

The Oncology Nurse Prescribing: A Catalan Survey

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ABSTRACT

Objective: This study identifies the capability, knowledge, and satisfaction of oncology nurses in Spain after approval of the nurse prescribing law in 2006. **Methods:** A descriptive cross-sectional study was conducted among 140 nurses in three cancer centers in Catalonia, Spain, by using convenience sampling method. The principal variables of this study were nurse satisfaction, knowledge about what products nurses are allowed to prescribe, the nurses' perception of their own prescribing ability, and their opinion on education and training needs with regard to the new approved law. The secondary variables included years of professional experience, place of work, and sociodemographic variables. Data were collected during a 3 months period by using a piloted 29-item self-assessment questionnaire. **Results:** Analyses of univariate and bivariate data

showed that 82.2% of the nurses were aware of the approved law, but 94.2% indicated that they lack information about it. The mean satisfaction with the approval of the law was 6.64 ± 1.76 (numerical scale 0-10). In addition, 68.1% and 55.1% of the nurses were prepared to prescribe medical devices and drugs, respectively. To date, 61.1% of the nurses prescribe medical devices and 66% prescribe pharmacological products daily. **Conclusions:** Nurses expressed general satisfaction with the approval of the Law 29/2006. Nurses currently provide prescriptions, but widespread knowledge of the allowed prescriptions is lacking.

Key words: Attitudes, knowledge, oncology nurses, prescriptions, satisfaction

Introduction

The general nursing council of Spain in 2007 defined nurse prescribing as: "The ability to select, guided by criteria

of good practice, different materials, products, and/or devices aimed at meeting the health needs of the user and

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the population, based on the nurses' clinical judgment and administered as nursing care."^[1]

Oncology nurses who provide care for patients and their families face multiple health situations, which lead to different therapeutic strategies. In several cases, nursing indications are based on educational advices that allow patients and their families to improve their self-care or resolve difficulties that arise during their cancer care, thus making them autonomous in the development of their needs.^[2-5]

In other cases, such as oral care, fungating wounds, the presence of stomas, or pain, care requires prescription of medical devices and pharmacological products.^[6]

In 1969, the USA was the first country to allow nurses to extend prescriptions.^[7] In the UK, nurse prescribing started in 2002 and was extended to all registered nurses and midwives in 2009.^[8]

Later, some other countries such as Hong Kong, Ireland, Jamaica, The Netherlands, or New Zealand joined the group.^[9] Thus, several countries, including Canada, the USA, Brazil, Australia, New Zealand, Sweden, the UK, and South Africa, have recognized nurse prescribing as a professional competence for more than 13 years.^[10,11]

Independent prescribing was extended then because it improved the health system, provided benefit to patients, and saved time;^[12] this approach is effective for professionals and increases nurse satisfaction.^[13] Jones in 2011, described the roles of prescribers and their effects on patient satisfaction in acute settings in England.^[14]

Wilkinson examined the prescriptions made by diabetes nurses in eight hospitals in New Zealand, and found them safe, of high quality and appropriate to patients' needs.^[15] Several other studies have investigated as well the safety and effectiveness of nurse prescribing in the abovementioned countries.^[16,17]

A study conducted in Ireland concluded that nurse and midwife prescribing met quality criteria in 69-80% of the occasions.^[18] Investigating with mixed methods, Jones reported that patients' beliefs about medicines prescribed by nurses have significant positive effects on adherence [Jones 2011].^[14]

Discussions of the pertinence of nurse prescribing in Spain started in mid-2005 during the update of the medicines act of 2006 (law 29/2006). The initial act included an article that allowed only trained professionals, such as doctors and dentists, to prescribe drugs.^[19] As a result, this act considered

illicit several routine aspects of nursing care, and therefore created a serious professional and social debate throughout the country.^[4,17,18]

Following article amendment (law 28/2009), Spanish nurses are allowed to dispense all drugs and medical devices that do not require medical prescription: autonomous or independent prescription.^[22] Products related to oral care (e.g., mouth rinse), skin care, (e.g., fungating wound care products), dressings (e.g., hydrocolloids, gauze foams, and silicone dressing), topical products, mix saline irrigations, bacteriostatics or topical antiseptics, and ointments, have always been managed by nurses in practice prior to approval of the law. Supportive care in cancer, such as ostomies, ulcers, colostomies, and incontinence products, are also included in nurse management.^[23]

The prescription, use, and authorization to dispense drugs are limited to the implemented protocols and clinical practice guidelines (collaborative prescription), as agreed by the medical and nurses' boards and as validated by the Quality Agency of the National Health System.^[19] The Spanish government regulates the entire process.

