

## SPECIAL ARTICLE

# Analysis of highly cited articles published in EMERGENCIAS

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A journal is generally considered to be of higher quality to the extent that it publishes articles that are cited. A journal's articles are not all cited equally, however; rather, citations of only a select group of titles accounts for most of a journal's impact factor. This study aimed to identify the characteristics of *Emergencias*'s most highly cited articles and compare their impact to that of papers by other authors in Spain, in Spanish, and internationally in the field of emergency medicine. Between 2008 and 2015, *Emergencias* published 975 articles, which received 2207 citations. The most-cited article received 52, and the group of 20 most-cited articles accumulated a total of 519 cites (23.5%). Even though *Emergencias* is published in Spanish and was included in Journal Citation Reports only recently (2008), some of the published articles have had considerable impact. The most-cited article (EVADUR Study) was in the top 2% (98th percentile) of all publications by authors in Spain, and in the top 1% of articles published in Spanish or in emergency medicine.

**Keywords:** Bibliometrics. Journals as topic. Research activity. Emergency Medicine.

## Análisis de los artículos de alta repercusión publicados en la revista EMERGENCIAS

En general, se acepta que una revista científica es tanto mejor cuanto más se citan los artículos que en ella se publican. Sin embargo, no todos los artículos de una revista son citados por igual, sino que solo un grupo selecto de ellos es el que contribuye mayoritariamente al factor de impacto de la revista. El presente estudio investiga las características de los artículos con mayor repercusión publicados en *EMERGENCIAS* y el posicionamiento de estos artículos de alta citación respecto a los artículos publicados por autores españoles, en español y en el área de investigación de Medicina de Urgencias y Emergencias (MUE) en todo el mundo. Entre 2008 y 2015, *EMERGENCIAS* publicó 975 artículos, que recibieron 2.207 citaciones. El artículo publicado en *EMERGENCIAS* más citado lo fue en 52 ocasiones, y los 20 artículos con mayor citación acumularon 519 citas (23,5% de total). A pesar que *EMERGENCIAS* es una revista editada en español y que ha sido incluida recientemente en Journal Citation Reports (JCR) (en 2008), algunos de sus artículos ya han alcanzado una repercusión notable. Así, por número de citas, el artículo más citado de *EMERGENCIAS* (Estudio EVADUR) se sitúa en el segundo percentil de todos los artículos publicados por autores españoles, y en el primer percentil de todos los artículos publicados en español o en el área de MUE.

**Palabras clave:** Artículos. Revista científica. Investigación. Medicina de urgencias y emergencias.

## Introduction

Scientific journals are the vehicle of academic quality used for transmission of the main scientific advances, and this is done through the publication of research articles. In general, it is considered that the quality of a scientific journal is reflected in the citation of its articles. The number of article citations allows calculation of the journal impact factor which, today, is the quality indicator most accepted for the classification of scientific journals. Journal impact factors are published annually by Journal Citation Reports (JCR). Thus, in its latest publication corresponding to the impact factors of 2014, the journal *EMERGENCIAS* obtained an impact factor of 2.895, which places it as number 1,761 of 8,618 journals indexed by JCR, and third of the 24 journals in the category Emergency Medicine (EM)<sup>1</sup>. Also, of the 74 JCR indexed journals that are published in

Spain, *EMERGENCIAS* had the third highest impact factor, and second among the journals that published their articles in Spanish last year<sup>2</sup>.

However, not all articles published in the same journal are cited equally, but only a select few of them contribute mainly to the journal impact factor<sup>3,4</sup>. For example, about one third of the articles published by Spanish authors in the field of biomedicine are not subsequently cited<sup>5</sup>. In this regard, multiple studies published in recent years have focused on high citation articles corresponding to a specialty or a cluster of journals<sup>6-9</sup>. One recently published study investigated the 100 most cited articles published in EM journals<sup>10</sup>. All of them appeared in journals published in English: 65 in the *Annals of Emergency Medicine*, 15 in *The American Journal of Emergency Medicine*, 12 in *Academic Emergency Medicine*, 4 in the *Journal of Emergency Medicine*, 3 in *Emergency Medicine Journal*, 1 in

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the European Journal of Emergency Medicine. However, the search strategy did not include the journal EMERGENCIAS, so it is not possible to know the ranking of articles published in it. Therefore, the aim of this study was to determine which articles in EMERGENCIAS were most cited, and compare the rates of citation of these articles with those of other articles published by Spanish authors and in Spanish (of any field of research) as well as those published in the world within the category of EM.

