

Evaluation of the assessment and documentation of chronic wounds in residential social care in the Czech Republic

Objective: Accurate evaluation of non-healing, chronic wounds followed by the selection of an appropriate therapeutic strategy is a must for the foundation of health-care management. Assessment of non-healing chronic wounds in clinical practice in the Czech Republic is not standardised in acute care settings or in residential social care facilities. The aim of the study was to analyse the methods being used to assess non-healing, chronic wounds in residential social services in the Czech Republic, where more patients with chronic wounds are present because of the increasing incidence of wounds in old age.

Method: The research was carried out at 66 residential social care institutions across all regions of the Czech Republic. A mixed model was used for the research (participatory observation including creation of field notes and content analysis of documents for documentation and analysis of qualitative and quantitative data). The same methodology was used in previous work which has been done in acute care settings in 2013.

Results: The results of this research have corroborated the inconsistencies in procedures used by general nurses for assessment of non-healing, chronic wounds. However, the situation was found to be more positive with regard to the evaluation of basic/fundamental parameters of a wound (e.g. size, depth and location of the wound) compared with the evaluation of more specific parameters (e.g. exudate or signs of infection). This included not only the number of observed variables, but also the action taken. Both were improved when a consultant for wound healing was present.

Conclusion: An effective strategy for wound management depends on the method and scope of the assessment of non-healing, chronic wounds in place in clinical practice in observed facilities; improvement may be expected following the general introduction of 'non-healing, chronic wound assessment' algorithm.

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nursing homes • wound healing • long-term care • wound assessment • documentation • Czech Republic

Population ageing is taking place in nearly all the countries of the world. The global share of older people (aged ≥ 60 years) increased from 9.2% in 1990 to 11.7% in 2013 and will continue to grow as a proportion of the world population, with predictions suggesting 21.1% by 2050.¹ Fewer than 60% of elderly people in Southern Europe (in the Czech Republic) live independently, with many in social residential care;² the majority of people living in homes or in residential social care are dependent on. Furthermore, the prevalence of chronic wounds increases markedly with age.³ The process of healing is affected by age, leading to delayed healing, because the number of macrophages (a white blood cell responsible for ingesting, removing or destroying foreign material) decreases, reducing the resistance to bacterial colonisation and infection.⁴

The problem of delayed healing highlights the importance of effective diagnosis and appropriate treatment.³ Wound assessment is a vital and dynamic process that can help to ensure that patients receive the most appropriate evidence-based interventions available.⁵ Non-healing wounds are a major

socio-economic problem whose solution requires a multidisciplinary approach. The problem with the assessment of non-healing, chronic wounds occurs in acute care in the Czech Republic.⁶ The situation in the context of long-term care seems to be similar, so this follow-up study uses the same methodology as for the acute care setting.⁶

Aim

The purpose of this study was to ascertain whether assessment and evaluation of chronic wound varies among residential social care institutions in the Czech Republic, to identify problematic areas, and to recognise which may affect wound assessment and can be improved. The chronic wound characteristics considered were based on published recommendations,⁷⁻⁹ as well as our previous study in acute care settings.⁶ The objectives were to determine which parameters of non-healing chronic wounds were the most reviewed, assessed and reported. Objective scales were used for the evaluation of non-healing chronic wounds and if so, which ones?

Methods

The principles of the TIME model,^{10,11} which offers a comprehensive approach to wound monitoring, in addition to the risk factors that can help identify

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patients with non-healing chronic wounds, were used for the study. These tools were chosen because they offer an understanding of why wounds do not heal, based on the underlying aetiologies, and why appropriate treatments are effective.^{10,12} The methodology was based on a previous study by Pokorna and Leaper.⁶

In order to determine how the process of evaluation of wound variables differ in various facilities, and how it relates to the following determinants, we assessed the following:

- Type of accreditation (proactive strategy to maintain the quality)
- Type of residential social care institution (old people's home, old people, home with special regime)
- Residential social care institution owner (region, municipality)
- The presence of a consultant for wound healing
- Assigned/awarded certification of Czech Wound Management Association (CWMA)
- The use of objective scales for assessment of patients
- A declared interest in further information about the evaluation of non-healing chronic wounds
- The kind of strategy to be adopted to implement the recommended procedure for objective evaluation of non-healing wounds in clinical practice.

