

Dressing-related pain in patients with chronic wounds: an international patient perspective

Patricia E Price, Hilde Fagervik-Morton, Elizabeth J Mudge, Hilde Beele, Jose Contreras Ruiz, Theis Huldts Nystrøm, Christina Lindholm, Sylvie Maume, Britta Melby-Østergaard, Yolanda Peter, Marco Romanelli, Salla Seppänen, Thomas E Serena, Gary Sibbald, Jose Verdú Soriano, Wendy White, Uwe Wollina, Kevin Y Woo, Carolyn Wyndham-White, Keith G Harding

Price PE, Fagervik-Morton H, Mudge EJ, Beele H, Ruiz JC, Nystrøm TH, Lindholm C, Maume S, Melby-Østergaard B, Peter Y, Romanelli M, Seppänen S, Serena TE, Sibbald G, Soriano JV, White W, Wollina U, Woo KY, Wyndham-White C, Harding KG. Dressing-related pain in patients with chronic wounds: an international patient perspective. *Int Wound J* 2008;5:159–171.

ABSTRACT

This cross-sectional international survey assessed patients' perceptions of their wound pain. A total of 2018 patients (57% female) from 15 different countries with a mean age of 68.6 years (SD = 15.4) participated. The wounds were categorised into ten different types with a mean wound duration of 19.6 months (SD = 51.8). For 2018 patients, 3361 dressings/compression systems were being used, with antimicrobials being reported most frequently ($n = 605$). Frequency of wound-related pain was reported as 32.2%, 'never' or 'rarely', 31.1%, 'quite often' and 36.6%, 'most' or 'all of the time', with venous and arterial ulcers associated with more frequent pain ($P = 0.002$). All patients reported that 'the wound itself' was the most painful location ($n = 1840$). When asked if they experienced dressing-related pain, 286 (14.7%) replied 'most of the time' and 334 (17.2%) reported pain 'all of the time'; venous, mixed and arterial ulcers were associated with more frequent pain at dressing change ($P < 0.001$). Eight hundred and twelve (40.2%) patients reported that it took <1 hour for the pain to subside after a dressing change, for 449 (22.2%) it took 1–2 hours, for 192 (9.5%) it took 3–5 hours and for 154 (7.6%) patients it took more than 5 hours. Pain intensity was measured using a visual analogue scale (VAS) (0–100) giving a mean score of 44.5 (SD = 30.5, $n = 1981$). Of the 1141 who reported that they generally took pain

Authors: PE Price, PhD, Department of Wound Healing, School of Medicine, Cardiff University, Cardiff, UK; H Fagervik-Morton, MSc, Department of Wound Healing, School of Medicine, Cardiff University, Cardiff, UK; EJ Mudge, MSc, Department of Wound Healing, School of Medicine, Cardiff University, Cardiff, UK; H Beele, PhD, Dienst Huidziekten, UZ Gent, Belgium; JC Ruiz, MD, Clínica Interdisciplinaria de Cuidado de Heridas y Estomas, Hospital General 'Dr. Manuel Gea Gonzalez', Mexico City, México; TH Nystrøm, MD, Hudpoliklinikken i Namsos, Norway; C Lindholm, PhD, Department of Clinical Nursing, Kristianstad University, Kristianstad, Sweden; Sylvie Maume, MD, Hospital Charles Foix, Ivry sur Seine; B Melby-Østergaard, RN, Copenhagen Wound Healing Centre, Bispebjerg Hospital, Copenhagen; Yolanda Peter, RN, Fachleiterin Wundbehandlung, Bulach; M Romanelli, MD, Dipartimento di Dermatologia, Ospedale Santa Chiara, Via Roma, Pisa, Italy; S Seppänen, MNSc, Head of Health Department, Mikkeli University of Applied Sciences, Mikkeli; TE Serena, MD, Pennsylvania North Centre for Advanced Wound Care, Warren, PA, USA; G Sibbald, MD, Women's College Hospital, Toronto, Canada; J Verdú Soriano, PhD, Department of Community Nursing, Preventive Medicine, Public Health and History of Science, School of Nursing, University of Alicante, Alicante, Spain; W White, RN, Monash University, Wound Foundation of Australia/NSW Branch, Sydney, NSW, Australia; U Wollina, MD, Department of Dermatology and Allergology, Hospital Dresden-Friedrichstadt, Dresden; KY Woo, MSc, Women's College Hospital, Toronto, Canada; C Wyndham-White, RN, HEdS Geneva, Switzerland; KG Harding, FRCS, Department of Wound Healing, School of Medicine, Cardiff University, Cardiff, UK

Address for correspondence: Professor PE Price, Department of Wound Healing, School of Medicine, Cardiff University, Cardiff CF14 4XN, UK

E-mail: pricepe@cardiff.ac.uk

Key Points

- there has been growing evidence that the experience of living with a chronic wound has a huge impact on a patient's quality of life
- the integration of the physiological and psychological aspects of pain in a single model mirrors the broader change in clinical practice away from a purely medical approach towards holistic patient care
- evidence exists across many health states that there is a major gap between an increasingly sophisticated understanding of the pathophysiology of pain and widespread inadequate pain management
- although only limited work has been completed on pain in chronic wounds, much of this has focused on pain at dressing change
- one of the ways in which manufacturers are attempting to limit the potential for pain on dressing removal is by the use of alternative adhesives for atraumatic dressings
- although work has been completed on the views of health care professionals and their perception of patient pain experiences, little research has been completed to gain the views of patients directly
- the potential for making errors during the pain assessment procedure is vast, particularly if we are not aware of the cultural norms within which our patients or we are operating
- this is the report of the second phase of a two phase study on the understanding of patients experiences of pain related to living with chronic wounds
- this part of the study aimed to:
- explore the extent of problems related to pain and dressing-related procedures
- compare pain experiences between wound types (wounds of the lower leg and foot) across a range of countries

relief, 21% indicated that they did not feel it was effective. Patients were asked to rate six symptoms associated with living with a chronic wound; 'pain' was given the highest mean score of 3.1 ($n = 1898$). In terms of different types of daily activities, 'overdoing things' was associated with the highest mean score (mean = 2.6, $n = 1916$). During the stages of the dressing change procedure; 'touching/handling the wound' was given the highest mean score of 2.9, followed by cleansing and dressing removal ($n = 1944$). One thousand four hundred and eighty-five (80.15%) patients responded that they liked to be actively involved in their dressing changes, 1141 (58.15%) responded that they were concerned about the long-term side-effects of medication, 790 (40.3%) of patient indicated that the pain at dressing change was the worst part of living with a wound. This study adds substantially to our knowledge of how patients experience wound pain and gives us the opportunity to explore cultural differences in more detail.

Key words: Chronic wound pain • Dressing change • International views • Patient experience

INTRODUCTION

In recent years there has been growing evidence that the experience of living with a chronic wound has a huge impact on a patient's quality of life (1,2). One of the consistent findings, particularly in the qualitative work that has been completed, is that pain is one of the symptoms that patients find particularly distressing (3–5).

