



PROFESSION AND SOCIETY

Course Content Related to Chronic Wounds in Nursing Degree Programs in Spain

Angel Romero-Collado, PhD, MSc, RN¹, Marta Raurell-Torreda, PhD, MSc, RN², Edurne Zabaleta-del-Olmo, MSc, RN³, Erica Homs-Romero, RN⁴, & Carme Bertran-Noguer, PhD, MSc, RN⁵

1 Professor of Nursing, Nursing Department, University of Girona, Spain

2 Professor of Nursing, Nursing Department, University of Girona, Spain

3 University Institute for Primary Care Research Jordi Gol (Institut Universitari d'Investigació en Atenció Primària (IDIAP) Jordi Gol), Barcelona, Spain and Researcher associated with the Universitat Autònoma de Barcelona, Bellaterra, Spain

4 Figueres Basic Healthcare Area (Àrea Bàsica de Salut de Figueres) Catalan Health Institute (Institut Català de la Salut), Girona, Spain

5 Head of Nursing Department, University of Girona, Spain

Key words

Curriculum, nursing education research, nursing students, pressure ulcer, professional competence, Spain, wound healing

Correspondence

Dr. Angel Romero-Collado, Professor of Nursing, Nursing Department, University of Girona, C/ Emili Grahit, 77, 17071 Girona, Spain.
E-mail: angel.romero@udg.edu

Accepted: July 19, 2014

doi: 10.1111/jnu.12106

Abstract

Purpose: To analyze content related to chronic wounds in nursing degree programs in Spain.

Design: Cross-sectional descriptive study.

Methods: Course descriptions available for online access during June and July of 2012 were reviewed for the 114 centers in Spain that offer a nursing degree, according to the official Registry of Universities, Centers, and Titles.

Findings: Of the 114 centers with degree programs, 95 (83.3%) post course content online, which make it possible to analyze 2,258 courses. In 60 (63.1%) of these centers, none of the courses included the concept of pressure ulcer prevention, and the course content posted by 36 (37.9%) centers made no mention of their treatment. None of the course descriptions contained any reference to pain management in patients with chronic wounds. Of the 728 elective courses analyzed, only one was related to chronic wounds.

Conclusions: This review of available information about nursing degree programs in Spain indicates that pain management in patients with chronic wounds is not addressed in any course, and more courses consider the treatment of pressure ulcers than their prevention.

Clinical Relevance: Degree programs responsible for the training of future nurses should be reviewed and revised as needed to ensure that graduates have acquired minimum basic competencies in the prevention and treatment of chronic wounds that help to decrease the theory–practice gap in this field.

Chronic wounds are a major factor in morbidity, mortality, and healthcare costs (Augustin, Brocatti, Rustenbach, Schäfer & Herberger, 2014; Sen et al., 2009). On healthcare teams, nurses typically have the responsibility of caring for patients who have these wounds or are at risk for them (Caron-Mazet, Roth, & Guillaume, 2007; Romero-Collado, Homs-Romero, & Zabaleta-del-Olmo, 2013).

Despite increased knowledge about chronic wound prevention and treatment, scientific evidence is not always translated into clinical practice to the extent that

would be desirable. The knowledge possessed by healthcare professionals is one of the key factors most frequently identified in efforts to explain the existence of this theory–practice gap, although organizational and environmental factors also have an impact (Moore, 2010). Cowman et al. (2012) conducted an international, multidisciplinary eDelphi study to identify the research and education priorities in wound management and tissue repair. This study offers a point of reference to consider where we are in this field and what should be

done to improve the preparation of healthcare professionals, thereby improving the prevention and treatment of chronic wounds.

Background

The Bologna Declaration (European Ministers of Education, 1999) establishes a new framework for European universities and a convergence of university degrees to facilitate mobility in the European job market (Davies, 2008). It also encourages study of the major European Union languages and discipline-specific study in those languages.

For the nursing profession in Spain, the new framework has led to the progressive disappearance of the 3-year nursing programs in universities (Zabalegui & Cabrera, 2009), which are being expanded to 4 years, 240 European Credit Transfer System (ECTS) units, and foreign language competency (level B2.1) in English, French, German, or Italian. In contrast, nursing degrees are completed in 3½ years and 210 ECTS in Denmark and Finland, and 3 years and 180 ECTS in Norway and Sweden (Råholm, Hedegaard, Löfmark & Slettebø, 2010). Full implementation of the new degree program in Spain will give the nursing profession equivalency with other degrees with respect to future options and opportunities. This includes access to higher academic degrees (master's and doctoral degrees) by way of their own discipline rather than by way of disciplines such as biology or psychology.

Another substantial impact of the Bologna process is a change in the concept of learning. The previous model was that learning was based on the knowledge considered necessary to obtain the diploma. This could concur—or not—with what the future professional would need to know for success in the workforce, but there sometimes appeared to be a large gap between the academic and working worlds. Under the Bologna process, learning is oriented toward skills and competencies and is student centered (Zabalegui & Cabrera, 2009). To address the theory–practice gap, courses must be designed to achieve essential competencies, along with knowledge of theory. This aligns with the white paper on the degree in nursing published by Spain's national accreditation agency, which indicated that the cross-cutting competency most valued by practicing nurses, university professors of nursing, and nursing administrators is “the ability to apply knowledge to practice” (Agencia Nacional de Evaluación de la Calidad y Acreditación, 2004).

