The status of wound care units in Spain



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The paucity of published studies to date has made it difficult to assess wound care provision in Spain. This paper reports the outcomes of the first census of units specialising in the treatment of chronic wounds in this country. Results indicate that wound units have very heterogeneous and diverse characteristics, varying according to region and health context. The regional organisation and implementation of health care appears to be reflected in the uneven distribution of wound care units across the territory, with several regions having none. The majority of units that exist provide benefits for both patients and staff, through treatment and training, respectively. Despite the benefits of the wound care unit model, there are barriers to unit creation and shortcomings that need to be addressed to strengthen the position of these units within Spain's healthcare system.

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The term 'chronic wounds' encompasses a large number of injuries, such as pressure ulcers, lower extremity ulcers and diabetic foot ulcers, among others (Vowden, 2011). Although these types of injury have their own, very differentiated, characteristics derived from a diverse pathophysiology and aetiology, we can define chronic wounds as those wounds that have failed to progress through the normal phases of healing within expected timeframes (Sibbald et al, 2011; Vowden, 2011). It is necessary to know the particularities associated with the pathophysiology and aetiology of each type of chronic wound in order to achieve adequate healing within an acceptable period of time, and have the ability to identify, address and understand factors that may slow or prevent full healing (Sibbald et al, 2011; Vowden, 2011).

Chronic wounds are a serious public health problem, as they are associated with high morbidity and mortality, and are affecting increasing numbers of people across the world (Sen et al, 2009). They put an enormous economic burden on health services, due to direct and indirect costs (Posnett et al, 2009; Guest et al, 2017). In addition, they cause a significant loss of well-being and impair quality of life for sufferers, which has a considerable social impact (González-Consuegra et al, 2011; International Consensus, 2012).

The theoretical and practical answers to the complex and growing problem of chronic wounds have been numerous, although they have often been implemented in isolation. Among these responses are the specific training and specialisation of healthcare practitioners (Cowman e al, 2012; Sibbald et al, 2012), the development of certification and accreditation systems (Sibbald et al, 2012; Masturzo et al, 2013), the implementation of standardisation tools for clinical practice such as clinical practice guidelines (Hernández Martínez-Esparza and Verdú Soriano, 2012; Sibbald et al, 2012), the use of telehealth or telemedicine (Moore et al, 2015; Sood et al, 2016), and the adoption of new organisational strategies (van Acker, 2012; Moore et al, 2014). In the latter case, the adoption of interdisciplinary or transdisciplinary approaches that allow the effective treatment of these lesions by a team is particularly relevant (Moore et al, 2014; Scarborough, 2017). In this context, in recent years the wound clinic or wound care unit has emerged, with the aim of integrating responses to poor healing. They do this by designing specific care structures for patients with chronic wounds.

Wound care units usually have heterogeneous and uneven characteristics, receiving different denominations (i.e. different names, such as wound clinics, wound units, wound commission, etc), depending on where they are located geographically. These structures generally have one feature in common — they are built around an organisational system based on a department, service or structure that integrates professionals from different disciplines (Gottrup, 2004a; Kim

et al, 2016) and often include such elements as consultation and telemedicine systems.

The wound care unit model is well established in some countries in Europe. Although there is growing interest in this subject, however, published works currently only address the issue of wound care in general, particularly in literature relating to wound management in Spain. The authors do not have information about the number, distribution and characteristics of wound care units. The study of these units can serve to encourage the further development of this model of care for people with chronic wounds. It is very probable that there are some barriers that impede or prevent the implantation and diffusion of this model in our health context. Having up-to-date information on this topic can serve to support the creation of new units, in addition to giving visibility to the units already established.

Aims of the study

The main purpose of the research presented in this paper was to determine how many wound care units exist in Spain today and the most important features of these units. Our study aimed to:

- Describe and analyse the phenomenon in depth
- Identify established units and carry out a census
- Describe the characteristics of each unit, exploring its organisation and operational structure
- Gather information about services and determine the profile of patients
- Establish the professional profile and competencies of unit leaders
- Investigate the composition of integrated multidisciplinary teams
- Investigate the possible existence of barriers that prevent unit implementation.

Methods

This cross-sectional, descriptive-analytical observational study consisted of two phases. In phase 1, a questionnaire was designed and developed for data collection in the wound units (Verdu et al, 2015). In phase 2, the authors sampled and recruited units, collecting and analysing information from them.