## Method

The Web of Science (WOS) was chosen as the database for this project, which includes EMERGENCIAS from issue number 1, 2008<sup>11</sup>, established as the basis for determining the citations and comparisons. In addition, in a complementary way, for those articles with the greatest number of citations listed in WOS, we considered the number of citations recorded by SCOPUS<sup>12</sup>, a different database, in which EMERGENCIAS appears since mid-2010. We accessed these databases on September 11, 2015, and looked at all indexed articles and all citations recorded up to that date.

First, all EMERGENCIAS articles were obtained by the sequence SO (publication name) = Emergencias. Identified articles were ordered depending on the number of citations obtained and when equal were ranked according to the ratio between the number of citations and the years since its publication (citations / year). The authors determined a priori that a detailed analysis be performed of the 20 articles with the highest number of cumulative citations, which include year of publication, type of article, the existence of collaboration (single center / multi-center), whether there was authorship by a research group and details of the individual authors. To determine the research lines of Spanish emergency physicians (EPs) we used the index one of the leading textbooks in emergency medicine, Tintinalli's Textbook of Emergency Medicine<sup>13</sup> slightly modified<sup>14</sup>, and the document was framed in the nearest category, according to the authors of this article. To see the potential degree of penetration beyond the field of Spanish investigation of these 20 most cited articles, we reviewed the source of their citations in two aspects: the percentage of citations from journals published in a language other than Spanish, and the percentage of citations from articles without Spanish authors.

For comparison of these results, three different search strategies were also used. In the first, the articles published by Spanish authors were selected. For this we used the sequence AD (address of the authors) = Spain, which guaranteed that at least one of the authors were affiliated to institutions in Spain (although their nationality was not necessarily Spanish). In the second, we selected the articles published in Spanish with the sequence LA (language) = Spanish. And in the third, we selected articles categorized as EM using the sequence SU (Research) = Emergency Medicine. Then we proceed-

ed to combine these three strategies with all possible variants.

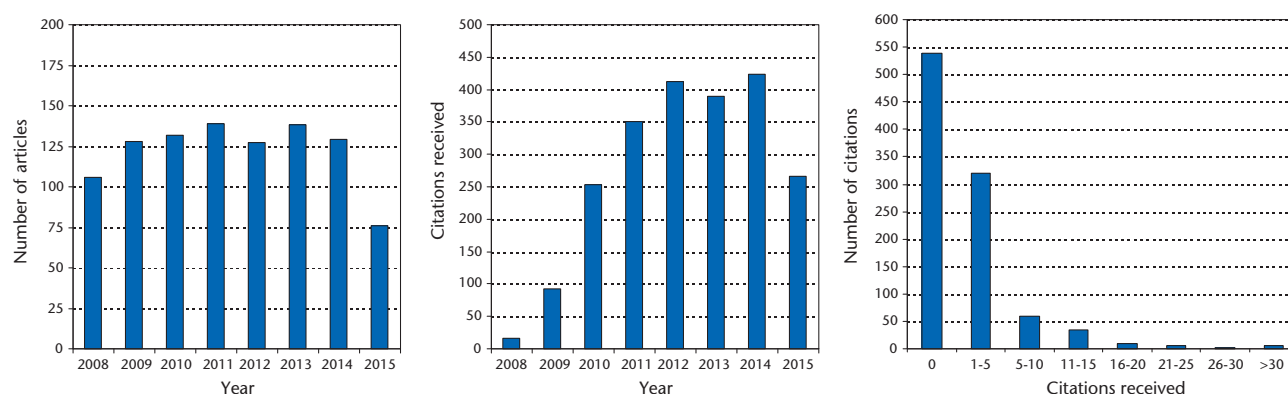
All searches generated were performed without considering time of publication, allowing us to select all articles in the repertoire, and then repeated by limiting the publication year by the sequence PY (publication year) = 2008- 2015. This was done because that is the period in which EMERGENCIAS has been present in the database, in order to establish a realistic comparison between the impact of the articles of EMERGENCIAS and the impact of articles published under the aforementioned combinations. For the latter comparison, the ranking of the article published by EMERGENCIAS which obtained the greatest number of citations was obtained. This was performed both in ordinal form and in the form of percentile, with percentile 1 corresponding to the best position and the 100th percentile corresponding to the worst position. Given the descriptive characteristics of the study, the other results are expressed as absolute values and percentages.

