

Pain-induced stress in wound care, part 2: assessment and management

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Previous research has demonstrated the relationship between stress and wound healing, and provided evidence for the influence of pain (Solowiej et al, 2009). As a result, it is important for healthcare assistants (HCAs) to acknowledge both pain and stress in clinical practice (Solowiej and Upton, 2010). Successful assessment and management of pain and stress during wound care has the potential to promote a faster and more comfortable wound healing experience for patients. In clinical practice, it would be beneficial to measure pain and stress before, during and after wound treatments (for example, dressing changes) to establish a patient's pain and stress symptoms. In comparison with baseline measures, these assessments can facilitate understanding of the severity of patients' individual pain and stress experiences during wound care. A variety of methods have been widely used in research to measure pain and stress, and these could be implemented in clinical practice.

Assessment of stress and pain

Observation of patients' behaviour can allow HCAs to identify verbal and behavioural signs of pain and stress. Feldt (2000) developed a checklist of non-verbal pain indicators (*Box 1*). Behavioural signs of stress often include increased breathing rate, muscle tension, sweating palms, a dry mouth, a tense voice, pale skin, and avoidance behaviour, which is a conscious or unconscious defence mechanism, by which an individual tries to escape or avoid an unpleasant

Box 1. Checklist of non-verbal pain indicators

- Vocal expressions (moans, groans, cries or gasps)
- Facial expressions (wincing, narrowed eyes, grimaces or clenched teeth)
- Bracing (clutching bed rails or the painful area)
- Restlessness (hand movements or unable to remain still)
- Rubbing (touching, holding or rubbing the affected area).

Source: Feldt (2000)

Abstract

Pain and stress can be detrimental to wound healing. This article, which is the second and last in a series, discusses how healthcare assistants should focus on the assessment and management of pain in order to promote faster healing of wounds, particularly those that are chronic in nature.

Key words

- Stress Pain Wound healing
- Delayed healing Assessment Management

situation, such as anxiety or pain. (Solowiej et al, 2010). Behavioural signs of stress and pain can be very similar. It is therefore important that HCAs can recognize these during wound care.

Measures of stress can include both psychological and physiological methods. Psychological methods involve questionnaires that assess patients' emotional responses to their condition. Some examples of psychological measures that would be appropriate for use in clinical practice are provided in *Table 1*.

However, questionnaires can sometimes cause patients to report high levels of stress in order to meet the expectations of the HCA. Similarly, patients may answer questions in a certain way, such as selecting the middle options on a rating scale rather than the extreme responses (Johnson et al, 1995). In order to counteract this, physiological measures of stress can accompany psychological assessments, as they are less likely to be influenced by social biases (*Table 2*). Some physiological measures are likely to be part of routine wound care already. These can therefore be used in addition to questionnaires to establish a patient's psychological state.

It is also important for HCAs to measure pain during wound care to understand the experience of individual patients. Effective pain assessment will enable the selection of appropriate pain management techniques, with a view to minimizing the stress. Methods of assessing pain often include a rating scale for patients to indicate the amount of pain they are experiencing (*Table 3*).

Table 1. Psychological measures of stress

Psychological Measures	Purpose
The Perceived Stress Scale (PSS) (Cohen, 1983)	<ul style="list-style-type: none"> ● This questionnaire is designed to measure the degree to which patients perceive situations as stressful ● Patients are required to indicate how often they have thought or felt a certain way during the last month ● Higher scores indicate greater stress
The State Trait Anxiety Inventory (STAI) (Spielberger, 1963)	<ul style="list-style-type: none"> ● This double-sided form is designed to measure state and trait anxiety ● Two scores are obtained overall: one for the condition of temporary state anxiety and one for the condition of long-term trait anxiety
The General Health Questionnaire (GHQ) (Goldberg, 1992)	<ul style="list-style-type: none"> ● The GHQ was developed to assess non-psychotic psychiatric disorder in patients in community and clinical settings ● Patients are asked whether they have experienced specific behaviours or symptoms using a rating scale ● Higher scores indicate higher emotional distress
The Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith, 1983)	<ul style="list-style-type: none"> ● This questionnaire was designed for use in medical outpatient settings to identify cases of anxiety and depression ● Higher scores indicate greater anxiety or depression.