Wound parameters were divided into basic and specific groups (as in the previous study). The ten basic (fundamental) wound parameters were the following:

- Wound aetiology
- Wound duration
- Size
- Depth
- Localisation
- Wound margins
- Periwound skin—state of the skin surrounding edge
- Wound bed
- Local therapy
- Systemic therapy.

Nurses were graded according to their reporting; when they recorded this information they were given 1 point. They could obtain 2 points for recording each parameter using an objective scale (not including aetiology, time of wound presence and local or systemic therapy). Scales were created for the number of reported basic variables from 0–10, and for objective recording from 0–16 points. Specific monitored wound parameters included signs of inflammation/infection, exudate, odour, level of contamination or colonisation (determined by swab culture, for example), comorbidities and pain. The scale for specific parameters ranged from 0–6 points and objective recording ranged from 0–10. The health-care facilities where nurses reported a greater number of signs and symptoms and used more objective methods (scales, ranges) were considered better than others because they met the optimal criteria for wound assessment.

A mixed research design with quantitative and qualitative elements at multiple levels (multilevel

approach) was used with intentionally induced assigned selection. The basic premise was that the use of the qualitative and quantitative approaches in combination allows a better understanding of the research challenge.^{13,14} Scientific observation is characterised by a precisely defined objective and is carried out by establishing a process whereby all data are systematically recorded.¹⁵

Other observed clinical parameters and information considered to be important for comprehensive assessment were added whenever nurses recorded them in the patient records.

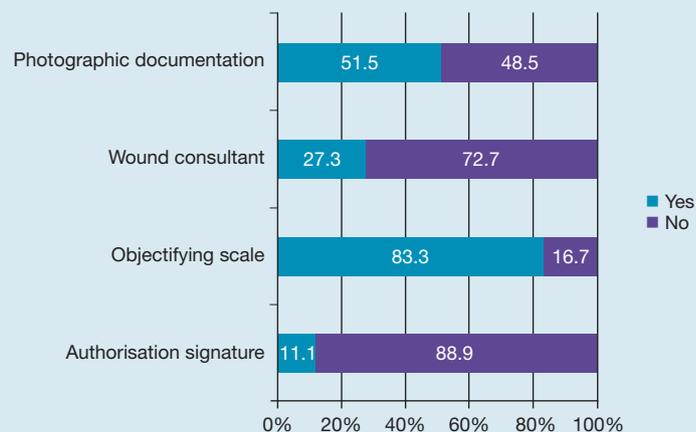
According to the information from the Czech Association of Social Care Providers there are 492 residential social care institutions operating, all of which were contacted. Data were obtained using structured observation of participants in their working environment, with the creation of field notes, complemented by analysis of documented patient records. An example of observation was the process used in dressing changes, the time of day it was undertaken and how and when such data were recorded for future assessment.