The authors included organisational structures (units) within the Spanish territory that aim to provide comprehensive care for people with chronic wounds based on a unified department, service or structure, without distinction as to the level of care, where they were created or legal or administrative context. Structures that focus on a particular type of chronic wound or serve as a place where patients receive consultation or advice from healthcare professionals were included. Those structures with informal operation and no established legal framework and structures whose design and functioning were not exclusively or specifically directed at the care of patients with chronic wounds were excluded.

A non-probability sampling system was used based on three stages:

- Stage 1: convenience non-probability sampling made by the principal researcher and three experts in the field
- Stage 2: exponential discriminant snowball sampling of the wound units detected in stage 1
- Stage 3: convenience non-probability sampling, which served as 'control-feedback' through three companies related to the chronic wounds market.

Units were recruited via direct telephone contact with the unit coordinators and/or through email and/or telephone research with the facility where the unit is located. Recruitment was chronologically divided into three periods derived from the sampling steps.

The authors posted the questionnaire to the units identified. The coordinators or leaders of each unit were responsible for completing and returning the questionnaire and accompanying consent document to the principal researcher.

Data analysis and interpretation

The data were stored, processed and analysed using the statistical program SPSS version 19.0. The analysis was carried out by the principal researcher (Héctor González de la Torre) and was supervised by the other two authors.

Five variables were measured by the questionnaire:

- The existence of barriers to unit creation due to suspicion and/or opposition
- The number of members in the unit
- The existence of a multidisciplinary team
- Whether a nurse was the professional responsible for the unit
- The existence of a consultant or consulting team.

A descriptive analysis of the variables considered was carried out. Percentages and frequencies were calculated for qualitative variables, and mean and standard deviation were calculated for quantitative variables. An inferential analysis was carried out to identify possible associations between different variables using Chi-squared test and exact Fisher statistic for qualitative variables, with significance being obtained for *P*-values <0.05. Cramér's V coefficient was calculated to gauge the strength of relationships identified and the McNemar test was

Table 1. Wound care units (n=42) included in the census by region.

Region	Number (%)
Andalucia	2 (4.8)
Aragon	1 (2.4)
Asturias	1 (2.4)
Balearic Islands	1 (2.4)
Basque Country	4 (9.5)
Canary Islands	1 (2.4)
Cantabria	0 (0.0)
Castilla-La Mancha	0 (0.0)
Castilla y León	1 (2.4)
Catalonia	9 (21.4)
Extremadura	0 (0.0)
Galicia	9 (21.4)
La Rioja	0 (0.0)
Madrid	7 (16.7)
Murcia	1 (2.4)
Navarra	1 (2.4)
Valencia	4 (9.5)

Table 2. The target populations of the 42 units.

Target population	Number of units (%)
Local: those who normally receive health services at the centre. This usually refers to a locality.	11 (26.2)
Regional: those who normally receive health services within the region. It generally refers to a wider geographical area than a locality, such as a county or even a province.	18 (42.8)
Community: a centre of reference for users (patients and healthcare professionals) from the community where the centre is located.	10 (23.8)
National: outpatients from across the national territory. In this case, users with chronic wounds move to the centre to receive treatment	2 (4.8)
International: as a world reference centre, outpatients from abroad are frequently treated here. Users with chronic wounds move to the centre from their countries of origin in order to receive treatment.	1 (2.4)

performed to determine the independence of the Chi-squared test results.

Ethics

Patients did not participate in this research, but relevant ethical and legal considerations were taken into account. All of the unit coordinators and leaders who agreed to participate signed an informed consent form. The data obtained during the investigation process met current data protection regulations. To preserve the confidentiality of the data, each unit was assigned an identification code. An information management policy was established to ensure the data obtained from each unit relating to the five variables measured was presented in a disaggregated way, so it was not possible to associate the results obtained with a specific unit. All participants were made aware of this policy. The companies participating in sampling stage 3 were assigned a code to shield their degree of participation in a similar way to the units.

