

Research by Spanish emergency department nursing staff indexed in the CUIDEN database (2000-2005)

MONTSERRAT AMIGÓ TADÍN

Urgent Care Area. Hospital Clinic. Barcelona, Spain.

CORRESPONDENCE:

Montserrat Amigó Tadíñ
Calle Argullós, 6, 5º, 1ª
08016 Barcelona, Spain
E-mail: montamigo@yahoo.es

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Objective: To ascertain the scientific output of Spanish emergency department nurses with respect to numbers of articles and subjects studied, and according to the institutions, provinces and autonomous communities where research is most promoted and the journals in which it is being published.

Method: A document search was carried out using the CUIDEN database of the Index Foundation and using *emergency department* as the key word. The years 2000 through 2005 were included in the search. Subsequently, the presence of these documents in the databases accessed through PubMed was checked and their international scientific impact was assessed using the ISI Web of Knowledge.

Results: A total of 124 Spanish original research articles were found. Staff from 2 or more institutions collaborated in 35.7% of the articles. Four or more investigators participated in 55.3% of the articles. The first author came from a hospital in 67.2% of the studies and a university in 12.3%. The most productive Spanish autonomous community was Andalusia (31 documents) and the leading Spanish provinces were Madrid and Barcelona, with 14 studies each. The most frequent subjects were quality (16.1%) and analysis of the reasons for using the emergency department (8.1%). The 124 articles were published in 34 journals, with *Ciber-Revista* (20.2%) being the one chosen most often. Eighteen of the documents (14.5%) were also located by PubMed and 3 (2.4%) were published in journals with an impact factor.

Conclusions: Spanish emergency department nursing staff carry out research, but their scientific production is low. In addition, the international scientific impact of the publications is scarce, as most of the journals in which they are published are not indexed in the most widely accessed databases. [Emergencias 2008;20:299-307]

Key words: Nursing staff. Emergency department. Research. Scientific production. Databases. CUIDEN.

Introduction

Nursing knowledge should be the axis of interest in the training of nurses since it provides different concepts and theories which stimulate thinking and guide teaching and investigation thereby allowing the creation of new knowledge. In addition, it leads to the development of abilities and skills which provide these professionals with the capacity to achieve excellence, with the care given being the basis of this knowledge¹.

Progression in the area of knowledge is essential to create an incentive setting which will undoubtedly influence the implementation of the processes of nursing and increase the safety of its actions which will lead to an improvement in the quality of healthcare, reinforce autonomy and cre-

ate new competences in addition to consolidating nursing as a scientific discipline within all the Health Sciences².

Nonetheless, the quality of the nursing practice depends not only on the knowledge learned during the career but also the clinical experience and an exhaustive reflection of reality which leads to the question as to whether what has been done is the most adequate and correct at the time. Up to now, nursing interventions leaned on previous experience whether their own or of others, as well as on intuition and reasoning, but this movement, which by itself is important, has not been sufficient to increase the basis of nursing scientific knowledge. Thus, investigation is important. Investigation means "new search" or "to study carefully" and more concretely, to perfect

or to recognise already existing knowledge and develop new knowledge³. Nurses need to be able to read investigation reports, identify which interventions are effective for their implementation in practice and apply them with the aim of obtaining positive results in patients and relatives. It is therefore essential to know scientific methods and the tools necessary for their use in investigation⁴.

Nursing research started with Florence Nightingale who meticulously registered the effects of the intervention of nurses during the Crimean War (1854-1856). Thanks to this some changes were introduced in patient care⁵. During the decade of the 1950s, investigation began to be admitted as part of the professional activity of nurses. After the 1970s nursing investigation was focused on clinical practice. There were no elements favouring the development of nursing investigation in Spain until the 1970s, but after 1977 nursing converted into a professional and an exclusively humanitarian art as well as a science with the incorporation of nursing into the university.

In the Emergency Department, as in other biomedical areas, investigation provides an important contribution by establishing a scientific background for the practice of healthcare⁶. Investigation is necessary to increase healthcare quality both in diagnoses and treatment and care of persons who attend this department with an urgent health problem. To date, the data available in the literature on nursing investigation in the area of emergency care in Spain are very scarce since only one document has been found mentioning nursing investigation through its congresses but with no information on the written production of the studies⁷. To analyse the quality and quantity of this investigation, in depth databases are required. Four databases focused on nursing literature have been edited in Spain: CUIDEN; CUIDATGE; ENFISPO and BDIE.