The theory–practice gap, defined as the lack of matching textbook descriptions of clinical situations with the reality of practice, is a vitally important topic for

nursing education (Scully, 2011). For example, the lack of education about the prevention of pressure ulcers (PUs) is cited as a cause of their high prevalence and incidence (Moore, 2010) and of the persistence of care interventions that are not recommended, such as the use of “doughnut”-type devices or massaging areas of redness (Iranmanesh, Rafiei, & Foroogh Ameri, 2011; Panagiotopoulou & Kerr, 2002; Pancorbo-Hidalgo, García-Fernández, López-Medina, & López-Ortega, 2007; Saleh, Al-Hussami, & Anthony, 2013). In other studies, the majority of nurses in an intensive care unit had the perception that their unit could improve its attention to patients who had or were at risk for developing PUs (Quesada Ramos & García Díez, 2008), and slightly more than half of the nurses in 14 long-term care units considered their knowledge of chronic wound management to be “average” (Caron-Mazet et al., 2007).

The prevalence of PUs in Spain ranges from 5.9% to 13.5%, depending on whether the population is being treated as part of a primary care home-health program or in a hospital or long-term care center (Leyva-Moral & Caixal-Mata, 2009; Soldevilla Agreda, Torra Bou, Verdú Soriano, & López Casanova, 2011). These values are similar to those of other European countries, such as Sweden's 14.5% prevalence in nursing homes and 16.6% in hospitals (Gunningberg, Hommel, Bååth, & Idvall, 2014), the 6.4% reported in a long-term care study in France (Caron-Mazet et al., 2007), and the 9% observed in a long-term care setting in the Republic of Ireland (Moore & Cowman, 2012).

Training nurses in the prevention and treatment of PUs is of fundamental importance. Nonetheless, there are major deficiencies in undergraduate course content related to this type of wounds (Ayello, Zulkowski, Capezuti, & Sibbald, 2010). In a study of emergency care professionals in Spain (Hinojosa-Caballero, 2012), just 23% considered their university education about PU prevention to be “good,” and the rate decreased to 19% when asked about aspects of PU treatment. Other studies have reported that 25% of nurses reported never having received any specific information about PUs in their professional program (Zamora Sánchez, 2006), 53.1% received no training specific to PU wound care (Romero-Collado et al., 2013), and 70% indicated they did not receive sufficient education about chronic wounds in their basic nursing education program (Ayello, Baranoski & Salati, 2005). These deficiencies were also observed in textbooks recommended by nursing educators (Wilborn, Halfens & Dassen, 2009), and wide variation in PU-related textbook content has been reported (Ayello & Meaney, 2003). However, nursing textbooks are not the only element that requires improvement to develop the needed skills. Educational programs must combine textbook content with a variety

of learning methods, including hands-on experience in the laboratory.

An analysis of what undergraduate nursing students know about PUs reported a low general level of knowledge (Larcher Carili, Miyazaki, & Pieper, 2003), despite evidence that even a small educational intervention (2-hr lecture-laboratory session) is effective in the short term (2-month follow-up) in improving students' knowledge about chronic wounds (Huff, 2011). Nursing students also believe that the more time dedicated to guided practice and clinical teaching, the greater will be the improvement in their skills and knowledge about maintaining skin integrity (Ousey, Stephenson, Cook, Kinsey, & Batt, 2013).

Given the impact of chronic wounds in the general population, a multidisciplinary, international eDelphi study (Cowman et al., 2012) was conducted to identify research and education priorities to improve wound management and tissue repair. The purpose of the present study was to analyze the content specified in descriptions of the basic courses taught in the 114 degree in nursing programs in Spain to identify instruction related to the four priorities identified by Cowman et al. (2012): pain management, PU prevention, wound bed assessment, and selection of dressings.

Methods

Design

A cross-sectional design was used to analyze the content on chronic wounds in nursing degree programs in Spain.

Centers

We analyzed the degree programs offered by the 114 teaching centers that award the degree in nursing in Spain, as indicated by Spain's official database of universities, centers, and diplomas offered, the Registro de Universidades, Centros y Títulos (RUCT; Gobierno de España, 2008). Search terms included degree titles containing "Nursing," academic level of "Degree program," and discipline of "Health Sciences." For each center, we obtained the names of courses and number of credits for each course in the nursing degree program.

Data Collection

From June 11 to July 6, 2012, we analyzed the degree in nursing program information included in the RUCT, accessed the web page for each center, and assessed the program and course content that was available online. No

centers were excluded from the study. We would note, however, that Spain has gradually implemented the undergraduate nursing degree and not all universities have proceeded at the same pace. Therefore, not all programs have published course descriptions for the full 4-year degree in nursing program.