Pain is a universal experience and there is little debate that pain is undeniably subjective and individual (6). Very early pain research emphasised the mechanical nature of pain, such as the withdrawal of the relevant body part from the noxious stimulus as a result of nerve activation (7). However, the Gate Control Theory (8) finally acknowledged the role of brain processes in the perception of pain that helped to explain how injured athletes can continue to compete without noticing pain, while raised anxiety can result in the experience of pain without any apparent injury. The integration of the physiological and psychological aspects of pain in a single model mirrors the broader change in clinical practice away from a purely medical approach towards holistic patient care.

Health professionals are now starting to recognise the importance of addressing the issue of wound pain, as evidenced by the European Wound Management Association Position Document (9) on pain, the dedication of a supplement of Ostomy Wound Management to this topic (10) and the Consensus Document on Minimising Pain at Wound dressing-related procedures launched at the World Union of Wound Healing Societies meeting (11). However, evidence exists across many health states that there is a major gap between an increasingly sophisticated understanding of the pathophysiology of pain and widespread inadequate pain management (6).

Although only limited work has been completed on pain in chronic wounds, much of this has focused on pain at dressing change. In a multinational survey, practitioners consistently rated dressing removal as the time of greatest pain (12). It is understandable why this should be the initial point of interest; we all have memories of gauze-based dressings sticking to childhood injuries and the distraction techniques our parents used to stop us from crying. Given that patients with leg ulcers are usually elderly with particularly fragile skin, the removal of dressings that stick to the wound may well be the most painful part of the dressing procedure (13). Adding to this the potential impact of dressings on trauma to the surrounding skin, the drive to produce a dressing that is almost painless to remove with little or no impact on the surrounding tissue is to be applauded. One of the ways in which manufacturers are attempting to limit the potential for pain on dressing removal is by the use of alternative adhesives for atraumatic dressings.

Although work has been completed on the views of health care professionals and their perception of patient pain experiences, little research has been completed to gain the views of patients directly. Differences in personal, familial and cultural backgrounds can lead to great variation in the experience and expression of pain by individuals (14). The potential for making errors during the pain assessment procedure is vast, particularly if we are not aware of the cultural norms within which our patients or we are operating.

This is the report of the second phase of a two-phase study on the understanding of patients experiences of pain related to living with chronic wounds. Phase I was a qualitative phase conducted in three countries that formed the basis of the questionnaire to be used in Phase II: the data from this phase has been presented (15).

This part of the study aimed to

- Explore the extent of problems related to pain and dressing-related procedures
- Compare pain experiences between wound types (wounds of the lower leg and foot) across a range of countries

METHODS

A patient survey was conducted in 15 countries (Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Mexico, Norway, Spain, Sweden, Switzerland, UK and the US). Participants were asked to complete a questionnaire, developed following a qualitative phase of the study (15). This was a cross-sectional, descriptive questionnaire design, providing predominantly quantitative data. The draft questionnaire was piloted on ten patients with chronic wounds, but only minor amendments were needed. The questionnaire was translated through expert linguists in each of the relevant countries, with substantial experience of medical related translation: all regional questionnaires were back-translated into English to confirm accuracy.

Sample

Each country identified a national coordinator who agreed to take part in the survey, who asked nurses or physicians from their respective professional wound care societies to participate. The aim was to encourage nurses or physicians from a range of locations to participate in order to get a sample that was reflective of the geographical and socioeconomic factors relevant to each country: a total target sample of 2000 was sought. It was anticipated that a substantial number of health professionals in each country would agree to participate and each nurse/physician was asked to invite up to ten patients from their caseload to participate.

Patients over the age of 18 years with an active, chronic wound, who were able and willing to participate and who had experienced discomfort/pain related to their chronic wound within the previous month were eligible for participation. Wherever possible, the patients were asked to complete the questionnaires independently; however, the relevant nurse/physician/health care volunteer could assist with the process by reading the questions if necessary: however, all participating nurses or physicians were asked

not to complete the questionnaire to reflect their own views of the patients' experiences. The inclusion criteria were deliberately broad to ensure that the full range of patients with these wound types could participate.

Procedure

All nurses or physicians who agreed to participate in the study were asked to ensure that the appropriate permissions were in place for their facility. Nurses or physicians were given written instructions related to the procedure; a country-specific telephone number and email address was provided in order to answer specific questions that arose.

Nurses or physicians were encouraged to explain the procedure to the patient and leave the questionnaire for the patient to complete in their own time, collecting the questionnaire at the same visit. In exceptional circumstances, when this process was difficult, the patient could be provided with a stamped addressed envelope to return the questionnaire (although this option was not used during the data collection). If the patient required help with completing the questionnaire, the nurse or physician was asked to complete this task with the patient after the clinical part of the visit was completed. Each member of staff was asked to ensure that the questionnaire had been fully completed and that the free text was readable. The national coordinator agreed the details of the process for their own country and ensured that the text was translated into English before returning the forms for analysis. All data were collected between March and October 2007.

Ethical issues

All necessary permissions were sought for this phase of the study from the relevant ethical review committees in each country. Participation was entirely voluntary and patient care was not affected in any way by their decision to participate or to choose not to participate. Patients were not mentioned specifically by name or referred to in any way and any papers based on the study will only include summary data related to the way in which responses reflect the comments made by participants. Data were kept in locked filing cabinets and accessed only by those directly involved with the analysis of data and the lead investigators in each country. Original data will be kept for 6 months after the final publications are prepared and then destroyed.

Key Points

- a patient survey was conducted in 15 countries
- this was a cross-sectional, descriptive questionnaire design, providing predominantly quantitative data
- it was anticipated that a substantial number of health professionals in each country would agree to participate and each nurse/physician was asked to invite up to ten patients from their case load to participate
- all necessary permissions were sought for this phase of the study from the relevant ethical review committees in each country

Key Points

- results were obtained for 2018 patients in the specified time, from 15 different countries: 57% of participants were female
- the return rate of questionnaires varied by country over the 15 countries involved in the project, with the biggest contribution from Italy and the smallest from an individual country being Belgium
- there was a range of wound aetiologies from the 15 participating countries; 46.3% were leg ulcers of known aetiology with a further 19.8% recorded as ulcers of unknown aetiology (66% in total)
- some patients had as many as seven different dressings and compression systems reported as being used at the time the questionnaire was completed
- antimicrobials were reported as used most frequently

Data analysis

Data were entered into a database (SPSS Inc., Chicago, IL, USA version 14) for quantitative analysis. Four researchers were involved in the input of data, following appropriate training. In instances where data were missing, these were coded as 999 while not applicable was coded as 888. In any case where the respondent placed a tick between two values these were always rounded down, thus underestimating the scores; this did not account for more than ten items in any one variable. Data quality checks were carried out to ensure consistency in data input and coding; these included visual checks, random checks for complete patient input, systematic checks for invalid entries and values outside the expected range. Any inconsistencies were resolved by checking back with the original questionnaire. The data were summarised by wound type and by country using frequency counts and appropriate summary statistics. All comparative analysis was performed on a descriptive or conservative basis, as this was not a hypothesis testing study. Where appropriate, chi-square was used for categorical data, the median test for data where one variable was nominal and the other ordinal and Friedman test for within patient analyses for ordinal data with multiple groups; parametric, continuous variables were analysed using one-way analysis of variance. Alpha was set at 0.05. Open comments were translated, transcribed and analysed using content analysis by two independent researchers to ensure a high level of reliability in coding the data. Several categories had to be coded to reduce the number of options provided in the raw data: data coding schedules were devised through multidisciplinary expert groups, with confirmation by the two researchers involved in coding the data.