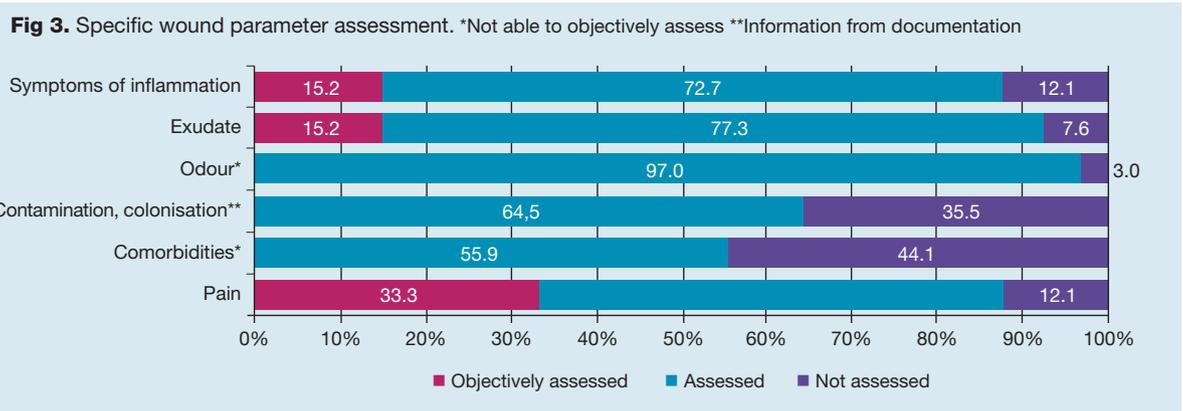
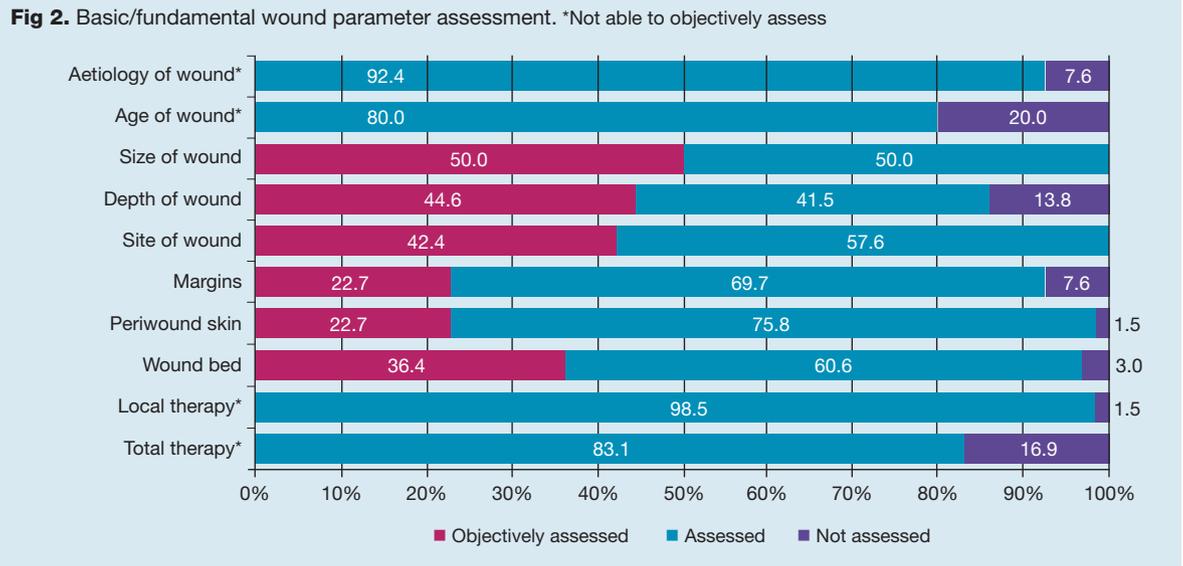
Statistical analyses of data were undertaken by comparing means, correlations, and appropriate statistical significance tests (Mann-Whitney U-Test, Kruskal-Wallis test, Wilcoxon test and Pearson correlation coefficient). A p-value ≤ 0.05 was considered statistical significance.

Ethical considerations

The research met the basic ethical principles for research involving human subjects, in accordance with the Helsinki declaration as revised in 2000, and was approved by the management of residential social care facilities involved and institutional ethics committees. It was not necessary to obtain written consent of each patient/resident because of the nature of the study, but participation was entirely voluntary and could be withdrawn at any time during the collection of data.

Fig 1. Institutions wound management organisation in residential social facilities





Results

Of the 492 residential social care institutions across the Czech Republic that were invited to participate, an analysis was carried out in 66 (13.4%), after consent was given by their managements. Of these, 48 were old people's homes, 11 old people's home with special regime, mainly for people with Alzheimer's disease, and seven others (special nursing homes or elderly homes owned by individuals or charities). A cross-section of residential social care institutions from all 14 regions of the Czech Republic was obtained, as at least one institution from each region participated. The largest number of participating institutions were from the Moravian—Silesian Region (n=11). The lowest number of institutions involved were from Usti Region (n=2) and Zlin Region (n=2), while in Karlovy Vary Region only one institution participated.