The approved law only allows general prescription by nurses who have undergone accreditation as agreed upon by other professionals.^[20,21] However, this process remains unclear and reopens the debate for the need of specific formularies in specialized areas of the profession, as is the case in other countries.^[24]

Nurses have long been recommending care products for cancer patients, as well as in other areas, such as community care or mental health.^[25] Thus, this study mainly aims to determine the oncology nurses' degree of knowledge of and satisfaction with the law 29/2006, as well as their perceptions of the present and future prescribing roles.

Methods

Design and setting

A descriptive cross-sectional study was conducted in 2011, in a net of cancer centers, named in generic, as ICO-Catalan Institute of Oncology. The three; ICO-Duran, ICO-Badalona and ICO-Girona are the main oncology hospitals in Catalonia, Spain.

Participants

The study population consisted of 140 nursing professionals working in these cancer hospitals. The nurses were asked to participate through nonprobability convenience sampling

(voluntary reply after E-mailing the survey and the access link). The expected minimum sample was 98 responses, with a confidence interval of 95%, an accuracy of 5%, and a hypothetical knowledge of the law of 70%, according to the data from a previous study carried out by the Universidad de Barcelona (Cabrera *et al.*, 2010) and calculated using Epi Info™ 6, public domain statistical software for Windows.

The inclusion criteria are as follows: a nurse working in any service or Department of the Catalan Institute of Oncology, any age, gender, or professional experience, and signed informed consent. Exclusion criteria were erroneous or partial completion of over 50% of the survey.

Study variables

The principal variables were knowledge of and satisfaction with the law's approval, knowledge about elements nurses are allowed to prescribe, perception of nurses on their own prescribing ability, and the nurses' opinion on education and information needs with regard to the approved law. The secondary variables included years of professional experience, place of work, age, and gender.

Data collection

Data were collected from May to July 2011 by using an *ad hoc* instrument designed by the research team with an expert's advice from the university. A 29-item self-assessment questionnaire, with 27 closed-ended questions with a numeric scale (0-10) or likert-type rating scale and 2 open-ended questions about the currently prescribed elements was used for the data collection. This questionnaire was piloted on 20 oncology nurses with similar age, sex, and education subgroups and different postgraduate trainings similar to the general population of nurses working in the three cancer services. These 20 nurses were not included in the final sample. Questionnaire completion times in the pilot study, length, content, and ease of completion were tested and then modified the definitive version.

The final contents of some of the items are as follows:

- Do you feel qualified to prescribe medical products?
 1. Highly qualified,
 2. Quite qualified,
 3. Somehow capable,
 4. Totally incapable.
- How confident do you feel with your ability to prescribe according to the law? Rate from 0 to 10.
- Is the adoption of the nurse prescribing law a professional advancement for nurses? Yes/no. If yes, why?
- What elements can be prescribed by nurses according to the current law? Responses:

1. Any drug can be prescribed,
2. Only prescription drugs that are not medically prescribed,
3. Some drugs that are medically prescribed to date,
4. Health products and nonprescription drugs.

Recruitment and investigation started after necessary changes from the pilot were made to the questionnaire. Questionnaires were indirectly distributed, and an on-line access link to the questionnaire was provided to ensure anonymity.

Ethics

An authorization to conduct the study was requested from the research coordinator and director of nurse of the centers. The participants were informed of the objective of the study and provided informed consent to participate. Data were anonymized and remained confidential.

Statistical analysis

Univariate and bivariate analyses were performed using Statistical Package for Social Science version 15.0 for Windows, IBM (SPSS Inc., Illinois, USA). Centralization and dispersion of parameters were applied to quantitative variables, such as satisfaction level with the approval of the law. Contingency tables and number of cases were applied to qualitative and categorical variables, such as the level of information or training. Chi-square statistic was calculated for bivariate analysis to observe the relation of the principal variables, such as knowledge and training, according to professional characteristics. A 95% confidence level for type-1 errors was assumed.

Results

Sample characteristics

The final sample included 110 nurses. The response rate was 78.57%, with 4% accuracy and 95% confidence interval.

Women accounted for 88.1% (96) of the participants, which is a similar ratio to the gender proportion distribution among professionals. The average age of the participants was 34.45 years (DT = 8.68). Their average professional experience was 11.47 years (DT = 7.80), from which an average of 8.85 years (DT = 6.30) were devoted to oncology. The biggest cancer center in Catalonia, the center ICO-Duran, showed the highest participation rate of 75.5% (83). Nurses from different departments participated including chemotherapy day units, clinics, radiotherapy departments, prevention departments, in-patient units, and outpatient units [Table 1]. Nurses with postgraduate

education and with specific specialization training for palliative care on cancer patients were 36.7% (40) and 89.2% (33), respectively.