RESULTS

Results were obtained for 2018 patients in the specified time, from 15 different countries: 57% of participants were female (see Table 1). For a survey of this size, missing data are to be expected, but this varied across the variables. Nineteen patients did not give their gender (0.9%), while 61 (3%) did not identify a wound type. The return rate of questionnaires varied by country over the 15 countries involved in the project, with the biggest contribution from Italy (19.5%) and the smallest from an individual country being Belgium (1.3%). The average age

Table 1 Gender distribution by country

| Country | Male | Female | Total (%) |
|-------------|------|--------|-------------|
| Australia | 40 | 41 | 81 (4.1) |
| Belgium | 11 | 15 | 26 (1.3) |
| Canada | 56 | 44 | 100 (5.0) |
| Denmark | 60 | 61 | 121 (6.1) |
| Finland | 27 | 37 | 64 (3.4) |
| France | 45 | 95 | 140 (7.0) |
| Germany | 69 | 78 | 147 (7.4) |
| Italy | 165 | 225 | 390 (19.5) |
| Mexico | 85 | 74 | 159 (8.0) |
| Norway | 40 | 61 | 101 (5.1) |
| Spain | 63 | 89 | 152 (7.6) |
| Sweden | 36 | 63 | 99 (5.0) |
| Switzerland | 48 | 59 | 107 (5.4) |
| UK | 73 | 123 | 196 (9.8) |
| USA | 48 | 68 | 116 (5.8) |
| Total | 866 | 1133 | 1999* (100) |

*There were 19 sets of missing data.

of participants was 68.6 years (min = 19, max = 101, SD = 15.4) across all countries (35 sets of missing data, 1.7%). Given the size of the data set, these results will focus on the results over all countries by wound type.

There was a range of wound aetiologies from the 15 participating countries; 46.3% were leg ulcers of known aetiology with a further 19.8% recorded as ulcers of unknown aetiology (66% in total). Around 20% of the sample was diabetic foot ulcers or pressure ulcers, with a further 7% made up of surgical, trauma wounds or burns and the final 7% classified as 'other', which included a range of conditions, such as pyoderma gangrenosum.

Table 2 outlines the frequency of patients presenting with their first wound experience. Across all wound types 43.8% of patients were describing their first experience of a wound. Thirty-three questionnaires reported this was unknown, with a further 6.6% of questionnaires where these data were missing.

The average wound duration across all wound types was 19.6 months (SD = 51.8 months), with a large range from >1 month to 65 years. There was also a large range within each wound type, as outlined in Table 3, with the burn wounds having the longest mean duration of 43.9 months.

A vast range of dressings was used across wound types and across countries; these have been categorised into ten generic dressing types and are presented in Table 4. Some patients had

Table 2 First experience of ulceration by wound type

| | First ulcer for patient | Not first ulcer | Unknown | Total |
|-----------------|-------------------------|-----------------|----------|-------------|
| Venous | 204 | 350 | 7 | 561 |
| Arterial | 84 | 103 | 4 | 191 |
| Mixed | 47 | 83 | 1 | 131 |
| Diabetic | 75 | 117 | 2 | 194 |
| Pressure | 98 | 69 | 9 | 176 |
| Ulcer (unknown) | 174 | 189 | 7 | 370 |
| Surgical | 35 | 15 | 1 | 51 |
| Trauma | 44 | 23 | 1 | 68 |
| Burns | 10 | 4 | 0 | 14 |
| Other | 52 | 76 | 1 | 129 |
| Total (%) | 823 (43.8) | 1029 (54.6) | 33 (1.8) | 1885* (100) |

*There were 133 cases of missing data.

as many as seven different dressings and compression systems reported as being used at the time the questionnaire was completed.

Antimicrobials were reported as used most frequently ($n = 650$) and were the leading dressing type used in Australia, Belgium, Canada, Finland, Germany, Italy, Spain, UK and USA. These country-specific trends and international preference for use of specific products highlight the popularity of antimicrobial dressings in some countries and potential reimbursement issues and availability. Furthermore, antimicrobial dressings were also the overall largest group of dressing type reported by respondents as causing 'more pain' (14%; silver dressings – $n = 52$ and iodine-based dressings – $n = 39$), whereas the most common dressings listed as causing 'less pain' were a soft silicone polyurethane foam, a hydrofibre and a foam with topical ibuprofen. It is, however, important to interpret these findings with

caution at this stage as further analyses about dressing choice needs to be conducted.

The experience of pain

Patients were asked 'Do you have any pain related to your ulcer?', with five response options ranging from 'never' to 'all the time' (see Table 5). Only 7% of patients reported that they never felt wound pain regardless of wound type: 30 of the 136 patients in that category, had ulcers of unknown origin. At the other end of the scale, 16.1% of patients reported that they had wound pain all the time; 119 (38%) of these were recorded as having venous ulcers and 16.9% as having ulcers of unknown origin. If the response options are collapsed into three categories then across all wound types 32.2% reported pain as 'never' or 'rarely', 31.1% reported pain 'quite often' and 36.6% reported pain 'most' or 'all of the time'. There are statistical differences between the wound types, with venous, arterial and mixed ulcers reporting more frequent pain experiences.

When asked 'where is the pain when it is most painful?', 1840 patients replied (the 178 sets of missing data included the 140 who replied that they did not experience any pain, so this question did not apply to them). Although patients were asked to limit their answers to three options, some patients gave additional details such as 'surrounding skin and elsewhere' (see Table 6). The largest group of patients across all wound types indicated that the wound itself was the most painful and this pattern was consistent for each wound type.