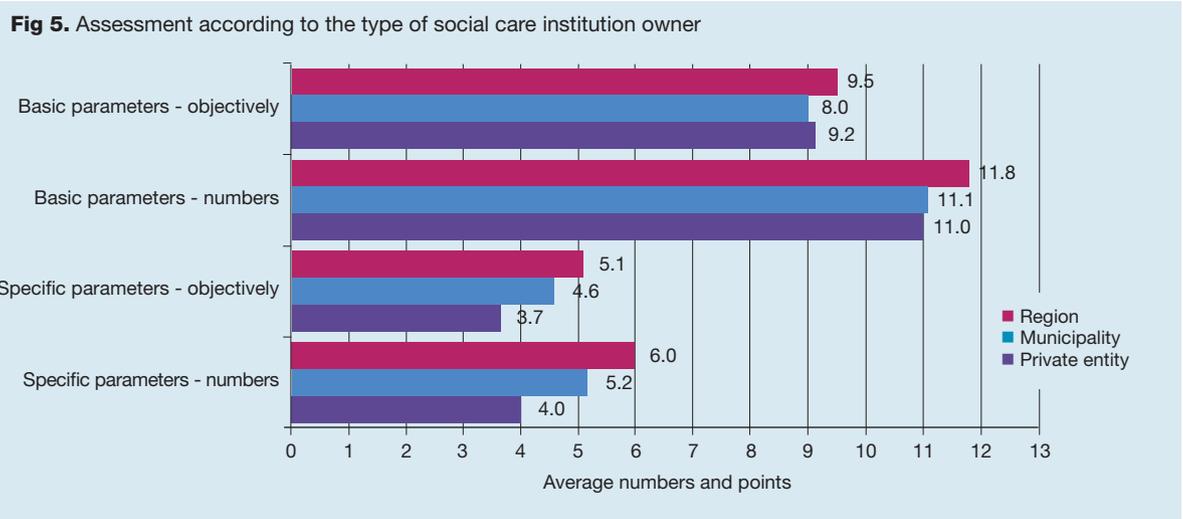
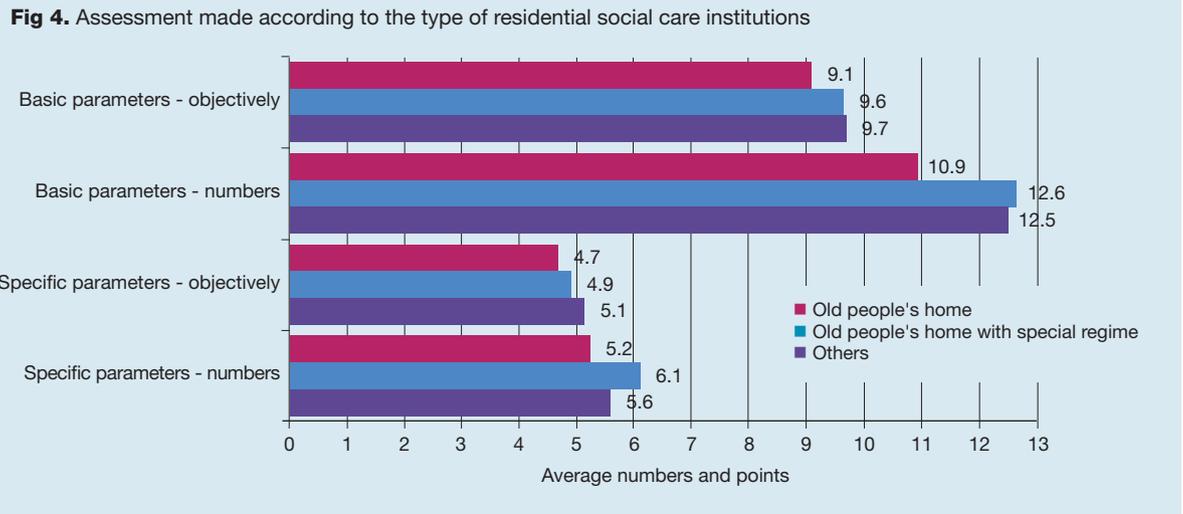
Fig 1 shows the information collected on the institutions, wound management. Only 27.3% of the institutions had a nurse (authorised person) working as a wound consultant, the rest did not have any coordinating person for wound management. The majority of the facilities used objectifying scales for evaluation of overall patient health status (83.3%). The Barthel index for basic

daily activities, the Mini Nutritional Assessment and the Mini Mental State Examination were the most commonly used scales. Photographic documentation was conducted at more than half of the social care institutions (51.5%), but the quality was poor. Digital cameras were not used according to standard operating procedures, photographs were taken from different distances, with insufficient lighting or fuzzy and/or blotchy, due to a low quality flash. However, there was a problem with the process of data confidentiality for example, pictures were stored without anonymisation and were not used according to the law for personal data protection. Importantly, the person who recorded information was authorised to use required signature or official stamp set by legislation at only 11.1% of institutions involved.