The aim of this study was to know the Spanish scientific production of emergency care nurses, the number and type of studies, the institution in which the authors work, the number of authors of the studies and the degree of collaboration among professionals of different institutions, the provinces and communities in which nursing investigation is most promoted, the subjects studied and the journals in which the studies are published.

To do this, the CUIDEN database was chosen because of its free, universal access and the large number of scientific journals with clinical content of relevance for the healthcare of Spanish speaking nurses⁸.

Methods

To carry out this descriptive, observational, transversal, retrospective study a search for all documents performed by nurses working in Spanish emergency departments (ED) in the CUIDEN database of the Fundación Index was undertaken through the website <http://www.doco.es/index/> in March 2007. This database was chosen because it includes the scientific production of Spanish and Iberoamerican nurses published in 435 journals with a clinical-healthcare content in all its specialties as well as journals with a methodological, historical, social or cultural focus. The key word used for the search was "emergencias" and no study was excluded except for presentations or book chapters since the aim of the study was to know everything that is published on this subject whether by emergency personnel in the ED or personnel related to this area with an interest in nursing.

To analyse what Spanish nurses are investigating and where, the original articles performed outside Spain, review studies, protocols and letters to the Editor were subsequently excluded. The years studied were from 2000 to 2005 inclusively. Later years were not included because this database had not yet included the studies of 2006 and 2007. Investigative subjects were classified as groups according to the main problem of subject approached and later according to the area of knowledge in which this could be included.

To verify whether the journals publishing these studies were indexed in the Pub Med database of the National Medical Library of the United States of North America, a search was made on April 1, 2007 through the website <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=journals> entering the name of the journal in the database "Journals". This database was selected because of its free access, for being the most used in health sciences and for including 5,164 journals.

The "impact index" of the journal was obtained on April 9, 2007 through the "journal citation reports" of the latest version available (2005) of the ISI Web of Knowledge introducing the international abbreviation of the journal in the website: <http://portal.isiknowledge.com/portal.cgi?DestApp=JCR&Func=Frame&Init=Yes&SID=P2jGJP73EeO@mmC23nO>.

To evaluate the scientific repercussion which the research documents related to nursing and emergency care have obtained, the ISI Web of Knowledge was again entered through its website <http://portal.isiknowledge.com/portal.cgi?DestApp>

=WOS&Func&Frame. The option "Web of Science" was selected and the search was initiated through "General Search". The title of the article in English was introduced under the section "Topic" and the number of times which this document had been cited by other authors in their studies was obtained as it appears in Pub Med. The study of the authors making the citation must necessarily have also been published in a journal indexed in the ISI Web of Knowledge. Thus, the absence of posterior citations did not mean that they did not exist but rather that they had been published in journals not indexed by Pub Med.

The data were introduced in the SPSS 12.0 statistical programme for analysis and the results were expressed in absolute numbers or by percentages.

Results

A total of 285 documents were found, 155 of which were originals, 67 reviews, 9 clinical cases, 40 action protocols, 4 letters to the Editor and 10 editorials or brief articles. The number of originals carried out in Spain was 124 with the year of greatest publication being 2003 with 35 studies (28.2% of the production of these 6 years) followed by 2004 with 30 (24.2%), 2002 with 21 (16.9%), 2000 with 16 (12.9%) and lastly 2001 and 2005 with 11 each (8.9%).

These 124 studies had been performed in one institution alone (hospital, university, public administration, etc) 64.3% of the times, in 2 in 25.2%, in 3 in 7%, in 4 in 2.6% and in 5 centres in 0.9%. Personnel from more than one department in the same institution participated in 4.2% of the studies.