## Results

At the time of consulting WOS, EMERGENCIAS had 975 indexed articles, which together had received 2,207 citations (Figure 1): 1,181 (53.5%) corresponding to 336 articles published in the journal EMERGENCIAS itself, and 1,126 corresponding to 428 published in other journals' articles, including *Anales del Sistema Sanitario de Navarra* (66 articles), *Medicina Clínica* (59 articles), *Revista Clínica Española* (23 articles), *Enfermedades Infecciosas y Microbiología Clínica* (23 articles), *Revista Española de Cardiología* (22 articles), *European Journal of Emergency Medicine* (18 articles), *Atención Primaria* (17 articles), and *Medicina Intensiva*, *Emergency Medicine Journal* and *Revista de Neurología* (articles each).

The number of citations to the 975 articles published in EMERGENCIAS ranged from 0 to 52. A total of 538 articles (55.2%) had not been cited to date (Figure 1). The 20 most cited articles<sup>14-33</sup> (Table 1) accumulated a total of 519 citations, representing 23.5% of all received by EMERGENCIAS. Citations to these articles came mostly from articles in journals published in Spanish (only 76, 14.6% of the citations, appeared in journals published in English) and which included Spanish authors (only 22, 4.2% of citations were made to articles without Spanish authors). According to their characteristics, these 20 articles consisted mainly of original research: 75% (40% multicenter studies), in 40% the subject matter was organizational, in 50% there was collaboration between different hospitals and 40% were performed by consolidated research groups (Table 2). In total, 107 authors were the signatories of these 20 articles, 26 of whom contributed more than one article (Table 2).

During the period in which EMERGENCIAS has been indexed in WOS, almost a million articles were published in Spain, about 380,000 articles in Spanish and al-



**Figure 1.** Total EMERGENCIAS documents indexed by Journal Citation Reports and citations for these documents between 2008 and 2015 (up to 11.09.2015).

most 100,000 articles in the relevant discipline of EM (Table 3). Importantly, for all combinations of search performed, the most cited article published by EMERGENCIAS was always in the first percentile, with the exception of the comparison with articles published by Spanish authors, which was in the second percentile (position 11,764 of 977,412 articles published) (Table 3)<sup>34-36</sup>.

## Discussion

This study describes the characteristics of the articles with the greatest impact published in EMERGENCIAS and shows how, despite being published in Spanish and only recently included in JCR (in 2008), some of the articles have already achieved a remarkable impact, comparable to the best articles published by Spanish authors, in Spanish or in EM worldwide.

Regarding the characteristics of the articles with the highest number of citations, it is noteworthy that the first 20, representing 2.1% of the total, have accumulated 519 citations, accounting for 23.5% of all citations received by EMERGENCIAS. It can therefore be inferred that these articles have played an important role in achieving and maintaining the impact factor of EMERGENCIAS, and year after year it has remained in the top quartile of the specialty<sup>2,23,37-39</sup>. Among the keys to understanding the greater quality of these articles, one may consider the fact that 50% were original multicenter works of research. This percentage is higher than that of collaborative EP work published during the period 2005-2009: 13% was done in collaboration between different emergency services, and 38% was multicenter work (i.e. all the work done in collaboration with other hospitals in the same or another Spanish community or other countries)<sup>14</sup>. In addition, 40% of high-impact papers published by EMERGENCIAS was conducted by consolidated multicenter research groups, all under the auspices of the Spanish Society of Emergency Medicine (SEMES). These stable collaborations between researchers from different centers, usually focused on a specific pathology, are therefore highly recommended. Several authors have recognized this as fundamental in

achieving research results, especially if they can subsequently be structured in the form of a consolidated research network<sup>40-43</sup>. This interaction probably also explains why there are certain authors who have co-authored several of these 20 research papers with greatest impact published in EMERGENCIAS.