Two researchers independently analyzed the content of each course description or syllabus and reached a consensus agreement. A third researcher was available to review the course information in the event of any discrepancy. A data collection form was designed ad hoc to record the data obtained about each degree program and course. The following variables were recorded for each program:

- **Access:** The number of years of the 4-year undergraduate degree in nursing for which online access to courses was available.
- **Number of Required Courses:** Total numbers of required courses, basic courses, guided practice, and final project (recorded to determine the nursing degree requirements, excepting elective courses).
- **Courses Entirely Related to Chronic Wounds:** Number of required courses with a title explicitly containing the words "chronic wound."
- **Courses With Content Related to Wounds:** Number of required courses, basic courses, guided practice, and final projects that included any of the following content in the available description: Pain and chronic wounds, Pain control or management (to capture any content related to controlling pain in general), Prevention of pressure ulcers, adults (assigned to a related "pressure ulcer" variable because there could be courses with only this content), Wound bed assessment, selection of dressings, or the mention of any product related to moist wound healing. These were later assigned to a related variable covering a broader concept, "Treatment of PU or other chronic wound (venous, arterial or neuropathic/diabetic etiology)."

Other variables related to chronic wounds were recorded to explore the availability of any content about other aspects of chronic wound care, in addition to the four educational priorities defined by Cowman et al. (2012). At the same time, this approach provided control variables to decrease the risk of information bias in the primary variables studied: Nursing or physiology—attention to patients with venous and arterial disorders in the lower extremities or with "diabetic foot"; Burns (adults, children, adolescents), extensive burns; Wounds related to acute processes; Content related to acute or chronic wound healing; Antisepsis or antiseptics.

If the same content appeared two or more times in the description of the same course, the content was recorded only once; if two or more different content variables were

identified in the same course, each one was counted as “a course” containing that information.

Electives. All elective course options were recorded and placed into the following categories: “chronic wounds,” “language courses,” “palliative care,” “occupational health,” “health promotion,” “Catholicism,” “dependency and chronic illness,” “urgent, emergency and/or catastrophic patient care,” “research,” “complementary/alternative therapies,” “cooperation,” and “school health.”

Ethical Considerations

All of the information recorded (degree programs, course content) was found online, in the RUCT database, and on the official web site of each university; therefore, all data were publicly available. No personal data were accessed (e.g., related to any individual who designed a degree program or course) for this study.

Data Analysis

Univariate descriptive methods (i.e., frequencies, percentages, means, and standard deviations [*SD*]) were used to analyze the data. IBM SPSS Statistics 19 (IBM Corporation, Armonk, NY, USA) was used for the analysis.

Results

The assessments completed by the two designated evaluators were in consensus, eliminating the need for the intervention of a third evaluator and for inter-rater reliability analysis. The study included the 114 degree programs available online, although detailed course analysis was limited to the 95 (83.3%) centers that provided online access to course content, of which 37 (32.5%) centers had implemented 2 full years of the new degree requirements, 34 (29.8%) provided 3 years, and 24 (21.1%) provided detailed information for the full content of the 4-year degree in nursing program.

Of the 3,436 required, basic, guided practice, and final project course descriptions reviewed, representing all of the nursing degree programs in Spain, 2,258 (65.7%) courses were analyzed in detail. The mean number of courses required for degree completion was 30.1 (*SD* 3.56) required and 6.7 (*SD* 4.56) elective courses. Table 1 contains a descriptive analysis of the number and type of courses.

The highest number of nursing degree programs are located in 3 of Spain’s 17 autonomous communities, with 18 (15.8%) in Andalusia, and 15 (13.2%) in Catalunya

and in Madrid. Only 1 (0.9%) program is offered in 4 communities: Cantabria, Ceuta, La Rioja, and Melilla. The remaining 62 (54.2%) programs are distributed across 10 autonomous communities.

Our analysis identified no course offered at any center that was dedicated to chronic wounds or included content on pain management specific to chronic wounds; however, 94 (98.9%) centers offered at least one course related to general pain control. Only 40 (46.9%) centers offered a course with specific content on prevention of PUs in adults, although some type of content specifically related to PUs was offered at 62 (65.3%) centers (Table 2). Only 10 (10.5%) centers indicated both of these content areas in their courses and 37 (38.9%) centers offered neither of them. “Wound bed assessment” was identified in one course in 1 (1.1%) center, and “How to select dressings” was found in 23 courses in 21 (22.1%) centers. “Treatment of pressure ulcers or other chronic wounds” was contained in 98 courses distributed across 59 (62.1%) centers (see Table 2).

Half of the centers offered no courses related to venous or arterial disorders in the lower extremities, and 91 (95.8%) centers offered no course description with the term “diabetic foot.” We included 131 courses offered by 75 (78.9%) centers in a “wounds, acute processes” category (Table 3).

The analysis of elective courses showed 50 courses related to the Bologna requirement for instruction in other European Union languages in 42 (40.4%) centers, 44 courses related to instruction in research methods in 34 (32.7%) centers, and 36 courses related to complementary or alternative therapies in 31 (29.8%) centers. In all of Spain, only one center (1.0%) offered one elective course that included the term “chronic wounds” (Table 4).

Discussion

Analysis of course content in degree in nursing courses at Spanish universities revealed that the education offered future nurses about chronic wounds is insufficient and largely fails to meet the four educational priorities identified by Cowman et al. (2012). We considered our results in the context of each of these priorities.