The number of authors in each study was 6 on 25.2% of the occasions, 3 in 17.9%, 5 or 2 in 15.4%, 1 in 11.4% and 4 in 10.6%, with between 7 and 10 authors in the remaining studies. During the time period studied, 94.5% of the authors had published only one study, 3.6% had reported 2, and 1.8% had 4 publications. The most prolific authors were Carlos Fano on the subject of the autonomous role of nurses in prehospital emergency care in Bilbao while M^a Carmen Álvarez of the Hospital Cabueñes in Gijón reported the quality in the continuity of care using a good dossier and nursing registry and the different responsibilities and work incentives of nursing in the emergency department.

The institutions in which the greatest scientific production has been generated in the 6

years studied with 4 original studies published in each were the Hospital de Cabueñes in Gijón, Protección Civil del Ayuntamiento of Bilbao and the Hospital General Universitario of Valencia (Figure 1).

The principal investigator was from a hospital centre in 67.2% of the studies, from a university in 12.3%, from primary care in 9%, prehospital centres in 7.4% and from a scientific, healthcare or political society in 4.1% of the publications. In studies involving the participation of professionals from several institutions, the principal associations were hospital/hospital in 8.9%, hospital/university in 8%, hospital/society in 4.8%, hospital/prehospital in 3.2%, hospital/primary care and primary care/primary care in 2.4%, university/society in 1.6% and university/prehospital in 0.8%.

Barcelona and Madrid were the provinces in which the greatest number of studies had been carried out with 14 each (Figure 2). The autonomous community which has most promoted investigation was Andalusia with 31 studies (Figure 3). Collaboration between different autonomous regions was scarce with 1 between Andalusia and the Balearic Islands, Catalonia and Cantabria, Navarra and Andalusia and 1 between 2 countries: Spain (Cantabria) and Germany (Bonn).

With regard to the subject of the studies (Table 1), that of greatest interest was on the different causes for which the ED is used (10 documents, 8.1%). If grouped by areas (Table 1), quality is the leader as the general topic with 20 studies (16.1%).

The journals with the greatest number of publications are shown in Figure 4 and were headed by Ciber Revista (25 documents) and Enfermería Científica (14 documents). No document was found in Accident and Emergency Nursing, despite being the only specific foreign emergency nursing journal indexed in CUIDEN.

Of the 34 journals including the scientific production of Spanish nurses, 6 are indexed in the Pub Med (Atención Primaria, Gaceta Sanitaria, Medicina Clínica, Revista Rol de Enfermería, Enfermería Intensiva and Revista Española de Salud Pública). Thus, only 18 studies (14.5%) have international repercussion and, of these, only 3 (2.4%) have been published in journals with an impact factor accredited by the Journal Citation Report.

Of the 18 articles included in Pub Med it was only possible to evaluate whether the articles had been cited or not by other authors in 2 since only

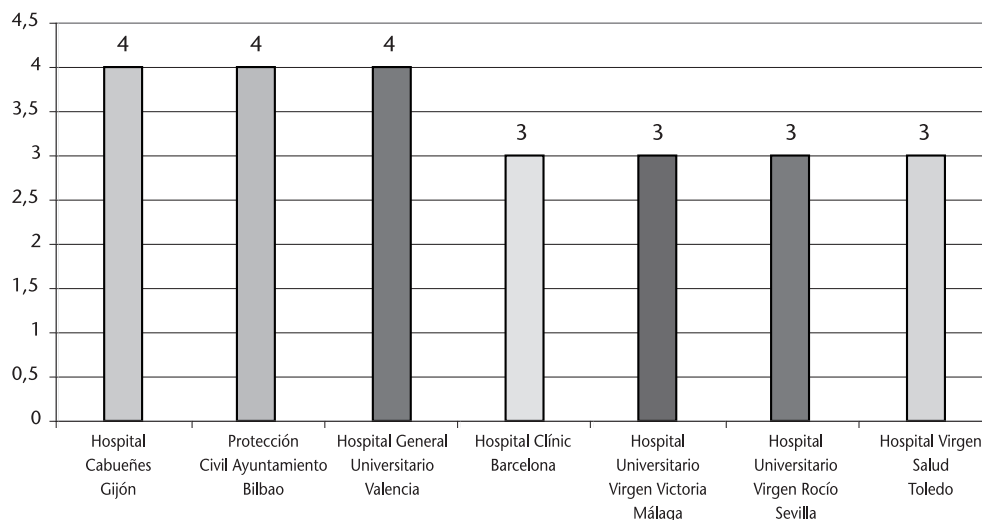


Figure 1. Scientific production of emergency nurses in Spain (CUIDEN 2000-2005). Distribution of the number of documents according to the principal institutions.

one journal (*Medicina Clínica*) was indexed by the ISI Web of Knowledge. Of the 2 articles published in *Medicina Clínica*, only one (published in 2005) was cited by other authors in 2 publications in 2006, in the same journal, although the authors did not coincide, or in other words, they were not self-citations.