The quality of these articles we believe can be considered good compared to articles of Spanish authors, articles written in Spanish and articles in the area of emergency medicine. The article by Thomas et al.<sup>15</sup>, with 52 citations, was the most cited EMERGENCIAS article, in the second percentile regarding articles published by Spanish authors, and in the first percentile with respect to those published in Spanish and in EM in the world. We therefore think that this article (and perhaps others present in the list of the 20 most cited) may become a classic reference in the years to come, with high citation, which is maintained over the years and thus further increases the possible number of citations received. In addition, some of the articles on the list of the 20 most cited have a very high rate of citation, which can be seen by citation / year index. Thus, recently published works such as that by Martínez Ortiz de Zarate et al.<sup>24</sup> published in 2013 (and therefore with little time to have received citations) currently occupies the 10th position in absolute number of citations, and the 3rd position by dating / year index, so it is predictable that as time passes it will advance its position.

Our work complements that recently published by Shuaib et al.<sup>11</sup> on the 100 most cited articles published in EM journals, as the authors analyzed only 15 journals included in the EM category of JCR, but they did not include EMERGENCIAS. Although the article by Thomas et al. would not be among these 100 published by Shuaib et al. (the number of citations ranged between 954 and 181), we must take into account that the journals chosen by these authors have been indexed in JCR for a longer time (and therefore some of their articles have had more years to be mentioned) and that the source of citations was SCOPUS, with a different repertoire of source journals (which are those that can generate citations). Thus, Table 1 shows how there may be differences in either direction when counting citations