Pain Management

The first of the four education priorities in wound management and tissue repair, pain management in chronic wounds (Cowman et al., 2012), was not mentioned in any of the nursing courses offering some content related to chronic wounds. Although PUs produce “endless pain and a restricted life” (Hopkins, Dealey, Bale,

Table 1. Number of Courses in Nursing Degree Programs in Spain

Courses in the degree program (<i>n</i> = number of centers)	Minimum	Maximum	Total	Mean	<i>SD</i>
Number of required courses offered (nonelective) (<i>n</i> = 114)	20	41	3436	30.14	3.55
Number of required courses reviewed (<i>n</i> = 95)	0	40	2258	19.81	10.46
Number of elective courses offered (<i>n</i> = 107)	0	23	728	6.68	4.56
Number of elective credits, ECTS (<i>n</i> = 114)	0	30	1157.5	10.15	7.05

Note. ECTS = European Credit Transfer System.

Defloor, & Worboys, 2006), deficiencies exist in the importance assigned to them in clinical practice (Caron-Mazet et al., 2007) despite recommendations that wound care should be incorporated into all patient care plans (Günes, 2008). We must be aware that all PUs cause pain and that wound care treatments (e.g., dressing changes) also can cause pain. Inadequate knowledge of pain management is a barrier to proper treatment. This deficiency must be addressed by including content about pain assessment and management in training related to chronic wounds (Pieper, Langemo & Cuddigan, 2009). In Spain, for example, the needed change could readily be accommodated by incorporating a unit on “pain management and chronic wounds” into the appropriate courses as, in response to the mandates of the Bologna Plan, the 3-year diploma program is converted to a 4-year university degree and credit hours in pharmacology are increased.

How to Prevent Pressure Ulcers

In the courses we reviewed, this second priority was absent from the content of the degree courses offered at nearly two thirds of the centers that award the degree of nursing in Spain. We consider this lack of training in PU prevention alarming because this is a cross-cutting problem that can affect patients of any age—children, adults, the elderly—in any healthcare setting (primary care, hospitals, long-term care). This limited presence of the topic in nursing studies could be related to the finding by Zamora Sánchez (2006) that 25% of Spanish nurses reported receiving no specific PU training during their official program of study, or to the 23% of health professionals on the other end of the spectrum who indicated that they had received “good” training in PU prevention (Hinojosa-Caballero, 2012). We must add that, despite clinical guidelines that recommend against particular care interventions (such as massaging reddened skin or using doughnut cushions), many nurses in different countries and of different professional generations continue to use

them (Iranmanesh et al., 2011; Panagiotopoulou & Kerr, 2002; Pancorbo-Hidalgo et al., 2007).

Basic theory taught in nursing programs should explain what is and is not recommended by clinical guidelines for the prevention of PUs. This should be complemented by guided practice and the involvement of clinical instructors in practical training to ensure that traditional interventions give way to current, evidence-based standards of practice (Saleh et al., 2013; Zamora Sánchez, 2006). Other researchers have reported a lack of course offerings on certain related topics in other university degree programs (e.g., medicine, physical therapy). For example, required courses related to aging are needed in Spain (Jiménez Díaz, Pulido Jiménez, Villanueva Lupión, Villar Dávila, & Calero García, 2011), and gerontological care is not adequately addressed in nursing education programs in Flanders, Belgium (Deschodt, de Casterlé, & Milisen, 2010). Although PU prevention tends to be considered a nursing task, some researchers have advocated that it should be the responsibility of the entire medical team and therefore should also be incorporated into physician education (Levine, Ayello, Zulkowski, & Fogel, 2012).

Wound Bed Assessment and How to Select Dressings

The third priority, wound bed assessment, was present in just one course at only one center. On the other hand, 23 courses at 21 (22.1%) centers included content on the selection of dressings, the fourth priority in the eDelphi study and an area in which another recent study (Ousey et al., 2013) also found that students are underprepared. The inclusion of “Treatment of PU and other chronic wounds” (a more general term that could potentially incorporate the third and fourth education priorities, “wound bed assessment” and “selection of dressings,” respectively) added 98 courses (4.34%) at 59 (61.8%) centers to the analysis.

Table 2. Number of Courses Included in Degree Programs, by Content Criteria Related to Chronic Wounds, Prevention, and Treatment

Course content criteria	Maximum in a degree program	Total courses with this content, n (%) (N = 2,258 courses)	Centers without this content in any course in the degree program, n (%) (N = 95 centers)	Centers with one course having this content, n (%)	Centers with two courses having this content, n (%) (N = 95 centers)	Centers with three or more courses having this content, n (%)
Pain management, chronic wounds ^a	0	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Pain management (in general)	2	96 (4.2)	1 (1.1)	93 (97.9)	1 (1.1)	0 (0.0)
Prevention of pressure ulcers ^a	4	50 (2.2)	60 (63.1)	25 (26.3)	7 (7.4)	3 (3.2)
Pressure ulcers	3	39 (1.7)	62 (65.3)	28 (29.5)	4 (4.2)	1 (1.1)
Wound bed assessment ^a	1	1 (0.0)	94 (98.9)	1 (1.1)	0 (0.0)	0 (0.0)
How to select dressings ^a	2	23 (1.0)	74 (77.9)	19 (20.0)	2 (2.1)	0 (0.0)
Treatment of pressure ulcers or other chronic wounds	5	98 (4.3)	36 (37.9)	33 (34.7)	18 (18.9)	8 (8.5)

Note. Types of courses consulted: required, basic, guided practice, final project.

^aThe top four education priorities in wound management and tissue repair defined by Cowman et al. (2012).