Patients were asked how frequently, if ever, they experienced pain at dressing change. The biggest category response was 'rarely' at 28.5% (see Table 7). If the categories are collapsed into

Key Points

- antimicrobial dressings were also the overall largest group of dressing type reported by respondents as causing 'more pain'
- the most common dressings listed as causing 'less pain' were a soft silicone polyurethane foam, a hydrofibre and a foam with topical ibuprofen
- it is, however, important to interpret these findings with caution at this stage as further analyses about dressing choice needs to be conducted
- there are statistical differences between the wound types, with venous, arterial and mixed ulcers reporting more frequent pain experiences
- the largest group of patients across all wound types indicated that the wound itself was the most painful and this pattern was consistent for each wound type
- in terms of overall results, there is a statistically significant difference between the groups when analysed using the median test, with venous, mixed and arterial ulcers being associated with more frequent experiences of pain at dressing change

Table 3 Duration of wound by wound type (in months)

| Wound type | N | Mean | SD |
|-----------------|-------|------|-------|
| Venous | 553 | 22.9 | 45.1 |
| Arterial | 189 | 16.8 | 33.7 |
| Mixed | 131 | 28.2 | 44.7 |
| Diabetic | 191 | 12.1 | 21.8 |
| Pressure | 174 | 11.9 | 22.1 |
| Ulcer (unknown) | 366 | 22.7 | 72.2 |
| Surgical | 52 | 7.5 | 7.5 |
| Trauma | 71 | 26.7 | 127.9 |
| Burns | 13 | 43.9 | 97.2 |
| Other | 130 | 15.3 | 27.2 |
| Missing | 37 | 8.8 | 18.7 |
| Total | 1907* | 19.6 | 51.79 |

*There were 111 cases of missing data.

Key Points

- there is a statistically significant difference between the wound types, with patients with mixed ulcers taking the longest time for the pain to resolve

Table 4 Total generic dressings used

| Ulcer | Classification of dressings | | | | | | | | | | | | Total |
|-------------------|-----------------------------|-----|-----|-----|-----|-----|----|-----|----|-----|------|----|-------|
| | AF | NAF | C | AM | A | HCD | F | O | AD | NAD | None | M | |
| Venous | 110 | 42 | 161 | 184 | 89 | 43 | 2 | 287 | 3 | 82 | 16 | 12 | 1031 |
| Arterial | 31 | 24 | 16 | 70 | 45 | 20 | 0 | 104 | 1 | 17 | 1 | 4 | 333 |
| Mixed | 31 | 11 | 17 | 46 | 30 | 10 | 0 | 83 | 1 | 20 | 1 | 2 | 252 |
| Diabetic | 31 | 20 | 14 | 78 | 32 | 10 | 1 | 89 | 4 | 43 | 9 | 4 | 335 |
| Pressure | 44 | 29 | 9 | 39 | 44 | 20 | 1 | 71 | 1 | 25 | 2 | 3 | 288 |
| Unknown aetiology | 69 | 33 | 59 | 134 | 64 | 13 | 8 | 214 | 4 | 47 | 2 | 11 | 658 |
| Surgical | 12 | 3 | 4 | 16 | 12 | 4 | 1 | 22 | 0 | 7 | 0 | 0 | 81 |
| Trauma | 9 | 11 | 8 | 19 | 11 | 9 | 0 | 35 | 0 | 12 | 1 | 0 | 115 |
| Burn | 1 | 1 | 2 | 5 | 2 | 2 | 0 | 9 | 0 | 0 | 1 | 0 | 23 |
| Other | 25 | 12 | 16 | 59 | 28 | 13 | 1 | 69 | 0 | 20 | 0 | 2 | 245 |
| Total | 363 | 186 | 306 | 650 | 357 | 144 | 14 | 983 | 14 | 273 | 33 | 38 | 3361 |

AF, adhesive foam; NAF, non adhesive foam; C, compression, AM, antimicrobial; A, alginate; HCD, hydrocolloid; F, film; O, other, AD, adhesive dressing; NAD, non adhesive dressing; None, no dressing currently being use; M, missing data.

three responses then 45.3% experience pain at dressing change 'never' or rarely', 21.9% have pain at dressing change 'quite often' and 31.9% report pain at dressing change 'most to all' of the time.

In terms of overall results, there is a statistically significant difference between the groups when analysed using the median test, with venous, mixed and arterial ulcers being associated with more frequent experiences of pain at dressing change.

Patients were asked to report how long it took any pain that they experienced at dressing change to subside, using a four-point scale of time, but also giving a 'not applicable' option for those who reported that they never felt pain at dressing change. Although there are 100 sets of missing data for this question, 1918 responded with only 311 of those reporting that the ques-

tion was 'not applicable'. Overall, 812 (40.2%) respondents reported that it took less than 1 hour for the pain to subside, for 449 (22.2%) it took 1–2 hours, for 192 (9.5%) it took 3–5 hours, and for 154 (7.6%) patients it took more than 5 hours. One thousand eight hundred and sixty-three of these patients also identified their wound type (see Table 8).

When the results are analysed using the median test, there is a statistically significant difference between the wound types, with patients with mixed ulcers taking the longest time for the pain to resolve.

Words that describe the pain experience

Patients were asked to complete a variation of the McGill Short-form Pain Questionnaire, which was translated and back-translated across the

Table 5 Experience of pain by wound type

| Wound type | Never | Rarely | Quite often | Most of the time | All of the time |
|-----------------|---------|------------|-------------|------------------|-----------------|
| Venous | 23 | 127 | 177 | 125 | 119 |
| Arterial | 10 | 44 | 64 | 48 | 31 |
| Mixed | 6 | 37 | 39 | 32 | 18 |
| Diabetic | 26 | 55 | 62 | 35 | 23 |
| Pressure | 18 | 52 | 53 | 28 | 30 |
| Ulcer (unknown) | 30 | 107 | 116 | 80 | 53 |
| Surgical | 11 | 11 | 20 | 2 | 8 |
| Trauma | 2 | 21 | 25 | 12 | 10 |
| Burns | 0 | 3 | 8 | 4 | 0 |
| Other | 10 | 33 | 41 | 32 | 21 |
| Total (%) | 136 (7) | 490 (25.2) | 605 (31.2) | 398 (20.5) | 313 (16.1) |

Median $\chi^2 = 26.42$; $P = 0.002$.

Table 6 Location of pain by wound type

| Wound type | In the wound | Wound and surrounding skin | Surrounding skin | Surrounding skin and elsewhere | Radiating elsewhere |
|-----------------|--------------|----------------------------|------------------|--------------------------------|---------------------|
| Venous | 291 | 8 | 159 | 1 | 95 |
| Arterial | 100 | 3 | 54 | 1 | 27 |
| Mixed | 82 | 0 | 22 | 1 | 22 |
| Diabetic | 99 | 3 | 37 | 1 | 45 |
| Pressure | 94 | 1 | 39 | 0 | 26 |
| Ulcer (unknown) | 168 | 6 | 102 | 0 | 90 |
| Surgical | 30 | 1 | 11 | 1 | 5 |
| Trauma | 37 | 2 | 13 | 0 | 14 |
| Burns | 8 | 0 | 4 | 0 | 3 |
| Other | 77 | 0 | 29 | 1 | 22 |
| Total (%) | 986 (53.59) | 24 (1.3) | 470 (25.54) | 6 (0.33) | 349 (18.97) |

Key Points

- patients with venous ulceration rated their pain more extremely
- the full range of the scale was used by the majority of patients within each of the different wound types, with the lowest median for surgical wounds and the highest for mixed ulcers and burn wounds

relevant languages used in the countries involved. These terms can be summarised into two main domains, known as 'sensory' and 'affective'. The scores for each word in the tool by wound type for each country are presented in the appendices. Table 9 presents the summaries for the two domains for all 1999 patients who provided data for this part of the questionnaire (sensory scale from 0 to 30, affective scale from 0 to 12: on both scales a higher score indicated more severe levels of pain), overall and by wound type. For both domains there are statistically significant differences between the wound types; there are more patients above the median with venous, arterial, mixed ulcers and burns than in the other groups in the sensory domain; and more patients above the median for venous, mixed and other ulcers in the affective domain. These data confirm the quantitative data collected in other items, whereby

patients with venous ulceration rated their pain more extremely.