Analysis of knowledge and satisfaction levels

About 82.2% of the nurses were aware about the amendment to law 29/2006. Results also showed that 68.5% (61) of the nurses correctly identified the elements they were authorized to prescribe: Medical devices and drugs not subjected to doctor prescription. Professional nurse associations were the main source of information in 55.6% (50) of the nurses. Despite their awareness level, 94.2% (97) of the cancer nurses stated they did not have sufficient information about the law, and 90.8% (99) knew that the Spanish nursing council has a catalogue or nomenclature for nurse prescription products and/or drugs. The primary priorities of the 59.6% (62) and 25% (26) of participants were to receive further information about which products and drugs are regulated by the law and to be given further information about it, respectively. Their second priority of the 41.7% (30) was to receive specific training and education [Table 2].

The average satisfaction level with the approval of the law was 6.64 (DT = 1.76) (0-10). About 65.8% of the professionals reported that the law offers significant or fairly significant improvement to users. In addition, 53.2% (50) think that prescriptions will be better adapted to users' needs, and 33% (30) think it reduces paperwork [Table 3].

Analysis of training and prescription

The proportion of nurses who feel fairly or highly qualified to prescribe medical devices was 68.1% (75) and those who described themselves as qualified enough to prescribe pharmacological products was 55.1% (60). The reasons cited for the present lack of qualification are insufficient medical device and pharmacological training in 78% (32) and 80.4% (37) of the cases, respectively. Moreover, 19.6% (8/9) of the participants indicate the lack of knowledge about the formulary with regulated products.

Currently, 61.1% (66) of the nurses' stated that they indicate and recommend medical devices to patients in daily practice, particularly those related to pressure ulcers and skin treatments. With regard to indication of pharmacological products, 66% (64) and 38.6% (27) prescribed laxatives or anti-diarrheal drugs, respectively, and 34.3% (24) prescribed antipyretic and analgesic products [Table 4].

Inferential analysis by professional characteristics

Nurses showed no significant differences in the awareness level of the law and perception on prescribing ability, regardless of

Table 1: Sociodemographic, working, and academic characteristics of the participants

Variable	n	(%)
Female (missing: 1)	96	88
Professional experience (missing: 1) (years)		
<5	32	29.4
6-15	45	41.3
16-25	24	22
26-35	7	6.4
>35	1	0.9
Professional experience in oncology (missing: 2)		
<5	42	38.9
6-15	48	44.4
16-25	18	16.7
Work center		
Centre 1: ICO-Duran	83	75.5
Centre 2: ICO-Badalona	12	10.9
Centre 3: ICO-Girona	15	13.6
Work unit (missing:4)		
Chemotherapy day care unit	31	29.2
Hematology unit	16	15.1
RDT+BRAQ	12	11.3
Oncology unit	14	13.2
Palliative care unit	8	7.5
Outpatient and clinics	11	10.4
PU+GCU+EDU+MAN	14	13.2
Academic background (missing:1)		
University diploma (3 years)	62	56.9
Postgraduate	40	36.7
Bachelor degree (5 years)	5	4.6
Doctorate PhD	2	1.8

RDT + BRAQ: Radiotherapy and brachytherapy, PU: Prevention unit, GCU: Genetic counselling unit, EDU: Education unit, MAN: Management, ICO: Catalan Institute of Oncology

Table 2: Priorities regarding the need of information about the law 29/2006

Priorities	First priority		Second priority	
	n	Percentage	n	Percentage
Nurse prescription products and drugs	62	59.6	18	25
General aspects of the law	26	25.0	11	15.3
Specific training on prescribing	12	11.5	30	41.6
Administrative body regulating prescription	4	3.9	13	18.1
Missing	6		38	

their center, work unit or years of professional experience.

The units' where the nurses work did not affect the perception level on the ability to prescribe sanitary or pharmacological products. However, nurses with more professional experience in oncology showed higher perception level on the ability to prescribe health and care devices ($\chi^2 = 20.457$; gl:6; $P = 0.002$) and pharmacological products ($\chi^2 = 15.402$; gl:6; $P = 0.017$) [Table 5]. No significant differences were observed regarding the type of

Table 3: Opinion about level and kind of improvement with the law's approval

Level of improvement			Kind of improvement		
Characteristics	n	Percentage	Characteristics	n	Percentage
High	18	16.7	Less paperwork	31	33
Fair	53	49.1	Better adaptation of the prescription to the patient's needs	50	53.2
Poor	26	24.1	Shorter visit time	10	10.6
Does not improve	11	10.2	Safety of prescription	3	3.2
Missing	2		Missing	16	