Table 3. Number of Courses in Each Nursing Degree Program, According to the Content Criteria Related to Acute and Chronic Wounds, Used as Controls

Course content criteria	Maximum in a degree program (N = 95 centers)	Total courses with this content, n (%) (N = 2,258 courses)	Centers without this content in any course in the degree program, n (%)	Centers with one course having this content, n (%)	Centers with two courses having this content, n (%) (N = 95 centers)	Centers with three or more courses having this content, n (%)
Venous disorders of the lower extremities	3	55 (2.4)	48 (50.5)	40 (42.1)	6 (6.3)	1 (1.1)
Arterial disorders of the lower extremities	3	56 (2.5)	48 (50.5)	39 (41.1)	7 (7.4)	1 (1.1)
Diabetic foot	1	4 (0.2)	91 (95.8)	4 (4.2)	0 (0.0)	0 (0.0)
Burns (adult patients)	2	42 (1.9)	54 (56.8)	40 (42.1)	1 (1.1)	0 (0.0)
Burns (children and adolescents)	1	10 (0.4)	85 (89.5)	10 (10.5)	0 (0.0)	0 (0.0)
Severe burns	1	19 (0.8)	76 (80.0)	19 (20.0)	0 (0.0)	0 (0.0)
Wounds related to acute processes	6	131 (5.8)	20 (21.1)	40 (42.1)	19 (20.0)	16 (16.8)
Wound healing	2	25 (1.1)	71 (74.7)	23 (24.2)	1 (1.1)	0 (0.0)
Antiseptics and antiseptics	6	95 (4.2)	38 (40.0)	33 (34.7)	17 (17.9)	7 (7.4)

Note. Types of courses consulted: required, basic, guided practice, final project.

These data show that the treatment of PUs and other chronic wounds is emphasized more than prevention in the degree programs (4.34% vs. 2.21% of courses and 61.8% vs. 36.9% of centers, respectively). Our finding is not consistent with other reports on the knowledge base of healthcare professionals, primarily nurses, which have found better results in the prevention than the treatment of PUs (Hinojosa-Caballero, 2012; Pancorbo-Hidalgo et al., 2007; Quesada Ramos & García Díez, 2008; Saleh et al., 2013). Our results highlight a problem in nursing education that can be addressed very directly when students are assigned to clinical training. In recent years, there have been more changes in PU treatment than in prevention strategies, and therefore prevention has taken a back seat in continuing professional education (Pancorbo-Hidalgo et al., 2007); however, we cannot allow this tendency to affect the preparation of new nursing professionals. The clinical supervisor is a key player in ensuring that students acquire skills in both the prevention and treatment of PUs, not least because the student spends many more hours at the clinical site than in university courses on clinical practices. It is difficult to make changes in what students learn and to improve clinical practices if outdated (even nonrecommended) procedures persist at clinical training sites. Therefore, it is essential that clinical supervisors teach evidence-based best practice and ensure that it is demonstrated by example at the clinical site.

Acute Wounds

We included the term “wounds, acute processes” as a control indicator to assess whether this type of wound is given importance similar to the category of “treatment of pressure ulcers and other chronic wounds.” This term was more prevalent than “chronic wounds” in 30% of the courses (5.8% vs. 4.34%) and was at least present in some course at 16 more centers (75 vs. 59). These results concur with Ayello et al. (2005), who reported that 70% of nurses responded that they had not received sufficient education on chronic wounds in their basic nursing education program. Although more courses and more centers indicate content related to “wounds, acute processes” than to “treatment of pressure ulcers and other chronic wounds,” acute wound care remains an area of concern because all centers should be providing this instructional content, independently of the present study’s focus on chronic wounds.

Lower Extremity Wounds

We also considered it important to identify content related to assessing nursing care of patients with dia-

betic foot or venous and arterial disorders in the lower limb, which are the other large groups of chronic wounds and have great impact on patients’ quality of life (Feinglass et al., 2012). We found content on “venous and arterial disorders of the lower extremities” to be slightly more prevalent than “prevention of pressure ulcers” (55 vs. 50), and more centers offered at least one related course (47 vs. 35). We consider this a deficiency because future nurses must know the characteristics, diagnosis, progression, and treatment of ulcers with venous or arterial etiology. These deficiencies have also been reported in specialized training of internal medicine residents (Schwarcz, Quijano, Olin, & Ostfeld, 2012; Wyatt et al., 2010). Researchers have recommended a greater emphasis on lower extremity wounds in medical school and residency programs (Georgakarakos et al., 2013; Wyatt et al., 2010).

Content on “diabetic foot” is almost anecdotal in the courses analyzed, and was found only in four courses in four different centers. Between 15% and 25% of diabetic patients present with a foot ulcer at some point, and 14% to 20% of them are amputated (Conferencia Nacional de Consenso sobre Úlceras de la Extremidad Inferior, 2009). The training of nursing professionals in foot care is one of the implementation objectives that support patient education and the prevention of possible disorders (van Houtum, 2012); therefore, it is critical to include this content in the curriculum.