Pain intensity

Patients were asked to identify the intensity of pain they had experienced in the previous week, leading up to the time of completing the questionnaire, on a VAS scale of 0–100 (where 0 meant no pain, 100 signified worst possible pain). The full range of the scale was used, with a mean score of 44.5 over all patients and a standard deviation of 30.5 ($n = 1981$). Figure 1 suggests that the full range of the scale was used by the majority of patients within each of the different wound types, with the lowest median for surgical wounds and the highest for mixed ulcers and burn wounds. These data provide further support to the McGill data, suggesting that patients with leg ulcers and burns experience the greatest pain intensity.

Table 7 Pain at dressing change by wound type

| Wound type | Never | Rarely | Quite often | Most of the time | All of the time |
|-----------------|-------------|-------------|-------------|------------------|-----------------|
| Venous | 75 | 150 | 144 | 96 | 109 |
| Arterial | 23 | 59 | 40 | 35 | 40 |
| Mixed | 14 | 32 | 33 | 25 | 28 |
| Diabetic | 55 | 56 | 46 | 20 | 22 |
| Pressure | 40 | 55 | 32 | 20 | 33 |
| Ulcer (unknown) | 68 | 125 | 77 | 54 | 61 |
| Surgical | 16 | 16 | 12 | 5 | 4 |
| Trauma | 10 | 27 | 21 | 5 | 7 |
| Burns | 2 | 4 | 5 | 2 | 2 |
| Other | 23 | 30 | 33 | 24 | 28 |
| Total (%) | 326 (16.78) | 554 (28.51) | 443 (21.95) | 286 (14.72) | 334 (17.19) |

Median $\chi^2 = 38.09$, $P < 0.001$.

Key Points

- the wound types associated with the highest levels of taking pain relief are burns, arterial and other wounds; the highest levels of not taking medication are associated with surgical wounds and pressure ulcers
- the order of the symptoms in terms of being problematic (over all respondents) is pain, impaired mobility, difficulties in bathing, leakage, odour and slippage of the dressing or bandage

Table 8 Time for the pain to resolve after dressing change by wound type ($n = 1863$).

| Wound type | Less than 1 hour | 1–2 hours | 3–5 hours | More than 5 hours | Not applicable |
|-----------------|------------------|------------|------------|-------------------|----------------|
| Venous | 231 | 149 | 65 | 47 | 69 |
| Arterial | 76 | 44 | 24 | 15 | 29 |
| Mixed | 39 | 36 | 19 | 19 | 17 |
| Diabetic | 93 | 35 | 12 | 12 | 35 |
| Pressure | 83 | 34 | 3 | 17 | 37 |
| Ulcer (unknown) | 155 | 82 | 38 | 25 | 64 |
| Surgical | 23 | 9 | 2 | 2 | 12 |
| Trauma | 28 | 11 | 8 | 3 | 14 |
| Burns | 8 | 3 | 1 | 0 | 3 |
| Other | 55 | 31 | 14 | 10 | 22 |
| Total (%) | 791 (42.46) | 434 (23.3) | 186 (9.98) | 150 (8.05) | 302 (16.21) |

Median $\chi^2 = 31.61$, $P < 0.001$.

Pain relief

Patients were also asked if they took any pain relief for their wound-related pain. Although 12 participants did not provide an answer to this question (0.6%), 1303 (64.6%) of the total sample stated they did take pain relief. Seven patients reported that this question did not apply to them, whereas five reported that the pain relief worked 'sometimes'. Of the 1671 patients who replied, 1141 (68%) stated that when they did

take pain relief, it generally made a difference while 530 (32%) recorded that pain relief did not generally work (this is the variable with the largest amount of missing data at 17.3%). If the results for the two questions on pain relief are put together, then of the 1670 who replied to both questions the results are slightly different (see Table 10): 83% of those who were taking pain relief for their wound pain stated that it worked, but 79% of those who were not taking pain relief (at the time they completed the questionnaire) felt it was not effective (which could explain why they were not taking any medication at the time).

Table 9 Sensory and affective domain scores by wound type

| | N | Mean | Median | Range |
|------------------|------|------|--------|-------|
| Sensory | 1999 | 8.78 | 7 | 0–30 |
| Venous | 571 | 9.84 | 8 | 0–30 |
| Arterial | 196 | 9.43 | 7 | 0–30 |
| Mixed | 131 | 9.41 | 8 | 0–30 |
| Diabetic | 199 | 8.38 | 7 | 0–30 |
| Pressure | 181 | 7.5 | 4 | 0–30 |
| Ulcer (unknown) | 384 | 8.19 | 6 | 0–30 |
| Surgical | 54 | 5.88 | 4 | 0–24 |
| Trauma | 71 | 6.76 | 5 | 0–23 |
| Burns | 15 | 7.73 | 8 | 1–19 |
| Other | 137 | 8.92 | 6 | 0–27 |
| Affective | 1999 | 2.43 | 0 | 0–12 |
| Venous | 571 | 2.78 | 1 | 0–12 |
| Arterial | 196 | 2.54 | 0.5 | 0–12 |
| Mixed | 131 | 3.20 | 1 | 0–12 |
| Diabetic | 199 | 2.01 | 0 | 0–12 |
| Pressure | 181 | 2.06 | 0 | 0–12 |
| Ulcer (unknown) | 384 | 2.16 | 0 | 0–12 |
| Surgical | 54 | 1.37 | 0 | 0–12 |
| Trauma | 71 | 1.53 | 0 | 0–11 |
| Burns | 15 | 1.86 | 0 | 0–9 |
| Other | 137 | 2.78 | 1 | 0–12 |
| Total | 1999 | | | |