The 2 exclusively nursing journals indexed in Pub Med are the *Revista Rol de Enfermería*, in which 4 studies were published and *Enfermería Intensiva* with one study. However, despite being indexed, these journals do not have an impact factor and it cannot be known whether these studies have later been cited by other authors, since they are not included in the ISI Web of Knowledge.

Discussion

This study demonstrates that some subjects in emergency care are of interest to nurses. The main causes leading to investigation are to know why patients go to the ED⁹, since this is associated with overcrowding of the ED and carries poor quality healthcare with the consequent concern related to finding solutions to this problem¹⁰. This situation also carries additional stress to the work activity which, together with the emotional overload of the critical moments experienced, facilitates the flowering of burnout symptomatology among the healthcare personnel which is a subject of preoccupation in Spanish nursing and has been extensively reflected in these studies¹¹.

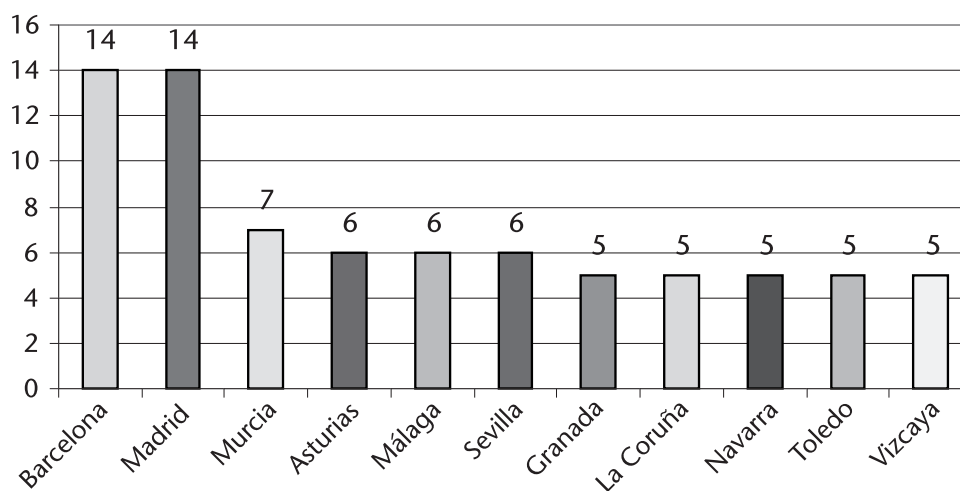


Figure 2. Scientific production of emergency nurses in Spain (CUIDEN 2000-2005). Distribution of the number of documents according to the principal provinces.