**Table 1.** List of the 20 most frequently cited articles published in Emergencias

| Order | Publication year | Title <sup>(ref)</sup>                                                                                                                                                                                                    | Authors                            | Cited in WOS | Cited in WOS/year | Cited in non-Spanish language | Cited by non-Spanish authors | Cited in SCOPUS | Type of article | Subject area |
|-------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------|-------------------|-------------------------------|------------------------------|-----------------|-----------------|--------------|
| 1     | 2010             | EVADUR: Adverse events related to assistance in emergency departments of Spanish hospitals <sup>17</sup> .                                                                                                                | Tomás S, et al.                    | 52           | 8.67              | 9.6%                          | 0%                           | 54              | O               | Org          |
| 2     | 2008             | Clinical profile of patients with acute heart failure treated in the emergency department: Preliminary Study Data EAHFE (Epidemiology Emergency Acute Heart Failure) <sup>16</sup> .                                      | Llorens P, et al.                  | 44           | 5.50              | 13.6%                         | 2.3%                         | –               | O               | CV           |
| 3     | 2011             | Overcrowding of emergency services: A call for unity <sup>17</sup> .                                                                                                                                                      | Flores CR                          | 42           | 8.40              | 21.4%                         | 4.8%                         | 40              | PV              | Org          |
| 4     | 2009             | Activity of a short stay unit in a tertiary hospital emergency department: four years experience <sup>18</sup> .                                                                                                          | González-Armengol JJ, et al.       | 40           | 5.71              | 0%                            | 0%                           | –               | O               | Org          |
| 5     | 2010             | Impact of the implementation of hospital management measures to increase efficiency in the management of beds and reduce overcrowding in the emergency department <sup>19</sup> .                                         | Juan A, et al.                     | 33           | 5.50              | 15.2%                         | 6.1%                         | –               | O               | Org          |
| 6     | 2011             | Management of acute heart failure in emergency services, emergency department and attached units. Group consensus document of acute heart failure in the Spanish Society of Emergency Medicine (ICASEMES) <sup>20</sup> . | Llorens P, et al.                  | 26           | 5.20              | 38.5%                         | 19.2%                        | 32              | DC              | CV           |
| 7     | 2010             | Overcrowding of emergency services. A proposal from the system for a system problem <sup>21</sup> .                                                                                                                       | Ovens H                            | 26           | 4.33              | 11.5%                         | 3.8%                         | –               | PV              | Org          |
| 8     | 2012             | Biomarkers for prediction of bacterial infection, bacteremia and severity in the emergency department <sup>22</sup> .                                                                                                     | Tudela P, et al.                   | 25           | 6.25              | 12.0%                         | 2.5%                         | 25              | O               | Inf          |
| 9     | 2011             | 3.085 <sup>23</sup> .                                                                                                                                                                                                     | Miró O                             | 24           | 4.80              | 8.3%                          | 8.3%                         | 22              | E               | NC           |
| 10    | 2013             | INFURG-SEMES study: Epidemiology of infections treated in emergency departments and evolution over the past decade <sup>24</sup> .                                                                                        | Martínez Ortiz De Zarate M, et al. | 23           | 7.67              | 21.7%                         | 0%                           | 21              | O               | Inf          |
| 11    | 2012             | Scientific production of Spanish emergency physicians during the five-year period 2005-2009 and compared to the period 2000-2004 <sup>14</sup> .                                                                          | Miró O, et al.                     | 22           | 5.50              | 13.6%                         | 4.5%                         | 16              | O               | NC           |
| 12    | 2009             | Epidemiological study of acquired pneumonia diagnosed in an ED: Does the Fine index influence decision-making? <sup>25</sup> .                                                                                            | Llorens P, et al.                  | 22           | 3.14              | 9.1%                          | 9.1%                         | –               | O               | Inf          |
| 13    | 2011             | Prognostic value of the urgent determination of brain natriuretic peptide in the emergency department in patients with heart failure: PICASU-1 study <sup>26</sup> .                                                      | Jacob J, et al.                    | 21           | 4.20              | 38.1%                         | 4.8%                         | 23              | O               | CV           |
| 14    | 2009             | Care activity in the observation unit of a second level hospital <sup>27</sup> .                                                                                                                                          | Estella A, et al.                  | 20           | 2.86              | 15.0%                         | 0%                           | –               | O               | Org          |
| 15    | 2011             | Culture of patient safety in emergency services: evaluation of results in 30 hospitals in the Spanish National Health System <sup>28</sup> .                                                                              | Roqueta Egea F, et al.             | 19           | 3.80              | 15.8%                         | 5.3%                         | 22              | O               | Org          |
| 16    | 2009             | Results achieved with "stroke code" circuit in a large hospital: role of emergency department and analysis of the learning curve <sup>29</sup> .                                                                          | Gómez-Angelats E, et al.           | 19           | 2.71              | 10.5%                         | 10.5%                        | –               | O               | Neur         |
| 17    | 2009             | Usefulness of procalcitonin and C-reactive protein in patients with sepsis in the emergency room <sup>30</sup> .                                                                                                          | Julián-Jiménez A, et al.           | 18           | 2.57              | 5.6%                          | 5.6%                         | –               | O               | Inf          |
| 18    | 2012             | Patient safety in emergency departments: SEMES four-year-Patient Safety Program <sup>31</sup> .                                                                                                                           | Tomás S, et al.                    | 17           | 4.25              | 17.6%                         | 0%                           | 16              | AE              | Org          |
| 19    | 2011             | Prognostic implications of the possibility of determining urgently B-type natriuretic peptide in the emergency department in patients with acute heart failure: Study PICASU-2 <sup>32</sup> .                            | Miró O, et al.                     | 17           | 3.40              | 29.4%                         | 0%                           | 17              | O               | CV           |
| 20    | 2010             | Evolution of different bibliometric markers and quality of EMERGENCIAS between 2005 and 2009 and compared to specialist journals included in Journal Citation Reports <sup>33</sup> .                                     | Miró O, et al.                     | 17           | 2.43              | 5.9%                          | 0%                           | 15              | O               | NC           |

O: Original; PV: Point of View; E: Editorial; CD: consensus document; SA: Special article. Org: organization of emergency services; Inf: infectious diseases; CV: cardiovascular disease; Neur: neurology; NC: Not classifiable.