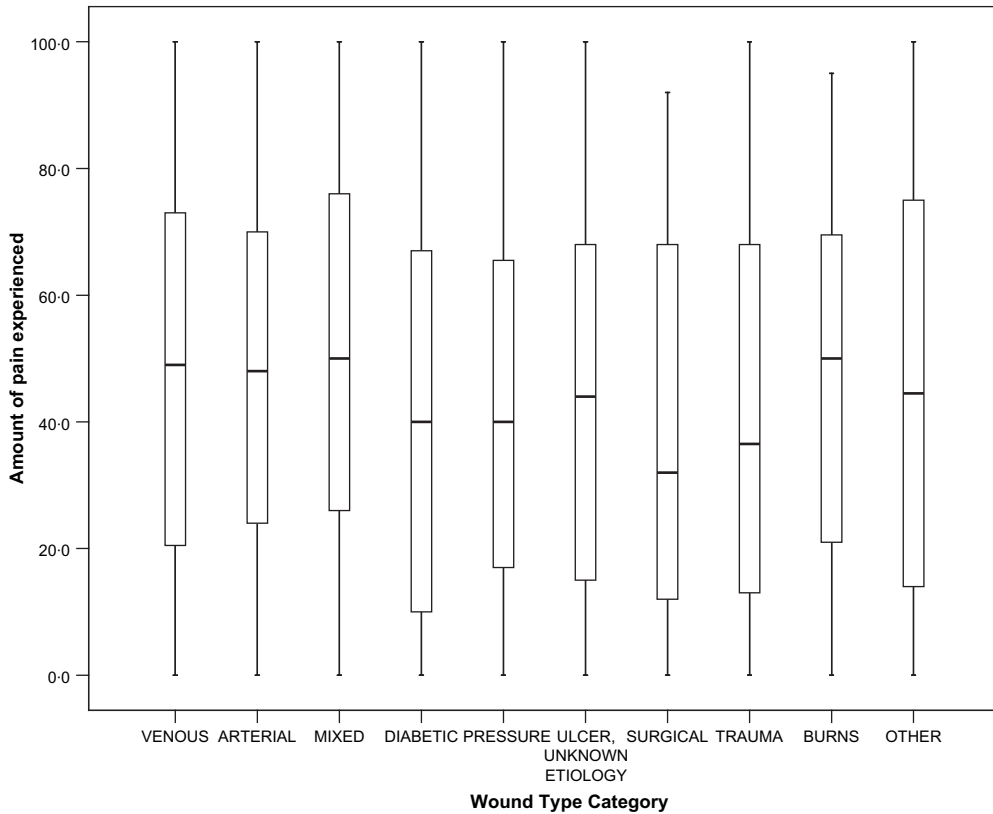
Median test $\chi^2(\text{sensory}) = 39.13$, $P < 0.001$ (affective) = 30.31, $P < 0.001$.

Pain relief medication was also analysed by wound type (see Table 11). The wound types associated with the highest levels of taking pain relief are burns, arterial and other wounds. The highest levels of not taking medication are associated with surgical wounds and pressure ulcers.

Symptom experience

Patients were asked to rate six symptoms on a five-point scale (1, not a problem, 5, a major problem); the frequencies overall participants can be seen in Table 12. 'Difficulties in not being able to take a bath or a shower' was recorded with the highest number of responses, indicating that this was a major problem, with 'pain' as the second most frequently cited major problem.

If, however, the symptoms are ordered by their mean scores (based on the results of 1898 participants who responded to all of the items), then 'pain' is given the highest mean score of 3.08. The order of the symptoms in terms of being problematic (over all respondents) is pain, impaired mobility, difficulties in bathing,



Key Points

- the order of activities in terms of associated pain is overdoing things, sleeping at night, pain at dressing change, pain associated with infection and pain on waking

Figure 1. Box plot for visual analogue scores scores by wound type. Median is represented by the bold line within the box. $F_{9,1911} = 2.36, P = 0.012$.

leakage, odour and slippage of the dressing or bandage.

Participants were also asked to rate the levels of pain associated with different types of daily activities, again using a five-point scale (1, no pain, 5, very painful). In terms of the frequency of ‘very painful’, then the highest frequency was recorded for pain due to wound infection (see Table 13). If, however, the symptoms are ordered by their mean scores (based on the results of 1916 participants who responded to all of the items), then ‘overdoing things’ is associated with the highest mean score. The order of

activities in terms of associated pain is overdoing things, sleeping at night, pain at dressing change, pain associated with infection and pain on waking.

Participants were asked to rate the different stages of the dressing change procedure, again using a 1–5 scale (1, no pain; 5, very painful). The part of the dressing change procedure with the highest frequency of ‘very painful’ was ‘touch-

Table 10 Taking pain relief and associated effectiveness

| | Does medication relieve wound pain? (%) | | Total (%) |
|--------------------|---|----------|------------|
| | Yes | No | |
| Pain relief taken? | | | |
| Yes | 1058 (83) | 217 (17) | 1275 (100) |
| No | 82 (21) | 313 (79) | 395 (100) |
| | 1140 | 530 | 1670 |

$\chi^2 = 538.9, d.f. = 1, P < 0.001$.

Table 11 Taking pain relief by wound type

| Wound type | Pain relief taken | | Total |
|-----------------|-------------------|------------|--------------|
| | Yes (%) | No (%) | |
| Venous | 376 (65.6) | 197 (34.4) | 573 |
| Arterial | 140 (71.1) | 57 (28.9) | 197 |
| Mixed | 90 (68.7) | 41 (31.3) | 131 |
| Diabetic | 117 (58.5) | 83 (41.5) | 200 |
| Pressure | 98 (53.8) | 84 (46.2) | 182 |
| Ulcer (unknown) | 269 (69.9) | 116 (30.1) | 385 |
| Surgical | 29 (53.7) | 25 (46.3) | 54 |
| Trauma | 43 (60.6) | 28 (39.4) | 71 |
| Burns | 11 (73.3) | 4 (26.7) | 15 |
| Other | 97 (70.3) | 41 (29.7) | 138 |
| Total (%) | 1270 (65.3) | 676 (34.7) | 1946 (100.0) |

Key Points

- the order of the symptoms in terms of pain during dressing change is touching/handling the wound, cleansing, dressing removal, time after application of new dressing and time waiting for dressing change

Table 12 Experience of different wound symptoms

| | 1 (not a problem) | 2 | 3 | 4 | 5 (a major problem) | Total (responses to this item) | Mean (<i>n</i> = 1898) | Median | Range |
|-------------------|----------------------|-----|-----|-----|---------------------------|-----------------------------------|----------------------------|--------|-------|
| Odour | 1209 | 285 | 191 | 132 | 153 | 1970 | 1.85 | 1 | 1–5 |
| Leakage | 716 | 393 | 359 | 238 | 281 | 1987 | 2.49 | 2 | 1–5 |
| Pain | 430 | 344 | 359 | 329 | 516 | 1978 | 3.08 | 3 | 1–5 |
| Impaired mobility | 566 | 293 | 335 | 349 | 430 | 1973 | 2.89 | 3 | 1–5 |
| Bathing | 686 | 235 | 282 | 260 | 521 | 1984 | 2.86 | 3 | 1–5 |
| bandage Slippage | 1188 | 312 | 212 | 143 | 120 | 1975 | 1.84 | 1 | 1–5 |