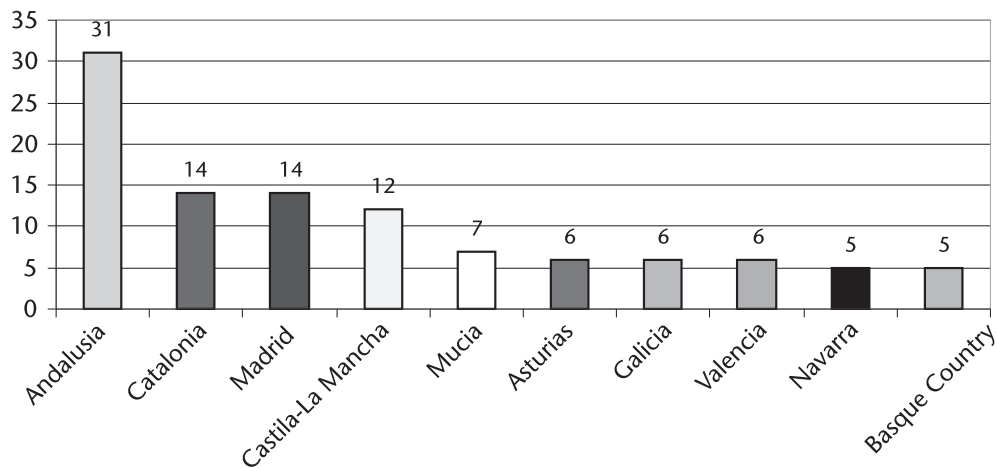


Figure 3. Scientific production of emergency nurses in Spain (CUIDEN 2000-2005). Distribution of the number of documents according to the principal provinces.

Other material covered were the care of catheters and better use of both venous and arterial routes, an eminently nursing subject in which nurses have an important role for both improving the technique for the extraction of biological samples for analysis¹² and for providing the patient the least discomfort possible, while also reducing the risk of iatrogenesis¹³. These techniques have a primordial role in emergency care because they help to define the medical diagnosis and administer treatment early.

Providing good quality healthcare is also of

interest to nurses and thus, the numerous studies on the reporting and the continuity of care¹⁴. Since the conceptual framework of nursing is still in the process of definition due to the continuous changes in the professional career and taking into account that in emergency care the priority is to improve the acute or critical state of health of the patient, something as important as registering everything that happens is sometimes forgotten and thus, all that has taken place with the patient a posteriori it is not known with certainty.

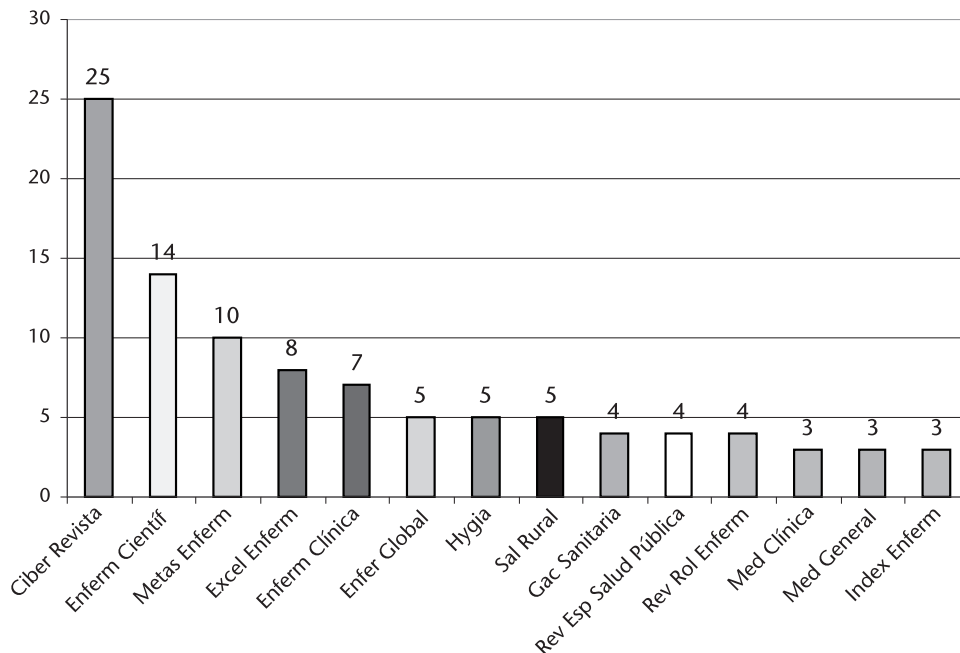


Figure 4. Scientific production of emergency nurses in Spain (CUIDEN 200-2005). Distribution of the number of documents according to the main journals.

Table 1. Scientific production of emergency nurses in Spain (CUIDEN 2000-2005) Distribution of the percentage of documents (N = 124) according to the topics studied and the area of knowledge

Scientific production in nursing	Percentage
By topics studied	
Causes of ED use	8.1
Catheter care	5.8
Burnout	4.8
Nursing autonomy	4
Immigration	4
Nursing registries	4
Adverse reactions	3.2
Triage	3.2
Care continuity	3
Geriatrics	3
Work stress	3
Professional ethics	3
Resources	3
Labour risks	3
By areas of knowledge	
Quality of care	16.1
Labour	13.7
Sociology	8.9
ED frequentation	8.9
Professional	7.3
Toxicological	5.6
Care continuity	4.8
Pharmacology	4
Healthcare formation	4
Triage	3.2
Ethics	2.4
Pneumology	2.4

ED: Emergency department.