Management of stress and pain

As it has been established that unresolved pain, leading to stress, can result in prolonged wound healing (Reddy et al, 2003). Every patient should have regular pain and stress assessment. Woo et al (2007) found that the implementation of clear, concise best practice guidelines were shown to significantly improve patients' reported pain scores (on a numerical scale). At the start of the study, 61.3% of patients from a sample of 111 reported that pain was a significant problem with their wound. After best practice guidelines were introduced, average pain ratings decreased from 6.3 at week 1 to 2.8 at

week 4. In addition to this, wound healing was found to have significantly improved in patients receiving suitable pain management.

Pain and stress can be managed in a number of ways to facilitate faster wound healing. White (2008) has shown that the selection of appropriate dressings can significantly reduce pain at dressing change. Dressings that do not cause further trauma or damage to the wound and surrounding skin will facilitate a reduction in pain caused by dressing removal (World Union of Wound Healing Societies (WUWHS), 2007). HCAs should have a good understanding of the dressings that are selected for

Table 2. Physiological measures of stress

Physiological measure	Purpose
Salivary cortisol sampling	<ul style="list-style-type: none"> ● Cortisol is a hormone present in the saliva that is associated with stress ● Saliva can be collected easily using swabs ● Higher levels of cortisol indicate greater levels of stress
Heart rate	<ul style="list-style-type: none"> ● Increased heart rate is a symptom associated with stress ● The body responds to stress and prepares for 'fight or flight' ● Heart rate can be monitored over time (for example, before and after treatment)
Blood pressure	<ul style="list-style-type: none"> ● High blood pressure is a stress-related physiological symptom ● Similar to heart rate, blood pressure can be measured at intervals over a period of time
Galvanic skin response (GSR)	<ul style="list-style-type: none"> ● GSR is a measure of sweat gland activity associated with the body's stress response ● Increased GSR is associated with greater stress ● Non-invasive electrodes are attached to the fingertips or palms to measure GSR.

Table 3. Pain assessment methods

Pain measure	Purpose
McGill Pain Questionnaire (MPQ)	<ul style="list-style-type: none"> ● Multidimensional measure that assesses the different components of pain ● Assesses how pain changes over time ● Identifies factors that relieve or worsen pain
Verbal or Numerical Pain Rating Scale	<ul style="list-style-type: none"> ● Includes a measure of pain intensity ● Scale consists of a list of describing words (no pain-severe pain) or numbers (0–10) ● Patient is required to indicate his or her current level of pain using the scale ● Higher scores indicate more intense pain
Visual Analogue Scale	<ul style="list-style-type: none"> ● Patients are asked to draw a cross on an unmarked line with pain descriptors at each end ● Unlike verbal and numerical scales, patients are less likely to recall previous ratings, which reduces the effects of practice bias

Source: Melzack, 1995

individual patients, and suitable methods of application and removal to ensure pain is minimized at dressing change. Techniques including soaking old dressings to facilitate removal, selecting non-traumatic dressings and the use of dressings that offer pain free removal can also contribute to pain relief (European Wound Management Association (EWMA), 2003).

Previous research has explored the effect of different strategies to cope with pain and stress. Miller et al (1992) demonstrated the effects of a distraction technique on patients with burn pain. Patients were shown a video of picturesque scenery accompanied by music during their dressing changes to distract them from their pain experience. Pain was assessed using the McGill Pain Questionnaire (MPQ) and anxiety was measured using the State Trait Anxiety Inventory (STAI). It was found that patients who were distracted from their dressing change reported significantly lower pain and stress scores than a control group who did not receive a distraction therapy. This suggests that if patients show a preference for distraction during wound treatments, then coping techniques of this nature would be beneficial for managing pain and stress. In a community setting, this technique could be administered by allowing patients to watch the television or listen to music while they undergo wound treatment.

Alternatively, coping strategies can also include focusing on the sensory aspects of wound treatment. For example, during wound cleansing, patients could be encouraged to focus on the sensations of the cleansing solutions as opposed to the pain caused by this treatment. Keogh and Mansoor (2001) demonstrated the effects of the sensory focus technique to minimize pain among a sample of female participants. Results showed that participants reported greater pain when asked to ignore it

in comparison to participants who were asked to focus on the sensations of a cold compress. These findings indicate that encouraging patients to focus on other sensations can help to reduce pain caused by wound treatments.