Table 13 Experience of pain by daily activity

| | 1 (no pain) | 2 | 3 | 4 | 5 (very painful) | Total (responses to this item) | Mean (<i>n</i> = 1916) | Median | Range |
|-----------------------------|----------------|-----|-----|-----|---------------------|-----------------------------------|----------------------------|--------|-------|
| Waking up | 949 | 348 | 280 | 206 | 206 | 1989 | 2.19 | 2 | 1–5 |
| Overdoing things | 657 | 348 | 333 | 332 | 300 | 1970 | 2.63 | 2 | 1–5 |
| Sleeping (night) | 730 | 343 | 355 | 276 | 282 | 1986 | 2.52 | 2 | 1–5 |
| Dressing changes | 699 | 420 | 341 | 248 | 277 | 1985 | 2.5 | 2 | 1–5 |
| Pain due to wound infection | 843 | 268 | 237 | 282 | 330 | 1960 | 2.49 | 2 | 1–5 |

Table 14 Experience of pain with different parts of the dressing change procedure

| | 1 (no pain) | 2 | 3 | 4 | 5 (very painful) | Total | Mean (<i>n</i> = 1944) | Median | Range |
|---------------------------------|----------------|-----|-----|-----|---------------------|-------|-------------------------|--------|-------|
| Waiting for dressing change | 1193 | 337 | 233 | 123 | 93 | 1979 | 1.78 | 1 | 1–5 |
| Dressing/tape removal | 867 | 417 | 299 | 212 | 189 | 1984 | 2.23 | 2 | 1–5 |
| Cleansing | 592 | 413 | 351 | 297 | 326 | 1979 | 2.68 | 2 | 1–5 |
| Touching/Handling the wound | 440 | 430 | 327 | 333 | 456 | 1986 | 2.97 | 3 | 1–5 |
| Re-application of new dressing | 974 | 431 | 265 | 181 | 132 | 1983 | 2.03 | 2 | 1–5 |
| Time after new dressing applied | 827 | 454 | 335 | 228 | 139 | 1983 | 2.20 | 2 | 1–5 |

ing/handling the wound' followed by 'cleansing' (see Table 14). If, however, the symptoms are ordered by their mean scores (based on the results of 1944 participants who responded to all of the items), then 'touching/handling the wound' is given the highest mean score of 2.97. The order of the symptoms in terms of pain during dressing change is touching/handling the wound, cleansing, dressing removal, time after application of new dressing and time waiting for dressing change.

Participants were asked whether there were products available that make the dressing change procedure less painful. Six hundred and twenty patients (of the 1785 who responded to this question) indicated that products could make a difference. When asked for specific examples of such products, a huge range of products were highlighted; items identified by at least ten patients can be found in Table 15.

Of the 1360 patients who responded to the question 'If there was one thing that you would like health care professionals to do for you to help with your pain at/during dressing-related procedures, what would it be?', 61 patients (4.5%) reported that they were satisfied with the treatment provided regardless of whether they experienced pain and 22 patients (1.6%) stated that they did not experience any pain at/during dressing-related procedures. The majority of participants (495 patients; 36.4% of those who answered) answered that they felt the health care professionals in charge of their care could do nothing to help with their pain at/during dressing-related procedures; similarly, 144 patients (10.6%) did not know of anything that would be beneficial to their care. For those who provided suggestions for health care professionals, 14.9% of patients felt that analgesics/anaesthetics would be beneficial, 8.0% emphasised

Table 15 Generic products/techniques that make the dressing change procedure less painful

| Generic products/techniques | Number of participants who suggested product/technique |
|---|--|
| Creams or gels | 44 |
| Non adhesive dressings | 39 |
| Local anaesthesia | 34 |
| Moisten dressings before removing them | 20 |
| Moist dressings | 17 |
| Gauze | 13 |
| Hydrocolloids | 13 |
| Hydrogels | 13 |
| Topical application of anaesthetic cream or gel | 11 |
| Foam dressings | 10 |
| Morphine or other pain relieving medication | 10 |

Key Points

- this is one of the biggest international surveys of the patient perspective of chronic wound pain, particularly focusing on dressing-related procedures
- the results suggest that wound type is a strong indicator of wound pain experiences, across all cultural groups, with venous and arterial ulcers associated with more frequent pain

a wish for the health care professional to be careful and gentle during treatment, 4.0% of patients highlighted the importance of being consulted with, listened to, communicated with and distracted from the dressing-related procedures, to have their dressing soaked/moistened before removal (3.3%) and not to rush the procedures (2.3%). Advice on avoiding touching and/or scrubbing the wound, ensuring consistency and sound quality of care and a wish to have the wound washed with water were also reported (2.1%, 1.5% and 0.9% respectively).

Attitudes to living with pain

Patients were asked to describe the extent to which they agreed with four statements on dressing change pain and living with long-term use of pain medication, using a five-point Likert Scale (strongly agree to strongly disagree) (see Table 16). One thousand four hundred and eighty-five (80.15%) of patients responded that they liked to be actively involved in their dressing changes, 1141 (58.15%) responded that they were concerned about the long-term side-

effects of medication, 790 (40.3%) of patient indicated that the pain at dressing change was the worst part of living with a wound (with a relatively even split across the categories); however, 1254 (63.8%) agreed that pain at other times was the worst pain of living with an ulcer.

DISCUSSION

This is one of the biggest international surveys of the patient perspective of chronic wound pain, particularly focusing on dressing-related procedures. The results suggest that wound type is a strong indicator of wound pain experiences, across all cultural groups, with venous and arterial ulcers associated with more frequent pain. It is unfortunate that so many responses only identified the aetiology of the wound as 'ulcer', as this group had to be analysed separately, which may have underestimated the pain experience of this group; the missing information may reflect insufficient documentation, or that a large number of patients do not have a complete diagnosis. Direct comparison between groups is also confounded by the inclusion of unexpected wound types (e.g. burns

Table 16 Attitudes to living with wound pain

| | Strongly agree | Agree | Uncertain | Disagree | Strongly disagree | Total |
|--|----------------|-------|-----------|----------|-------------------|-------|
| I like to be actively involved in the process of changing my dressings | 716 | 769 | 197 | 178 | 125 | 1985 |
| I am concerned about long-term use of pain medication (e.g. side-effects) | 463 | 678 | 320 | 307 | 194 | 1962 |
| Overall, the pain experienced while having the dressing change is the worst part of living with an ulcer | 318 | 472 | 295 | 607 | 270 | 1962 |
| Overall, wound pain at other times is the worst part of living with an ulcer | 567 | 687 | 278 | 288 | 143 | 1963 |

Key Points

- in order to work towards providing wound care within a framework of culturally competent health care, we need more information on the cultural diversity related to chronic wound pain so that we can develop assessment methods that are sensitive to culturally specific ways of experiencing pain and use this information to develop culturally appropriate treatment goals
- this survey is the first step in providing the information necessary to help wound-related pain research include biological, psychological and cultural influences within a model of culturally competent wound care

and trauma): given the inclusion criteria for the study, we can only conclude that these are wounds that have become 'chronic' because of the duration of the wound, rather than original cause. The findings also suggest that most wound pain is experienced in the wound itself, with >30% of all wound types experiencing dressing-related pain most or all of the time; approximately 60% of the sample reported that it took longer than 1 hour for this pain to resolve.

