain survey (Price et al, 2008), more than 80% of patients reported that they liked to be actively involved in dressing changes. They felt it was beneficial to receive effective analgesics, and for nurses to be careful and gentle with their wound. In addition to this, many patients noted the importance of communication during wound treatment.

In particular, they valued being listened to, consulted with and distracted from wound care procedures.

The correct selection of dressings can also contribute to improving pain, stress and QoL. The World Union of Wound Healing Societies (WUWHS) (2007) identified that soft silicone adhesive dressings are advantageous compared with the other dressing types because they produce minimal pain and trauma at dressing changes, provide good adherence to the skin without strong bonding, stick instantly to the skin, and are easy to remove to check the wound and then reapply (WUWHS, 2007). White (2008) also found that such dressings could significantly reduce pain at dressing change.

REFERENCES

Table 1. Behavioural signs of pain and stress (Feldt, 2000)

<table>
<thead>
<tr>
<th>Pain</th>
<th>Vocal expressions: moans, grunts, sighs, gasps</th>
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<tbody>
<tr>
<td></td>
<td>Facial expressions: winces, grimaces, furrowed brow, tightened lips, jaw drop, clenched teeth</td>
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<tr>
<td></td>
<td>Bracing: clutching/holding bedrails, tray or table, or affected area of pain</td>
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<td></td>
<td>Restlessness: shifting position, hand movements, unable to keep still</td>
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<td></td>
<td>Rubbing: touching, holding, rubbing or massaging affected area</td>
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TABLE 1. BEHAVIOURAL SIGNS OF PAIN AND STRESS (FELDT, 2000)

CONCLUSION
Nursing care is vital to safe pain relief and to optimal wound healing. There is increasing evidence supporting a relationship between stress and the delayed healing of wounds, suggesting that successful stress assessment and management during wound care will prevent delays in healing.

Minimising pain could reduce its effect as a stressor; however, research is needed to demonstrate the role of pain in the relationship between stress and wound healing. Despite this, assessment and management of pain and stress as part of routine wound care could provide the basis for faster wound healing and improved QoL for patients who have acute and chronic wounds.

Nursing Times 27 April 2010 Vol 106 No 16 www.nursingtimes.net