Observation of basic/fundamental wound parameters

Fig 2 summarises the recording of basic parameters of wounds by use of objective scales. The size and location of wounds were the most commonly evaluated and reported parameters (Fig 2), with all parameters reported in ≥80% of institutions participating.

In Fig 3, pain is shown to be the most common objectively evaluated specific parameter (33.3%).



Odour was not recorded using any scales, and nurses described and named odour in their own language and terms very subjectively.

On the basis of data obtained on the assessment of basic and specific wound parameters, the quality of assessment was also sought and recognised. We numbered all the symptoms which were assessed and only those which were measured or identified with use of some objective scales assessed were counted. When checking the relationship between the extent of monitoring of basic and specific parameters of the wound and the type of workplace (old people's home, old people's special regime, other), no statistically significant differences were found ($p > 0.05$). However, most of basic parameters of wound (average: 10.9 points) and specific parameters of wound (average: 5.4 points) were observed in old people's homes with a special regime (Fig 4). This might be related to a higher proportion of residents in more serious conditions and greater staffing levels in comparison with other residential social care institutions.

The evaluation of the averages of specific parameters

(signs and symptoms) of non-healing wounds in residential social care institutions according to the type of their owner, statistically significant differences were found. A statistically significant difference was detected in specific monitored wound parameters ($p = 0.048$) (Fig 5). In the facilities established by the regional or municipality offices, a higher number of wound parameters monitored when compared with privately established institutions.

Discussion

The results of this study have shown that there is inconsistency in the process of wound assessment among the residential social care institutions in the Czech Republic and the situation is similar to acute care settings.⁶ There are many ways of classifying wounds and their symptoms and one universal system may not be suitable.⁴ Nevertheless, wound measurement is therefore a useful component of a wound assessment tool (WAT). Wound measurement carried out by nurses in their routine practice will almost inevitably lack

precision. However, basic measurements should be able to identify a trend of healing or non-healing. Wounds which fail to decrease in size are at risk of not healing and may require further investigation or intervention.¹⁶

It has been recognised that the assessment of wound parameters depends on the presence of nursing wound consultants at the workplace—on the assumption that they are more experienced and able to assess wounds more accurately. This confirms the results of the study conducted by Cook,¹⁷ which related the level of education in the evaluation and documentation of wounds to the quality of the care process. So far, there has been a lack of studies focusing on the knowledge and skills of nurses in the evaluation of non-healing, chronic wounds.⁶ With regard to the level of knowledge, nurses need support, particularly in relation to acceptance of their knowledge and competencies by the team.¹⁸ Disparity regarding using objective practices such as scales and maps was also mentioned by other published surveys.^{18–21} It was recognised that wound, localisation, depth and the wound bed were the basic parameters most commonly assessed in the wound. This finding fully corresponds with the study made in acute care settings in the Czech Republic.⁶ Correct wound measurement helps nurses to identify whether a wound is healing or not.^{22–24} It has been acknowledged that measurements carried out by nurses in daily clinical practice lack precision, mostly because nurses are short of time. However, in this study 50% of residential social care nurses were found to be using disposable rulers for measuring wound size, which is consistent with the findings that it is the most common way of measurement.^{6,18,25,26} Tracking the size of the wound in residential social care institutions in the Czech Republic has a direct connection with the reporting of professional nursing care to the health-care payers (insurance companies). The size of the wound in cm² is directly proportional to the time of treatment reported in scoring. In the remaining facilities where wound size was measured (50%), nurses compared the size of the wound with everyday objects, such as a matchbox, or it was estimated by eye, which is not appropriate, but is similar to the situation which was found in Czech hospitals.⁶ A possible solution could be the use of good quality photography or photogrammetric software, which could save time and simultaneously provide accurate information for storage,^{18,27–29} particularly with regard to irregularly shaped wounds. However, the economic situation in most Czech residential social care institutions precludes this possibility and, therefore, measurement with disposable rulers is considered as the gold standard for calculation of the wound volume.^{25,26} This process is probably effective and sufficiently accurate in day-to-day care but not in research studies, which are not often carried out in these kind of institutions.