Different diseases attended in the ED are also described. For example, improvement in the care to cardiac¹⁶, toxicologic¹⁷, pneumologic¹⁸ or geriatric¹⁹ patients is investigated as are the adverse reactions to certain interventions²⁰ and aspects with social repercussion such as immigration²¹, aggressions²², postcoital contraception²³, drugs²⁴ and alcoholism²⁵. Aspects related to work such as biological accidents or other types of risk²⁶ which are numerous in the ED due to the hurry, the great management of techniques and physical and emotional burnout are also of interest.

On the other hand, as a profession, the role of autonomy and the competences of nurses within the areas of healthcare, teaching and investigation such as triage²⁷, nutrition and elimination, dressings and vaccinations or the role of prehospital emergencies in which the nurse has the first contact with the user and must make decisions²⁸ should be defined. This also includes the role of nurses as collaborators with other disciplines, ethical and emotional aspects and the work of population healthcare educators.

Within the setting of emergency care the nursing investigator usually works in a hospital and provides care and the institution is usually linked

to a university centre or scientific society (Figure 1). It is logical for the personnel working in these centres and who belong to or are related to some of these organisms to carry out more investigations because they are more motivated to acquire and widen their knowledge since the mission of these centres is to promote this attitude^{30,31}.

Why do nurses not investigate and perform more investigations, and particularly, in emergency care?³²⁻³⁴ All the citations mentioned in the Introduction are not carried out in everyday practice because a series of resources and attitudes which the nursing collective currently does not have, are necessary³⁵. The following barriers are encountered at present: professional and personal (lack of training, orientation and awareness), public and of context (lack of support, autonomy and resources of time and money), communicative and educative (lack of content, unskilled teachers, and separation between theory and practice) and resistance to change (cultural pressure to maintain the *status quo*).

In addition to these barriers, other difficulties may be added in emergency care: short patient stay (making follow up difficult), presence of multiple causes of emergency care and pluripathology (diversity of care), no specialisation (many independent specialties and with different interests), impossibility of planning of time to devote to different functions (care, teaching or investigation), healthcare personnel with great stress (severity of the symptomatology and number of visits) and staff not implicated in the department (only duties).

Spanish emergency nurses publish reviews, protocols and investigate but their scientific production is far from that of physicians working in emergency care and even farther from that of other medical professionals³⁷⁻³⁹. This scarce productivity of emergency nurses is also observed in other nursing specialties⁴⁰⁻⁴³.

Moreover, the documents published have apparently little national and null international repercussion because most of the journals publishing these studies are not indexed in the databases of greatest diffusion and the only journals which are indexed do not, at present, have impact factor. The fact that the journal *Emergencias* and *Ciber-Revista de Enfermería de Urgencias* are not indexed is also a key to explain the scanty repercussion of investigation of nurses working in the ED in our country.

Another factor which may be very important to explain why a scientific production has scarce international repercussion is the very low level of

knowledge of the English language among Spanish nurses. One confirmation of this is that no document has been published in the only emergency nursing journal (Accident and Emergency Nursing) which is indexed in both CUIDEN and Pub Med, edited in the United Kingdom and which only publishes articles in English. Indeed, this factor is also decisive for not including CINAHL as a methodologic tool in the search for documents.

To promote investigation in nursing and motivate nursing professionals the previously mentioned walls must be broken⁴⁴. To do this a series of strategies must be proposed on behalf of the institutions in which nurses work and future professionals are trained and also by organisms in which the basis of knowledge for nursing practice is established. These strategies should provide support (time, economic resources, priority)⁴⁵, create capacities of investigation in nursing (training, diffusion and use of investigation), stimulate cooperation (inter and multidisciplinary), motivate (there are many topics to investigate, investigation is necessary for professional development and contributes to personal satisfaction), implement a professional career in all the institutions and recognise this activity, establish and favour a network of nursing investigators with the capacity to carry out an investigation programme and make up part of the investigation councils and organisms on topics of health, stimulate and promote the use of internet, facilitate access to documentation, promote publications in national and international journals which are indexed in international databases and favour a positive discrimination to initiate nurses in this practice⁴⁶.