As well as reducing pain during wound care, interventions should be implemented to minimize patient stress. Research has shown that social support can facilitate a reduction in psychological stress. The ‘direct effects’ hypothesis highlights that social support can reduce the risk of illness as it can influence a patient’s perception of control and available coping resources (Brown, 2008). Building upon this, the ‘buffering’ hypothesis explains that social support networks (such as family and friends) can help to improve wellbeing and act as a defence against the negative impact of stress (Carver, 2008). Examples of social support interventions are Leg Club environments, which enable patients to socialize with individuals who share similar experiences. Wound healing and recurrence can improve when patients are educated and maintain contact with wound care professionals and other patients at leg ulcer clinics (Edwards et al, 2005; Brown, 2008). This suggests that social support can help to reduce stress and promote patient wellbeing.

Conclusion

Methods of assessing stress and pain should be incorporated into the wound care process to improve patient care and resource costs. Furthermore, social support interventions should be investigated further to explore the impact on healing and recurrence rates, in addition to wound treatment.

Future research should focus on the role of pain in the relationship between stress and delayed wound healing. Interventions and techniques to minimize stress and pain that could be incorporated easily into wound care should

also be investigated in order to facilitate faster wound healing and promote patient wellbeing. BIHCA

- Brown A (2008) Does social support impact on venous ulcer healing or recurrence? *Br J Comm Nurs* **13**(3): S6–S10
- Carver C (2008) Buffering hypothesis. Available at: www.blackwellreference.com/public/tocnode?id=g9780631202899_chunk_g9780631202899_ss1-12 (accessed 23 August 2010)
- Cohen S (1983) *The Perceived Stress Scale (PSS)*. NFER Nelson, London
- Edwards H, Courtney M, Finlayson K, Lewis C, Lindsay E, Dumble J (2005) Improved healing rates for chronic venous leg ulcers: pilot study results from a randomized controlled trial of a community nursing intervention. *Inter J Nurs Pract* **11**: 169–176
- European Wound Management Association (EWMA) (2003) *Position Document: Pain at Wound Dressing Changes*. Medical Education Partnership Ltd, London
- Feldt K (2000) The checklist of non-verbal pain indicators. *Pain Manage Nurs* **1**(1): 13–21
- Goldberg D (1992) *General Health Questionnaire (GHQ-12)*. NFER Nelson, London
- Johnston M, Wright S, Weinman J (1995) *Stress, Emotion and Life Events*. NFER Nelson, London
- Keogh E, Mansoor L (2001) Investigating the effects of anxiety sensitivity and coping on the perception of cold pressor pain in healthy women. *Eur J Pain* **5**(1): 11–22
- Melzack R (1995) *McGill Pain Questionnaire (MPQ)*. NFER Nelson, London
- Miller AC, Hickman LC, Lemasters GK (1992) A distraction technique for control of burn pain. *J Burn Care* **13**(5): 576–580
- Reddy M, Kohr R, Queen D, Keasy D, Sibbald RG (2003) Practical treatment of wound pain and trauma: a patient-centred approach. An overview. *Ostomy Wound Management* **49**(1): 44–53
- Solowiej K, Mason V, Upton D (2009) Review of the relationship between stress and wound healing: part 1. *J Wound Care* **18**(9): 357–366
- Solowiej K, Mason V, Upton D (2010) Assessing and managing psychological stress and pain in wound care: part 2, pain and stress assessment. *J Wound Care*. **19**(3): 56–61.
- Solowiej K, Upton D (2010) Managing stress and pain to prevent patient discomfort, distress and delayed wound healing. *Nursing Times* **106**(16): 21–23
- Spielberger CD (1963) *State Trait Anxiety Inventory (STAI)* Oxford Psychologists Press, Oxford
- White R (2008) A multinational survey of the assessment of pain when removing dressings. *Wounds UK* **4**(1): 1–6.
- Woo K, Alavi A, Botros M, et al (2007) A transprofessional comprehensive assessment model for persons with lower extremity leg and foot ulcers. *Wound Care Canada* **5**: S34–S47
- World Union of Wound Healing Societies (2007) *Principles of Best Practice: Minimising Pain at Dressing-related Procedures. A Consensus Document*. WUWHS, London
- Zigmond AS, Snaith RP (1983) *The Hospital Anxiety and Depression Scale (HADS)* NFER Nelson, London

Key Points

- Observation of behavioural signs of pain and stress can help HCAs to understand patients' experiences of wound care.
- Interaction with patients can encourage patients to articulate their pain experience.
- HCAs should administer pain and stress assessment tools in routine wound care.
- Effective assessment can lead to successful management of pain and stress, which can facilitate wound healing.
- Minimizing pain is essential for promoting patient comfort and improved wound healing.