Objective assessment of the wound bed was carried out using wound healing continuum (WHC) definitions^{21,28–32} in 36.4% of residential social care institutions, with the wound bed being described as necrotic (black), sloughy (yellow), granulating (red) and epithelialising (pink),

corresponding to supporting expert advice. On further analysis of the documents, it was found that only the basic wound bed tissue types were recorded, whereas the transitional type of wound beds were rated at only two workplaces. A relatively high percentage of the use of grading scales was also influenced by the strategies of distributors of wound healing materials who have prepared an overview of product portfolios and their use for the healing stage according to WHC and TIME systems, as discussed by Pokorna and Leaper.⁶

Nurses who were not familiar with any objective scales described the tissue of the wound bed in their own words, which was confirmed in Cook's survey of general nurses who were not familiar with these tools,¹⁷ but, according to the findings of this study, nurses were better in the evaluation of WHC than doctors. In another report from the Netherlands, found that the knowledge of 63 nurses and 79 doctors was consistent.³³ An Austrian study published in the same year reported that both nurses and doctors made evaluation errors,³⁴ which were least often in the assessment and monitoring of the wound edges (20%) and surrounding skin (22.7%). In our study, field notes from observations, and subsequent analysis of patients' documentation, showed that even if an objective assessment was made locally using an applicable scale, nurses used terms that did not have the same meaning or they understood them differently. Nurses often did not use predefined terms, and the description of the edges and surrounding skin area corresponded to the comments written in their own words. Procedures in which uniform terminology is not used pose a risk of a mistake and disruption to the continuity of care. This issue of the use of jargon, acronyms and typing errors has been recognised and addressed by others.^{35,36}

The second phase of the research was to assess the evaluation and recording of specific parameters of wounds in clinical practice. These are the parameters that are not always evaluated by a nurse or when a decision (such as assessment of contamination or colonisation) does not fall within the nurse's competence. These examinations are not usually provided by the social care facilities: patients are referred to specialised hospital units. Assessment of specific parameters requires a certain level of experience, and theoretical knowledge of the anatomy and pathophysiology of the skin and the healing process. The most commonly assessed specific parameter of non-healing wounds was odour (97%), which is rarely considered in wound trials. An increasing intensity of the odour, or an unexpected change, might be an important signal of a sudden deterioration of the wound.^{37,38} Although it was not expected that odour would be evaluated according to a scale, at some institutions up to 34 descriptors of odour were recorded. Interestingly, odour assessment is included in national guidelines from Ireland and Austria, which recommend an assessment of the occurrence of odour during care — no odour, odour in intact primary dressing, odour when removing the dressing, or odour upon entering the

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room.^{39,40} Odour and increasing exudate are two symptoms that distress patients, triggering anxiety resulting in a poor quality of life, especially in those with fungating wounds.⁴¹

Low amounts of exudate are normal in wound healing and are responsible for maintaining the moist wound environment considered necessary for optimal healing. While it is normal for a wound to produce serosanguinous exudate during the healing process, an increase in exudate volume or viscosity may indicate infection or impeding dehiscence.^{42,43,44} From the analysis of documentation, it was found that nurses usually assessed exudate character according to a colour scale, expressed using a variety of technical terms—serous, serosanguinous, purulent. Nurses examined the nature of exudate with regard to dressing types at only ten out of the 66 facilities, but none corresponded to best practice. Nurses in the hospitals examined the nature of exudate at three out of 95 facilities; again none corresponded to best practice.⁶ Our notes showed that nurses believed exudate evaluation should be the doctor's responsibility, but a doctor may not be present at each dressing change, specially in residential social care facilities, where doctors visit once a week. Cook¹⁷ drew attention to the belief held by nurses that an exact evaluation of the wound using scales is highly time-consuming and not possible in their day-to-day work. Therefore, it was recommended that an assessment of exudate should be made with simple pictograms, similar to the colour range for the WHC. The wound exudate continuum (WEC) definitions could be used effectively, which is a guideline for the choice of therapeutic material for the absorption or, conversely, the retention of moisture in the wound.^{44,45}