Elective Courses

When we analyzed the presence of elective courses, we were surprised to find only one elective course in all of Spain that offered the possibility of consolidating and deepening students’ knowledge of chronic wounds, far below other fields such as complementary or alternative therapies (1 vs. 36). It could be argued that there is no need to offer elective courses related to chronic wounds because sufficient content is provided in the degree courses. However, the same case could be made for elective courses about research methods (the second most frequent elective offering); urgent, emergency, or disaster care (the third most frequent elective); or dependency, disability, and chronic disease (sixth in frequency). All of these topics were represented in required courses, but electives offer an opportunity to gain a deeper understanding.

In Spain, opportunities for specialization exist in elective courses and in 2-year graduate residency programs in one of seven specialty nursing areas (family and community health, geriatrics, gynecology/obstetrics/midwife, medical-surgical care, mental health, occupational health, and pediatrics). Although caring for chronic

Table 4. Number of Elective Courses, Grouped by Topics Included in the Degree Program

Content criteria consulted	Maximum in a degree program	Total courses with this content (N = 728 courses)	Centers without this content in any of the courses in the degree program, n (%) (N = 104 centers)	Centers with one course having this content, n (%)	Centers with two courses having this content, n (%) (N = 104 centers)	Centers with three or more courses with this content, n (%)
Content related to learning other languages	3	50 (6.9)	62 (59.6)	35 (33.7)	6 (5.8)	1 (0.9)
Content related to research methods	4	44 (6.0)	70 (67.3)	27 (26.0)	5 (4.8)	2 (1.9)
Content related to urgent, emergency, and/or disaster care	3	43 (5.9)	68 (65.4)	31 (29.8)	3 (2.9)	2 (1.8)
Content related to occupational health	2	40 (5.5)	66 (63.5)	36 (34.6)	2 (1.8)	0 (0.0)
Content related to complementary/alternative therapies	3	36 (31.6)	73 (70.2)	28 (26.9)	1 (0.9)	2 (1.9)
Content related to dependency and/or chronic disease	3	24 (3.3)	83 (79.8)	19 (18.2)	1 (1.0)	1 (1.0)
Content related to cooperation	2	20 (2.7)	85 (81.7)	18 (17.3)	1 (1.0)	0 (0.0)
Content related to health promotion	1	13 (1.8)	91 (87.5)	13 (12.5)	0 (0.0)	0 (0.0)
Content related to palliative care	1	11 (1.5)	93 (89.4)	11 (10.6)	0 (0.0)	0 (0.0)
Content related to school health	1	3 (0.4)	101 (97.1)	3 (2.9)	0 (0.0)	0 (0.0)
Content related to Catholicism	1	2 (0.3)	102 (98.1)	2 (1.9)	0 (0.0)	0 (0.0)
Content related to chronic wounds	1	1 (0.1)	103 (99.0)	1 (1.0)	0 (0.0)	0 (0.0)

wounds is of obvious concern in the geriatric population and in medical-surgical hospital nursing, awareness of their preventability and of current best practices in the prevention and treatment is a competency that can contribute to quality patient care in any setting. This can be addressed by site protocols and continuing education workshops, but it is also key that universities adequately address the topic in their curricula. Unlike countries that offer a specialization in wound care or diabetes care, universities in Spain need to provide elective courses and units of required degree courses that make it possible for students in any program to acquire this important area of competency and be prepared to provide affected patients with the needed care.

Limitations

An important limitation of our data collection was the lack of a common set of official criteria governing nursing course content descriptions. Some centers provide extensive descriptions and others offer rather scant information about the content of their courses. We also did not have access to all courses in all programs because Spain has gradually implemented the university-level degree in nursing and not all centers have proceeded at the same pace. Nonetheless, we were able to review course content from 83.3% of the centers, more than 80% of them through the second year, and had access to 65.72% of all listed courses. Therefore, our results are drawn from an extensive panorama of the undergraduate nursing degree programs in Spain.

Another limitation of this study is the lack of electronic access to the course content taught at 16.7% of the centers that award the degree in nursing. However, we gained access to more than 80% of the relevant information through the second year of the degree program, at which point students have completed the bulk of their required and introductory courses.

The analysis was confined to nursing degree programs in Spain. Although we found no studies with similar methodology, we located several reports of these same deficiencies in other countries: in Germany, using content analysis of nursing textbooks (Wilborn et al., 2009); in England, where students in the final year of their nursing degree reported a perception that they did not know how to manage patients' skin integrity effectively (Ousey et al., 2013); and a U.S. study of faculty perceptions and documentation of PU content in all 50 states and the District of Columbia (Ayello et al., 2010).

Conclusions

In this study, we observed differences in the presence of the four top educational priorities in wound management and tissue repair (Cowman et al., 2012) in courses that comprise the degree in nursing in Spain. Content on pain management in patients with chronic wounds (top priority) is nonexistent and about PU prevention (second priority) is deficient, compared to content about PU treatment (third and fourth priorities).

The course content related to chronic wounds that is offered to future nurses in Spain appears to be deficient. This situation must improve in order to phase out the use of nursing interventions not recommended for PU prevention. In the 21st century, we simply cannot allow more than half of the teaching centers that offer a degree in nursing to ignore the prevention of PUs in their course content. This change must be implemented in required courses, because there are almost no elective courses related to the prevention and treatment of chronic wounds.

Degree programs responsible for preparing future nurses must guarantee the acquisition of minimum basic skills in the prevention and treatment of chronic wounds. University programs in all countries should review their curricular offerings and take steps to reduce the theory-practice gap in this field.