**Table 2.** Characteristics of the 20 most frequently cited articles published in EMERGENCIAS

|                                         | N (%)   |
|-----------------------------------------|---------|
| <b>Year of publication</b>              |         |
| 2011                                    | 6 (30)  |
| 2009                                    | 5 (25)  |
| 2010                                    | 4 (20)  |
| 2012                                    | 3 (15)  |
| 2008                                    | 1 (5)   |
| 2013                                    | 1 (5)   |
| <b>Type of article</b>                  |         |
| Original research                       | 15 (75) |
| – Multicenter studies                   | 6 (40)  |
| Opinion (editorial / point of view)     | 3 (15)  |
| Consensus document                      | 1 (5)   |
| Special article                         | 1 (5)   |
| <b>Collaborative work</b>               |         |
| Single-center                           | 10 (50) |
| Multicenter                             | 10 (50) |
| <b>Research group authorship</b>        |         |
| Yes                                     | 8 (40)  |
| – ICA-SEMES                             | 4       |
| – SEMES-Patient Safety                  | 3       |
| – INFURG-SEMES                          | 1       |
| No                                      | 12 (60) |
| <b>Subject area of article</b>          |         |
| Organization                            | 8 (40)  |
| Cardiovascular                          | 4 (20)  |
| Infections                              | 4 (20)  |
| Neurology                               | 1 (5)   |
| Unclassifiable                          | 3 (15)  |
| <b>Authors (with two or more items)</b> |         |
| Martín-Sánchez FJ                       | 7 (35)  |
| Miró O                                  | 7 (35)  |
| Llorens P                               | 5 (25)  |
| Chanovas Borrás M                       | 4 (20)  |
| Herrero Puente P                        | 4 (20)  |
| Julián Jiménez A                        | 4 (20)  |
| Jacob J                                 | 4 (20)  |
| Tomás Vecina S                          | 4 (20)  |
| Gil V                                   | 3 (15)  |
| Pérez-Durá MJ                           | 3 (15)  |
| Roqueta F                               | 3 (15)  |
| Aguirre A                               | 2 (10)  |
| Alonso H                                | 2 (10)  |
| Álvarez AB                              | 2 (10)  |
| Burillo Putze G                         | 2 (10)  |
| Sánchez M                               | 2 (10)  |
| Garrido M                               | 2 (10)  |
| Giménez A                               | 2 (10)  |
| González-Armengol JJ                    | 2 (10)  |
| González del Castillo J                 | 2 (10)  |
| Noval A                                 | 2 (10)  |
| Pavón J                                 | 2 (10)  |
| Perelló R                               | 2 (10)  |
| Richard F                               | 2 (10)  |
| Segura F                                | 2 (10)  |
| Toranzo T                               | 2 (10)  |

\* In addition there are 81 authors of a single article.

of an article by WOS and Scopus (with variations ranging from 27%<sup>14</sup> underestimates to 23% overestimates<sup>20</sup>); in particular, for the article of Thomas et al., the count was 52 citations with WOS and 54 with Scopus. In addition, unlike the rest, the journal EMERGENCIAS is not indexed in PubMed, a source of frequent consultation of European and American researchers, and its language is Spanish, i.e. not English, facts that have been shown to decrease the degree of dissemination and vi-

sibility, and thus the opportunity to cite its work<sup>44</sup>. An example of these limitations to dissemination, in general terms, of EMERGENCIAS is the low number of citations to articles from journals published in English (14.6% of the citations) and non-Spanish authors (4.2% of citations). In this regard, the consensus document on acute heart failure, Llorens et al<sup>20</sup>, was the article that received greatest dissemination and impact outside Spain among the 20 analyzed in this study, but still, the percentage of citations from journals published in English did not reach 40% (38.5%) and from non-Spanish authors did not reach 20% (19.2%). Undoubtedly, this is an aspect that should improve with the future inclusion, when it occurs, of EMERGENCIAS in PubMed.