Table 4: Present nurse prescription of sanitary and pharmacological products

First choice sanitary products (n = 66)			First choice pharmacological products (n = 70)		
Products	n	Percentage	Products	n	Percentage
Material for cure	36	31	Laxatives/anti-diarrhea	27	38.6
Dressings for ulcers and bedsores	35	30.2	Antipyretic/analgesic pain killers	24	34.3
Incontinence material	20	17.2	Antiemetic drugs	5	7.1
Ostomy material	6	5.2	Topical treatment	5	7.1
Hygiene	5	4.3	Mouthwash	2	2.9
Others	14	12.1	Natural/complementary therapies	2	2.9
			Others	5	7.1

Table 5: Factors determining the level of knowledge of the law and perception of prescription ability

Factors	Knowledge of law		PA for sanitary products		PA for pharmacological products	
	χ^2	P	χ^2	P	χ^2	P
Work center	6.433	0.040*	7.172	0.305	6.009	0.422
Work unit	5.171	0.522	22.067	0.229	18.128	0.447
Education-academic	1.667	0.644	4.298	0.891	4.689	0.861
Total professional experience	6.759	0.149	23.642	0.023*	19.910	0.018*
Total professional experience in oncology	0.116	0.944	20.457	0.002*	15.402	0.017*

*Degree of statistical significance for $P < 0.05$. PA: Prescription ability, P: Probability, χ^2 : Chi square

product prescribed and the years of professional experience.

Notably, the legal recognition of nurse prescribing implied professional advancement and increased work appreciation in 91.5% (97) and 42.3% (41) of the professionals. Moreover, nurse prescribing is reported by 55.7% (54) as a development in competence. The reasons for the negative opinion on career development were the increase in the degree of responsibility in 66.7% (2) of the cases and the additional professional burden in 33.3% (1) of the cases.

Discussion

Results showed that nurse prescribing is performed daily in clinical practice, particularly in management of skin integrity and skin problems, as well as in management of symptoms or side effects during cancer treatments, such as pain, constipation, and nausea. Oncology nurses are generally satisfied with the law permitting nurse prescribing. However, the law is a slow and controversial process, and remains unclear on several key points, such as the included regulated products. These results concur with the findings in the first study carried out in Spain by Cabrera-Jaime *et al.*, in 2011, who investigated nurses with a master's degree at Universidad de Barcelona. Their study reported the satisfaction of nurses, but lacked information about their future as professionals with prescription capability.^[26]

Nurse accreditation involves independent and collaborative nursing roles developed at each specific setting. This process has not been clearly defined, which does not allow for comparison with other models of nurse prescribing and ways to achieve accreditation from Europe or the USA. For instance, nurse practitioners in the USA need a master's degree with further specialization, and more advanced virtual systems, such as podcasting described by Sánchez-López, are available for nurse prescriptions in England.^[27]

Competence has been governed by the need to provide care to areas with large geographic territories as observed in Spain and other countries. Practical reasons are behind the acceptance of the nurses' prescription ability in Spain and other several countries and regions. In Canada, it was governed by the need to provide services to patients in wide geographic areas, whereas in Scotland, the need to provide care to areas lacking medical professionals has determined nurse prescribing to a larger degree than conviction or the need to develop professional competences.^[28] The implementation of similar laws in several countries has not been without problems and has even led to jurisdictional disputes in some cases.^[29-32]

To date, nurse prescribing has been well accepted in specific areas, such as community care or mental health, and has clearly proved its efficiency in adapting indications,^[32] improving understanding and communication of the attention process, and patient satisfaction.^[33,34]

In Spain, a legislative mistake or "legal gap," opened the discussion about the prescribing competence of nurses. Specifically in Andalusia, which is the largest regional autonomy, more than 7000 nurses, including community and hospital nurses who manage patient care, are allowed to prescribe independently. These nurses prescribe today a

wide range of products from 37% in hospitals to 61% in the community.^[35]

To date, no published results are available on the interventions of oncology nurses, but the nurses themselves clearly indicate the future areas for improvement. Regarding satisfaction level among nurses with the approval of the law is lukewarm.

Limitations

The limitations of this study are as follows. The difference in the number of participants from each center is attributed to their size, thereby more nurse respondents from the main cancer center in Catalonia, ICO-Duran.

The data obtained in this study cannot be extrapolated to other professional areas or communities because the information process of the law and its development are different between national communities or care settings. However, the comparison of these results with those of the study by Cabrera-Jaime *et al.*, from the University of Barcelona revealed the knowledge level of the law and the need for clear information about its specifics, as it stresses the actuality of nurse prescribing.^[26]

Due to the increasing number of countries that are introducing nurse prescribing and listing some of the conclusions that the last systematic review, conducted in 2014 by Gielen *et al.*, it is an urgent priority to evaluate the impact of nurses in their role of prescribing in the oncology services.^[36] Further studies should be carried out among Catalonian and nationally in Spain, as well as among nurses in Europe and internationally, to provide true results of the effect of nurse prescriptions to reinforce their competence and legal frame.

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Conflicts of interest

There are no conflicts of interest.

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