Acknowledgments

We appreciate the translation and manuscript editing provided by Elaine Lilly, PhD. Preliminary results of this study were presented at a GNEAUPP Symposium (IX Simposio Nacional GNEAUPP. Ciencia, Arte y Compromiso) held in Sevilla November 14–16, 2012.

Clinical Resources

- European Pressure Ulcer Advisory Panel: <http://www.epuap.org>
- European Wound Management Association: <http://ewma.org/english.html>
- Spain's official database of universities, centers, and diplomas [Registro de Universidades, Centros y Títulos (RUCT)]: <https://www.educacion.gob.es/ruct/home#>
- Spanish Pressure Ulcer and Chronic Wounds Advisory Panel: <http://www.gneaupp.org>

References

Agencia Nacional de Evaluación de la Calidad y Acreditación. (2004). *Libro blanco. Proyecto de la titulación de enfermería.*

- Madrid: Author. Retrieved from www.aneca.es/media/150360/libroblanco_jun05_enfermeria.pdf
- Augustin, M., Brocatti, L. K., Rustenbach, S. J., Schäfer, I., & Herberger, K. (2014). Cost-of-illness of leg ulcers in the community. *International Wound Journal*, *11*(3), 283–292.
- Ayello, E. A., Baranoski, S., & Salati, D. S. (2005). A survey of nurses' wound care knowledge. *Advances in Skin & Wound Care*, *18*(5, Pt. 1), 268–275.
- Ayello, E. A., & Meaney, G. (2003). Replicating a survey of pressure ulcer content in nursing textbooks. *Journal of Wound, Ostomy, and Continence Nursing*, *30*(5), 266–271.
- Ayello, E. A., Zulkowski, K. M., Capezuti, E., & Sibbald, G. (2010). Pressure ulcer in undergraduate programs. *Nursing Outlook*, *58*(2), e4. doi:10.1016/j.outlook.2010.02.083
- Caron-Mazet, J., Roth, B., & Guillaume, J. C. (2007). Prevalence and management of chronic wounds in 14 geriatric institutions of the Haut-Rhin. *Annales de Dermatologie et de Venerologie*, *134*(8–9), 645–651.
- Conferencia Nacional de Consenso sobre Úlceras de la Extremidad Inferior. (2009). *Documento de consenso*. Madrid: Edikamed. Retrieved from <http://www.gneapp.es/app/adm/documentos-guias/archivos/8.pdf.pdf>
- Cowman, S., Gethin, G., Clarke, E., Moore, Z., Craig, G., Jordan-O'Brien, J., . . . Strapp, H. (2012). An international eDelphi study identifying the research and education priorities in wound management and tissue repair. *Journal of Clinical Nursing*, *21*(3–4), 344–353.
- Davies, R. (2008). The Bologna process: The quiet revolution in nursing higher education. *Nurse Education Today*, *28*(8), 935–942.
- Deschodt, M., de Casterlé, B. D., & Milisen, K. (2010). Gerontological care in nursing education programmes. *Journal of Advanced Nursing*, *66*(1), 139–148.
- European Ministers of Education. (1999). *The Bologna Declaration of June 1999*. Retrieved from http://www.bologna-bergen2005.no/Docs/00-Main_doc/990719BOLOGNA_DECLARATION.PDF
- Feinglass, J., Shively, V. P., Martin, G. J., Huang, M. E., Soriano, R. H., Rodriguez, H. E., . . . Gordon, E. J. (2012). How “preventable” are lower extremity amputations? A qualitative study of patient perceptions of precipitating factors. *Disability and Rehabilitation*, *34*(25), 2158–2165.
- Georgakarakos, E., Papadaki, E., Vamvakerou, V., Lytras, D., Tsiokani, A., Tsolakaki, O., . . . Papanas, N. (2013). Training to measure ankle-brachial index at the undergraduate level: Can it be successful? *International Journal of Low Extremity Wounds*, *12*(2), 167–171.
- Gobierno de España. Ministerio de Educación, Cultura y Deporte. (2008). *Registro de Universidades, Centros y Títulos (RUCT)*. Retrieved from <https://www.educacion.gob.es/ruct/home#>
- Günes, U. Y. (2008). A descriptive study of pressure ulcer pain. *Ostomy Wound Management*, *54*(2), 56–61.
- Gunningberg, L., Hommel, A., Bååth, C., & Idvall, E. (2014). The first national pressure ulcer prevalence survey in county council and municipality settings in Sweden. *Journal of Evaluation in Clinical Practice*, *20*(1), 58–65.
- Hinojosa-Caballero, D. (2012). Professional's knowledge of the department of urgencies on the prevention and treatment of pressure ulcers. *Gerokomos*, *23*(4), 178–184.
- Hopkins, A., Dealey, C., Bale, S., Defloor, T., & Worboys, F. (2006). Patient stories of living with a pressure ulcer. *Journal of Advanced Nursing*, *56*(4), 345–353.
- Huff, J. M. (2011). Adequacy of wound education in undergraduate nursing curriculum. *Journal of Wound, Ostomy, and Continence Nursing*, *38*(2), 160–164.
- Iranmanesh, S., Rafiei, H., & Foroogh Ameri, G. (2011). Critical care nurses' knowledge about pressure ulcer in southeast of Iran. *International Wound Journal*, *8*(5), 459–464.
- Jiménez Díaz, M. C., Pulido Jiménez, M. C., Villanueva Lupión, C., Villar Dávila, R., & Calero García, M. J. (2011). Ageing, the forgotten course in Spanish university: The iceberg type of negligence? *Gerokomos*, *22*(1), 8–12.
- Larcher Caliri, M. H., Miyazaki, M. Y., & Pieper, B. (2003). Knowledge of pressure ulcers by undergraduate nursing students in Brazil. *Ostomy Wound Management*, *49*(3), 54–63.
- Levine, J. M., Ayello, E. A., Zulkowski, K. M., & Fogel, J. (2012). Pressure ulcer knowledge in medical residents: An opportunity for improvement. *Advances in Skin and Wound Care*, *25*(3), 115–117.
- Leyva-Moral, J. M., & Caixal-Mata, C. (2009). Prevalence of bed sores in geriatrics nursing home residences. *Revista de Enfermería*, *32*(1), 52–56.
- Moore, Z. (2010). Bridging the theory-practice gap in pressure ulcer prevention. *British Journal of Nursing*, *19*(15, Suppl.), S15–S18.
- Moore, Z., & Cowman, S. (2012). Pressure ulcer prevalence and prevention practices in care of the older person in the Republic of Ireland. *Journal of Clinical Nursing*, *21*(3–4), 362–371.
- Ousey, K., Stephenson, J., Cook, L., Kinsey, L., & Batt, S. (2013). Final year student nurses' experiences of wound care: An evaluation. *British Journal of Community Nursing*, *18*(Supp. 1), S7–S16.
- Panagiotopoulou, K., & Kerr, S. M. (2002). Pressure area care: An exploration of Greek nurses' knowledge and practice. *Journal of Advanced Nursing*, *40*(3), 285–296.
- Pancorbo-Hidalgo, P. L., García-Fernández, F. P., López-Medina I. M., & López-Ortega, J. (2007). Pressure ulcer care in Spain: Nurses' knowledge and clinical practice. *Journal of Advanced Nursing*, *58*(4), 327–338.
- Pieper, B., Langemo, D., & Cuddigan, J. (2009). Pressure ulcer pain: A systematic literature review and national pressure ulcer advisory panel white paper. *Ostomy Wound Management*, *55*(2), 16–31.
- Quesada Ramos, C., & García Díez, R. (2008). Evaluation of the grade of knowledge of the recommendations for the