It is well known that citations by authors differ according to research area<sup>45</sup> and journals that publish their findings, and this is true for the area of EM<sup>46</sup>. In addition, we have also recently warned that the number of indexed journals in a given category affects the number of citations that articles and researchers in a particular research area receive<sup>47</sup>. Thus, in the case of EM, this is one of the areas with few indexed journals, so papers published in EMERGENCIAS (such as the 20 with greatest impact) are adversely affected by this. Consequently, this effect should be taken into account when comparing results of research by EPs with regard to researchers from other fields and when the list of articles presented here (with their respective citations) is compared with other lists from other specialities.

On reflection, this paper verifies that it is possible to transmit quality science in Spanish. This is possible thanks to the increasing quality of the research carried out in Spain, which includes that done in the emergency department by some groups of Spanish EPs<sup>48,49</sup>. But the positioning of some research journals, such as EMERGENCIAS, also plays an important role in maintaining its publications in Spanish, despite the predominance of English as the main language of scientific dissemination. This commitment is highly beneficial and positive for the Spanish language and Spanish-speaking research<sup>50-54</sup>.

This study has a number of limitations. The first is that the results are applicable only to the work of the journals included in the WOS database. Second, it assumes that the articles have been properly classified as performed by Spanish researchers, published in Spain or in the area of EM, but this has not been directly verified with the authors. Third, the time span covered is limited, only since the inclusion of EMERGENCIAS in WOS. It is possible that the dynamics of influence and impact of articles may be different in the medium and long term, so this list may differ in a few years. However, the results show that some of the articles published in EMERGENCIAS have significant dissemination and remarkable impact, similar to those of other writings in Spanish and by Spanish authors, and to articles published in the field of EM.

**Table 3.** Analysis of the situation of documents published in EMERGENCIAS regarding articles published in Spain, in Spanish and in the category of Emergency Medicine

| Search strategy                                           | All documents |                                      | Documents published between 2008 and 2015 |                                                             |                                                                       |                                                              |
|-----------------------------------------------------------|---------------|--------------------------------------|-------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------|
|                                                           | Documents     | Citations to the most cited document | Documents                                 | Citations to the most cited document (reference of article) | * Absolute position of the EMERGENCIAS document most frequently cited | Percentile of the EMERGENCIAS document most frequently cited |
| <b>Individual fields</b>                                  |               |                                      |                                           |                                                             |                                                                       |                                                              |
| Address (AD) = Spain                                      | 2,354,086     | 7,628                                | 977,412                                   | 7,628                                                       | 11,764                                                                | 2                                                            |
| Language (LA) = Spanish                                   | 1,270,566     | 1,681                                | 379,291                                   | 437                                                         | 132                                                                   | 1                                                            |
| Research Area (SU) = Emergency Medicine                   | 273,604       | 6,409                                | 98,134                                    | 2,578 <sup>34</sup>                                         | 959                                                                   | 1                                                            |
| <b>Combination of fields</b>                              |               |                                      |                                           |                                                             |                                                                       |                                                              |
| (AD = Spain) + (LA = Spanish)                             | 242,566       | 582                                  | 81,051                                    | 206                                                         | 14                                                                    | 1                                                            |
| (AD = Spain) + (SU = Emergency Medicine)                  | 2,762         | 674                                  | 1,787                                     | 274 <sup>35</sup>                                           | 16                                                                    | 1                                                            |
| (LA = Spanish) + (SU = Emergency Medicine)                | 4,079         | 66                                   | 2,360                                     | 66 <sup>36</sup>                                            | 2                                                                     | 1                                                            |
| (AD = Spain) + (LA = Spanish) + (SU = Emergency Medicine) | 4,088         | 52                                   | 966                                       | 52 <sup>15</sup>                                            | 1                                                                     | 1                                                            |

\* Reference to the most cited papers only when the search strategy included the research area (SU = Emergency Medicine.).

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## Conflict of interest

The authors declare no conflict of interest in relation to the present work.

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