The last specific parameter of the survey was the evaluation of pain. Pain was the most extensively evaluated specific parameter of chronic wounds. In 54 (5%) of institutions, pain evaluation was undertaken through the use of an objective rating scale. However, participants, observations showed that the assessment of pain was not usually recorded as part of the progress of non-healing, chronic wounds. Pain was more associated with the general status of the patient. Along with increasing chronic degenerative changes and multiple medical comorbidities, the prevalence of pain increases with advancing age, ranging from 50–75% of elderly patients, while remaining underdiagnosed and undertreated. Poorly controlled pain, in turn, causes impaired activities of daily living (ADLs), mood disturbances, decreased ambulation, and cognitive alteration.⁴³ Evaluation was predominantly focused on pain intensity and carried out with the use a visual analogue scale (VAS). Pain status or pain associated with nursing interventions (such as pain at dressing changes) was not assessed. This corresponds to the findings in an earlier study involving 250 nurses from the Czech Republic.⁴⁶ McCluskey and McCarthy showed in their study that majority (81%) of respondents assessed pain routinely.¹⁴

The assessment of pain is important for several

reasons: it distresses patients,^{28,47,48} an increase in pain may indicate infection; and it may relate to delayed healing. A prolonged inflammatory response stimulates the local afferent skin receptors (nociceptive) or peripheral nerve endings with increased sensitivity or hyperalgesia.^{28,47–51} Hence, on going assessment and team communication are essential for effective pain management.⁵² Pain influences the quality of life of patients, their understanding for needed procedures and willingness to collaborate with carers. The patient's attitude to the wound and its implications will determine their degree of adherence with the management plan.⁴ The record of pain may also be important in the transfer of patients from acute to long-term care, and vice versa. In this study, was confirmed that weaknesses exist in wound assessment in nursing practice in the Czech Republic, as it was found in the previous study made in an acute care setting.⁶ The management of all residential social care institutions involved was acquainted with the results of the survey and they were interested in removing the highlighted shortcomings of care. Almost all of 66 residential social care institutions (72.7%) were interested in the publication of a wound assessment guide. More than half (66.6%) of the residential social care institutions' managers were interested in online consulting and 37.9% of them wanted to be involved in the process of preparation of 'tailored' recording for wound care and wound assessment (a wound assessment guide). In comparison with the social care institutions, 80% of hospitals were interested in the publication of a wound assessment guide, 60% of the hospitals' managers were interested in online consulting and 52% of them wanted to be involved in the process of preparation of a wound assessment guide.⁶

Other reports also show that there is limited acceptance of nurses' knowledge and skills in the team, and not only in relation to wound management.^{9,16,17,33} The introduction of easy-to-use, validated WAT would help inexperienced nursing staff in orientation and decision-making and can serve as an aide-memoire for experienced nurses.⁵³ We have suggested that a good WAT can help guide nurses towards best practice in wound management. However, it cannot be a substitute for clinical knowledge and expertise.⁵⁴ Education has a vital role not only for nurses in an acute care setting, but also in the following long-term care and especially when patients are institutionalised. There must also be consistent flow and transmission of information among professional carers from acute to long-term care.

Limitation of the study

This study has also limitations that must be considered. The study was conducted on employees in a nursing environment and especially in residential social care; thus the results obtained can not be generalised to the public or other health-care professions (i.e. medical doctors, physiotherapists, psychologists, etc.) nor to all residential social care facilities in the Czech Republic in general (there were 66/492 involved institutions).

Nevertheless, with respect to the selected research strategy (mixed methodology) the result should be accepted as more objective and not influenced only by respondents' opinions, as it could be when only the questionnaire survey is used.

Conclusions

We confirmed that many nurses working in residential social care facilities in the Czech Republic lack knowledge regarding wound management and wound assessment skills. Hard-to-heal, chronic wounds require more nursing time and additional resources. If a nurse was able to recognise the primary symptoms of delayed healing, early intervention could be undertaken. From the analysis of this study, it was found that the evaluation process of non-healing, chronic wounds in selected Czech residential social care facilities was not homogeneous and that nurses

were not using objective techniques and tools for the evaluation of the basic and specific parameters of wounds. One of the main reasons for this is the lack of unified recommendations—guidelines for the evaluation of non-healing wounds in clinical practice at the national level.

Outcomes of this study recommended procedure for recording of clients with non-healing wounds in residential social care facilities and a record sheet for documentation of wounds. In collaboration with Czech Wound Management Association (CWMA), the Clinical Wound Assessment Algorithm was prepared,⁵⁵ based on internationally accepted recommendations for objective and accurate wound assessment. **JWC**

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