Results

During the study period, between April 2015 and December 2016, we identified 75 possible candidate study units at all three sampling stages. Thirty-one of these units were excluded from the study and 44 units were recruited, although two units had to withdraw. In total, 42 units from 13 regions were analysed in the first census of wound care units in Spain. The regions with the highest numbers of units were Catalonia and Galicia, followed by Madrid, Valencia and the Basque Country *[Table 1]*. Most units had been created between 2011 and 2015. Of the included units, 35.7% (15 units) were located in hospitals and 40.5% (17 units) in healthcare structures that covered an entire health area (i.e. an integrated health organisation). The rest of the units were located in centres of primary healthcare (7.1%; three units), specialist ambulatory centres (4.8%; two units), universities (4.8%; two units) and private medical consultations (7.1%; three units).

Descriptive analysis

The majority (95.2%; 40 units) of units provide services to both people with lesions and healthcare professionals, as they provide treatment to patients and training to healthcare practitioners. All but one unit provide advice to healthcare professionals from other centres, with email being the most frequently used electronic communication system (in 88.1% of cases; 37 units). Other counselling systems used were telephone advice (85.7%; 36 units), software for health administration (76.2%; 32 units), specific computer programs for wounds

(45.2%; 19 units), instant messaging, such as WhatsApp (45.2%; 19 units) and social networks (21.4%; nine units).

The most frequent area where the units provide assistance, according to the target population, is at a regional level (42.9%; 18 units) *[Table 2]*. A high proportion of units participate in training and research activities, with 76.2% (32 units) allowing professionals from outside the unit to undertake training through rotations. The types of lesions treated are provided in *Table 3*. The most frequently treated lesions are diabetic foot, venous, arterial and pressure ulcers.

The types of therapies used are given in *Table 4*. One unit did not answer the question relating to therapies, as it is dedicated exclusively to providing advice to healthcare professionals. All of the other units use moist wound healing dressings. Compression therapy, offloading and negative pressure are frequently used. Various types of wound debridement were performed in the units *[Table 5]*.

The leaders of most wound care units are nurses (78.6%), with 33 nurse leaders responsible for a unit. Sixteen (38.1%) unit leaders have national accreditation relating to the care of people with chronic wounds. On average, wound care units have 2.81 ± 2.78 members (range 1–15 members). Only six units (14.3%) have staff with three or more different qualifications, with 25 units (59.5%) not having multidisciplinary teams. A consultant and/or support team is, however, available in 22 units (52.4%).

The initial existence of barriers to the implementation of the units was studied and analysed. Five types of barriers were considered (financial/economic, legal/regulatory, fear/opposition, logistical and other barriers). Thirty-one units (73.8%) positively identified the existence of barriers to implementing wound care units, while nine (21.4%) indicated that they had not encountered any barriers *[Table 6]*. The most frequently detected barrier was fear/opposition, with half of the units reporting this as an issue.

Inferential analysis

Possible associations were explored with respect to the existence of fear of/opposition to the implementation of units through the use of different statistical tests. When we applied Chi-squared test, there was a statistically significant association between the number of members in the unit and the existence of fear/opposition (P=0.049). There were no other associations of statistical significance.

The McNemar test found only one statistically significant association. This association was between the existence of fear/opposition and whether a nurse was the professional responsible for the unit (P=0.007).

Cramér's V coefficient found two notable associations. The first was between the existence of fear/opposition to the implementation of the units and the number of members in the unit (Cramér's V = 0.34; 34%). The second was the existence of fear/opposition to units and the existence of multidisciplinary teams (Cramér's V = 0.35; 35%).

Table 3. Types of lesions treated in participating units (n=42).

Lesion type	Number of units (%)
Arterial ulcer	36 (85.7)
Diabetic foot ulcer	38 (90.5)
Pressure ulcer	34 (81.0)
Venous ulcer	36 (85.7)
Complex surgical wounds	35 (83.3)
Open surgical wounds	32 (76.2)
Burns	21 (50.0)
Moisture lesions	31 (73.8)
Wounds of low prevalence	30 (71.4)
Other wounds	27 (64.3)

Table 4. Therapies used in participating units (n=41).

Therapy	Number of units (%)
Moist wound healing dressings	41 (100.0)
Compression therapy	33 (80.5)
Offloading	34 (83.0)
Negative pressure therapy	33 (80.5)
Maggot therapy	4 (9.8)
Traditional care (dry care)	30 (73.2)
Physical therapy	12 (29.3)
Alternative/natural therapy	7 (17.1)
Hyperbaric therapy	8 (19.6)
Genetic therapy	4 (9.8)
Tissue engineering	16 (39.1)

Discussion

This is the first work studying wound units in Spain. To date, the only study published on a similar theme refers to diabetic foot units (Rubio et al, 2014a), so comparisons with our study should be made carefully. At the international level, there are very few published papers (Attinger et al, 2008; Kim et al, 2013; Jiang et al, 2016), which does not allow us to compare our results in depth.