To implicate emergency nurses more it is also necessary to create a speciality of emergencies (extend training), promote and index a specific emergency nursing journal in international databases (greater scientific and teaching diffusion) and encourage the participation of nursing staff in decision making referring to the subjects of protocols and emergency care in the ED (favour autonomy and integration).

The present study has different limitations. A single database was used. If the search had been widened to included other national (ENFIDPO, CIUDATGE) or international databases (CINHAL), more documents would probably have been obtained and the results would have been closer to reality. However, the CINAHL is not easily accessible and although it is associated with a large number of journals including those related to nursing, it also includes 17 other disciplines re-

lated to health sciences. On the other hand, CIUDATGE only has 56 nursing journals and ENFISPO 26 compared to more than 100 with CUIDEN⁴⁷. Other research work performed by emergency nurses and indexed in CUIDEN may have also escaped the search exclusively undertaken with the word "emergencias". On the other hand, it is known that some articles of emergency nursing have been published in journals such as EMERGENCIAS (6% of the total number of studies published)⁴⁸ or JANO⁴⁹ which, on being selectively indexed by CUIDEN, were not included in this study. The scientific production of Spanish emergency nurses could be greater than the data presented herein, although it should also be taken into account that studies performed by professionals who are not nurses may be included in this database⁵⁰ since, in most cases, the profession of the author is not identified.

It is also probable that if other databases such as the Nursing Citation Index of the International Nursing Index or SCOPUS had been used in addition to the ISI, a greater repercussion would have been observed in emergency nursing investigation. However, this is another limitation to the investigation, that of having to consult these databases from a university campus or through personal identification, thereby closing the doors to health-care personnel who are not also teachers.

Addendum

When the search for bibliometric data was performed the journal *Enfermería Clínica* was not indexed in Medline. It currently is and this fact would have modified some of the results presented.

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La investigación de la enfermería de urgencias en España a través de la base de datos CUIDEN (2000-2005)

Amigó Tadín M

Objetivo: Conocer la producción científica española de la enfermería de urgencias en cuanto a número y temas investigados, saber las instituciones, provincias y comunidades autónomas donde más se promueve la investigación enfermera y las revistas donde se publican estos trabajos.

Método: Búsqueda de documentos en la base de datos CUIDEN de la Fundación Index, durante los años 2000 al 2005, utilizando como palabra clave "Urgencias". Posteriormente se analizó la presencia de estos documentos en otra base de datos (*Pub Med*) y la repercusión científica internacional a través del *ISI Web of knowledge*.

Resultados: Se han hallado 124 documentos originales hechos en España. En el 35,7% de los trabajos colaboraron profesionales de 2 o más instituciones y en el 55,3% de los casos participaban 4 o más investigadores. El primer autor pertenecía a un hospital en el 67,2% de los trabajos y a una universidad en el 12,3%. La comunidad autónoma donde se produjo más fue Andalucía (31 documentos) y las provincias líderes fueron Madrid y Barcelona, con 14 trabajos cada una. Los temas tratados con mayor frecuencia fueron la calidad (16,1%) y el análisis de las causas por las que se utilizó el servicio de urgencias (8,1%). Toda la producción científica fue publicada en 34 revistas diferentes, siendo *Ciber-Revista* la más utilizada (20,2%). Dieciocho de estos documentos (14,5%) estaban también indexados en el *Pub Med* y 3 de ellos (2,4%) se habían publicado en revistas con factor de impacto.

Conclusiones: La enfermería española de urgencias investiga, pero su producción científica es escasa. Además, los documentos tienen poca repercusión científica internacional, debido a que la mayoría de las revistas que los publican no están indexadas en la base de datos de mayor difusión. [*Emergencias* 2008;20:299-307]

Palabras clave: Enfermería. Urgencias. Investigación. Producción científica. Bases de datos. CUIDEN.