Participants were asked to rate the different components of the dressing change procedure: the category with the highest mean score was 'Touching/Handling', followed by cleansing and dressing removal. These data support the growing awareness of pain associated with the cleansing part of the procedure (16,17). The response option 'touching/handling' was included as it was frequently brought up during the qualitative section of this study; however, interpretation of this option has associated difficulties. The response options for this question were waiting for dressing change; dressing/tape removal; cleansing; touching/handling the wound; reapplication of new dressing; time after the new dressing is applied. Many of these options follow a time course related to the dressing change procedure; however, touching/handling the wound may involved several stages of the process and not just the time when the wound is uncovered. This is particularly important to recognise given the translations issues, which may have resulted in a possible misunderstanding.

Although every effort was made to ensure that the translation process was rigorous, the importance of language in the assessment of pain cannot be underestimated. Languages often have a completely different vocabulary for descriptions of noxious substances; languages also differ in the number of words used to describe pain, as well as the emotional content of the pain descriptors (14). Some difficulties were experienced in translating the component parts of the McGill Short Form, particularly into Spanish. However, the study focused predominantly on developed countries influenced by European health perspectives (Europe, Australia and North Americas). The variation in sample size from different countries is partly explained by the time taken to gain all appropriate permissions, with those countries that were able to gain approval earlier recruiting the most patients. Future studies may consider

a limit on participation by country to avoid any particular cultural view being overrepresented. If the study were to be conducted in a broader range of countries, the questionnaire would need to be reconsidered in the light of dominant cultural beliefs regarding the medical system and treatment of illness.

Participants were asked to rate their pain experience compared with other symptoms that can be experienced when living with a chronic wound: in this instance pain was considered the biggest problem. However, in direct comparison with other activities of daily life 'generally overdoing' was considered the most painful event. This shows that questions related to pain may need to be set in context to ensure appropriate comparisons are made. The responses to the use of analgesia reflect studies in other health states, such that many of the participants responded that they were concerned about the long-term side-effects of taking analgesia (58%). However, 64% reported that they took pain relief for the wound pain with 82%, suggesting that the medication they took was effective, which is considerably higher than previous studies (18).

CONCLUSION

This present survey has documented that chronic wound pain, particularly as part of dressing-related procedures, is common with variations in pain experience related to wound aetiology and 64% of patients taking analgesia to cope with their pain experiences. However, further analysis is necessary to fully understand the role of cultural diversity on pain assessment and management. Research has already shown that views about health that are dominant in Western cultures do not prevail in other parts of the world (19); the same applies to the meanings attached to the experience of pain and how we perceive pain in others. In order to work towards providing wound care within a framework of culturally competent health care, we need more information on the cultural diversity related to chronic wound pain so that we can develop assessment methods that are sensitive to culturally specific ways of experiencing pain and use this information to develop culturally appropriate treatment goals. This survey is the first step in providing the information necessary to help wound-related pain research include biological, psychological and cultural influences within a model of culturally competent wound care.

ACKNOWLEDGEMENTS

The research team would like to thank all those patients who took time to complete this questionnaire and all staff across all the countries involved who graciously gave their time. We would also like to acknowledge Rhys Maidment and Paul Heatley for data input and Dr Clio Spanou for her help in Phase I of the study. We would also like to thank Molnlycke Healthcare for an unrestricted educational grant to support this work.

REFERENCES

- 1 Franks PJ, Moffatt CJ, Connolly M, Bosanquet, N, Oldroyd MI, Greenhalgh RM, McCollum CN. Community leg ulcer clinics: effect on quality of life. *Phlebology* 1994;9:83–6.
- 2 Price P, Harding KG. Measuring health-related quality of life in patients with chronic leg ulcers. *Wounds* 1996;8:91–4.
- 3 Charles H. The impact of leg ulcers on patients' quality of life. *Professional Nurse* 1995;10:571–4.
- 4 Ebbeskog B, Ekman S-L. Elderly People's Experiences. The meaning of living with Venous Leg Ulcer. *EWMA J* 2001;1:21–3.
- 5 Rich A, McLachlan L. How living with a leg ulcer affects people's daily life: a nurse-led study. *J Wound Care* 2003;12:51–4.
- 6 Brennan F, Carr DB, Cousins M. Pain management: a fundamental human right. *Anesth Analg* 2007; 105:205–21.
- 7 Horn S, Munafo M. Pain: theory research and intervention. London: Open University Press, 1998.
- 8 Melzack R, Wall P. The challenge of pain. Harmondsworth, Penguin, 1982
- 9 European Wound Management Association. Pain at dressing changes. EWMA position document. London: MEP Ltd, 2002.
- 10 Reddy M, Kohr R, Queen D, Keast D, Sibbald RG. Practical treatment of wound pain and trauma: a patient-centered approach. An overview. *Ostomy Wound Manage* 2003; 49(4A Suppl): 2–15.
- 11 World Union of Wound Healing Societies. Principles of best practise: minimising pain at wound dressing-related procedures: a consensus document. London: MEP Ltd, 2004.
- 12 Moffatt, C, Franks P, Hollingworth H. Understanding wound pain and trauma: an international perspective. EWMA position document: pain at dressing change. London: Medical Education Partnership Ltd, 2002:2–7.
- 13 Briggs M, Torra i Bou J. Pain at wound dressing changes: a guide to management. EWMA Position Document: Pain at dressing change. London: Medical Education Partnership Ltd, 2002: 12–17.
- 14 Koral CT, Craig KD. Pain from the perspectives of health psychology and culture. In Kazarian SS, Evans DR, editors. Handbook of cultural health psychology. San Diego: Academic Press, 2001.
- 15 Mudge, E. Tell me if it hurts: the patient's perspective of wound pain. *Wounds UK* 2007;3:6–7.
- 16 Lindholm, C. Quality life in patients with leg ulcers and psychological complications. Atlantio Meetings APT Feridas (Portugese Wound Healing Association) Madeiva, 7 December 2007.
- 17 Woo K, Sadavoy J, Sidani S, Maunder R, Sibbald RG. The relationship between anxiety, anticipatory pain, and pain during dressing change in the older population. CAWC Annual Conference, November 1–4, London, Ontario, 2007.
- 18 Quirino J, Santo V, Quednau T, Martins A, Lima P, Almeida M. Pain in pressure ulcers. *Wounds* 2003; 15:381–9.
- 19 Tu W. A religiophilosophical perspective on pain. In Kosterlitz HW, Terenius LY, editors. Pain and society. Weinheim, Germany: Verlag, 1980, p. 63–78.