In Europe, there is a growing interest in wound care units. The European Wound Management Association (EWMA) has launched a pilot

Table 5. Types of wound debridement used by participating units (n=41).	
Type of debridement	Number of units (%)
Sharp	40 (97.6%)
Autolytic	40 (97.6%)
Enzymatic	41 (100%)
Surgical	18 (43.9%)
Mechanical	14 (34.2%)
Jet lavage/hydro-surgery	12 (29.3%)
Ultrasound	5 (12.2%)
Osmotic	28 (68.3%)

Table 6. Barriers to running units (n=42).	
Barrier	Number of units (%)
Fear/opposition	21 (50.0%)
Financial/economic	15 (35.7)
Legal/regulatory	13 (31.0)
Logistical	12 (28.6)
Other	4 (9.5)
None	9 (21.4)

programme to establish guidelines for possible wound unit models (two types, depending on the health sector and complexity — i.e. primary care or hospital centre), as well as for the development of a specific accreditation system (EWMA, 2017). Currently, only two European countries — Belgium and Germany — have implemented a formal accreditation system. The system in these countries is specifically aimed at diabetic foot units (Morbach et al, 2016). In Spain, the National Group for the Study and Assessment of Pressure Ulcers and Chronic Wounds (GNEAUPP) has recently extended its accreditation system to wound care units; before it focused on the accreditation of clinicians, clinical practice guidelines, documents and scientific educational activities.

Wound care units in Spain have very heterogeneous and diverse characteristics. There are important differences in unit creation and focus. Units vary according to the region or health context. While there are regions with an acceptable number of units, in some regions, such as Extremadura, there are none. In some countries, the distribution of wound centres follows a pattern guided by population density criteria (Morbach et al, 2016); however, it is evident that the form of health organisation in Spain has led to the unequal creation and distribution of wound care units. Decentralisation has resulted in 17 regional health systems, which has led to a progressive increase in inequalities in health care for people according to the region in which they live.

According to data obtained in this study on the year of foundation, the number of units in Spain is increasing over time. The existence of units in a region may increase the likelihood of other units being created, although it is debatable whether this effect responds to real need and is a reflection of the effectiveness of this model. It is therefore necessary to carry out studies to examine this theme in greater detail.

Wound care units in Spain are typically located in a hospital or integrated in a health structure that offers coverage to a whole health area (structures that encompass hospitals, health centres and socio-sanitary centres). They have influence within their regional area and meet the needs of people with chronic wounds and healthcare professionals. These findings indicate that wound care units are important, not only as they provide specialised care for patients, but because they support healthcare professionals who often lack training in this treatment area (Gottrup, 2004b).

In Spain, wound units are generally small and have limited numbers of staff, although they often have access to a consultant and support team (García-Fernández et al, 2012). The units are usually led by a nursing professional with a long professional career. These results indicate that suspicion and opposition relating to units is engendered by the fact that nurses often lead them. This is a finding that deserves to be investigated in greater depth in the future.

The wounds that require more care in these units are usually lower extremity ulcers, especially venous, arterial and diabetic foot ulcers. Although diabetic foot units are an organisational model whose effectiveness no one doubts today (van Acker, 2012; Rubio et al, 2014b; Wang et al, 2016), we believe that the next logical step is the implementation of the multidisciplinary wound unit model (García-Fernández et al, 2012). These units must be able to treat any type of wound. This multidisciplinary model, far from increasing the costs associated with the care of these patients, can be economically viable (Rondas et al, 2015). Training and research activities should be important functions of the multidisciplinary model.

Conclusions

This work advances investigation into the multidisciplinary wound unit model. Despite the increasing number of wound units in Spain, the future of this new organisational model is uncertain as there are difficulties associated with their creation and certain shortcomings, such as staffing levels, need to be addressed. The

model has undoubted advantages; however, it is necessary to increase the visibility of the work these units carry out through studies demonstrating the effectiveness of this model, since there are indications that the position of these organisational structures in our health system is still weak and vulnerable.

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