- prevention and care of pressure sores in critical units. *Enfermeria Intensiva*, 19(1), 23–34.
- Råholm, M. B., Hedegaard, B. L., Löfmark, A., & Slettebø, A. (2010). Nursing education in Denmark, Finland, Norway and Sweden—From bachelor's degree to PhD. *Journal of Advanced Nursing*, 66(9), 2126–2137.
- Romero-Collado, A., Homs-Romero, E., & Zabaleta-del-Olmo, E. (2013). Knowledge about medications and products to prevent and treat pressure ulcers: A cross-sectional survey of nurses and physicians in a primary health care setting. *Journal of Clinical Nursing*, 22(17–18), 2562–2571.
- Saleh, M. Y., Al-Hussami, M., & Anthony, D. (2013). Pressure ulcer prevention and treatment knowledge of Jordanian nurses. *Journal of Tissue Viability*, 22(1), 1–11.
- Schwarcz, A. I., Quijano, A., Olin, J. W., & Ostfeld, R. J. (2012). Incoming internal medicine interns have a poor knowledge of peripheral artery disease. *Angiology*, 63(8), 597–602.
- Scully, N. J. (2011). The theory-practice gap and skill acquisition: An issue for nursing education. *Collegian*, 18(2), 93–98.
- Sen, C. K., Gordillo, G. M., Roy, S., Kirsner, R., Lambert, L., Hunt, T. K., . . . Longaker, M. T. (2009). Human skin wounds: A major and snowballing threat to public health and the economy. *Wound Repair and Regeneration*, 17(6), 763–771.
- Soldevilla Agreda, J. J., Torra Bou, J. E., Verdú Soriano, J., & López Casanova, P. (2011). 3rd National Survey of the prevalence of pressure ulcers in Spain, 2009. Epidemiology and defining variables in lesions and patients. *Gerokomos*, 22(2), 77–90.
- van Houtum, W. H. (2012). Barriers to implementing foot care. *Diabetes Metabolism Research and Reviews*, 28(Suppl. 1), 112–115.
- Wilborn, D., Halfens, R. J., & Dassen, T. (2009). Evidence-based education and nursing pressure ulcer prevention textbooks: Does it match? *Worldviews on Evidence-Based Nursing*, 6(3), 167–172.
- Wyatt, M. F., Stickrath, C., Shah, A., Smart, A., Hunt, J., & Casserly, I. P. (2010). Ankle-brachial index performance among internal medicine residents. *Vascular Medicine*, 15(2), 99–105.
- Zabalegui, A., & Cabrera, E. (2009). New nursing education structure in Spain. *Nurse Education Today*, 29(5), 500–504.
- Zamora Sánchez, J. J. (2006). Conocimiento y uso de las directrices de prevención y tratamiento de las úlceras por presión en un hospital de agudos. *Gerokomos*, 17(2), 100–110.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.