

Comparative study of journal selection criteria used by MEDLINE and EMBASE, and their application to Spanish biomedical journals.

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Abstract:

Journal selection criteria are studied for international databases MEDLINE and EMBASE and also LILACS, which covers only Latin-american and Caribbean biomedical production but follows exhaustive selection criteria that are widely reported.

The three databases consider subject suitability, quality of contents, quality of editorial work, production quality, selection methods of proposed articles, type of contributions, language and geographic coverage and other additional requirements included by some of them and not specified by others.

The selection criteria of international databases are compared applied to the Spanish biomedical journals indexed by MEDLINE, EMBASE or both. Presently, 41 Spanish journals are indexed by MEDLINE, and 111 by EMBASE, being 28 titles common to both.

Regarding the number of journals indexed in both databases, we can assume that the criteria used by MEDLINE are more restrictive than those used by EMBASE. Special consideration is given to the 13 Spanish journals indexed by MEDLINE and not by EMBASE.

Finally, after studying journals indexed by the Spanish databases IBECS (Indice Bibliográfico Español de Ciencias de la Salud) and IME (Indice médico Español), conclusions are shown implying that their selection criteria must be based in those applied by MEDLINE or EMBASE.

Key words:

MEDLINE, EMBASE, Biomedical databases, Biomedical Spanish journals, coverage, IME, IBECS.

Introduction:

Searching for literature about Medline and Embase comparison, we found that the most of the studies dealt with general comparative surveys of both databases (1, 2), the coverage of certain topics (3), the evaluation of retrieval methods (4), the efficiency on the recovery of articles written by authors with specified professional profile (5) or the

coverage of journals of selected topics (6). No article has been found on the coverage of periodicals of a specific country.

In this study, Medline and Embase have been compared to assess the reasons of the unequal presence of Spanish journals in both databases. Following this goal, the study and comparison between these databases on journal selection criteria are made (7, 8). The Spanish journals analyzed are those included in references (9, 10).

MEDLINE is the most important database produced by the U. S. National Library of Medicine and includes areas of medicine, dentistry, veterinary, nursing, Public Health and pre-clinic and basic sciences. It contains around 14 million records of references beginning in 1950, obtained from more than 10.000 different journals, of which 4.780 are indexed presently. The critical facts that are considered by the Selection Committee that examines the suitability of the journals for their incorporation to MEDLINE include:

- a) **Scope and coverage.** - Journals must publish mainly biomedical papers with preference to those that cover aspects scarcely covered in medical Literature.
- b) **Quality of contents.** - The scientific quality of the contents is the main aspect to select a journal for indexation. The validity, importance, originality and contribution to coverage of any biomedical field in the published papers, are key factors considered in recommending a title for their inclusion in the index.
- c) **Quality of editorial work.** - The journal should demonstrate features that contribute to the objectivity, credibility and quality of its contents. These features may include information about the methods of article selection, especially on the explicit process of external peer review; statements indicating adherence to ethical guidelines, independence of advertising companies or commercial sponsorship. Sponsorship by national or international professional societies may be considered.
- d) **Production quality.** - The quality in layout, printing, graphics and illustrations is taken into account.
- e) **Types of content.** - Journals with one or more of the following types of contents will be considered:
 - Reports of original research.
 - Original clinical observations accompanied by analysis and discussion.
 - Analysis of philosophical, ethical or social aspects of the health professions or biomedical sciences.
 - Critical reviews.
 - Statistical compilations.
 - Descriptions of evaluation of methods or procedures.
 - Case reports with discussions.
- f) **Foreign language journals.** - Criteria for selection are the same as for those written in English. Additional consideration is given to the availability of adequate English-language abstracts.
- g) **Geographic coverage.** - The highest quality and most useful journals are selected without regard for place of publication. In order to provide a broad international coverage, special attention is given to research, public health, epidemiology,

standards of health care and indigenous diseases. Journals will generally not be selected for indexing on subjects already well represented in MEDLINE or those that are being published for a local audience.

This same criteria are applied to both print and electronic journals.

EMBASE database has its origin in Excerpta Medica journal of abstracts, developed by a group of Dutch practitioners, that compiled abstracts of the most relevant medical literature. Since 1972 has been managed by Elsevier editorial company and is available online.

Currently it indexes about 4.400 journals of 67 countries. These have been selected considering the fulfillment of the following criteria:

1. **Scope and subject coverage.** Journals should cover any of the following subjects: Drug research, pharmacology, toxicology, human medicine, experimental and clinical research, human biology, health policy and management, pharmacoeconomics, public occupational and environmental health, substance dependence and abuse, psychiatry, forensic medicine, biomedical engineering and instrumentation. However other journals covering peripheral aspects or related matters can also be considered.
2. **Scientific quality and editorial coverage.** Scientific and editorial quality are prime factors in the selection of journals. The contents must be under expert evaluation (peer reviewed), although other journals as newsletters on core topics can also be considered. The presence of bibliographic references is a quality factor.
3. **Language requirements.** Embase includes journals in any language different from English, but requires abstracts in English. The quality of the English abstracts is considered in the evaluation.
4. **Geographic origin and coverage.** Embase aims to provide the widest possible international coverage. It selects high quality journals from any country, and special attention is given to those published out of the main publishing area (e. g. United States, Canada and Western Europe).

Currently EMBASE indexes serial literature which include, not only scientific journals, but also Congress proceedings or monographs, when published as serials (with International Standard Serial Number). Trade or news journals can also be selected when they contain contributions whose quality and presentation are comparable with articles of scientific journals. The inclusion of journals which have only electronic edition is at this moment being considered.

LILACS (Latin American and Caribbean Health Sciences Literature) is a database produced by BIREME (Latin American and Caribbean Center on Health Sciences Information) and which covers latin american health literature. It contains more than 150. 000 records from about 670 journals, beginning in 1982 (11). The selection criteria that are used are based mainly on those of MEDLINE (scientific contents, “peer review”, Editorial Committee adapted to the journal field, etc.) but gives special value to other formal facts as fulfilment of the publication date, minimum of quarterly

appearance, between others, which sometimes are not very thoroughly fulfilled by Latin American journals many of them have irregular or extremely late publication patterns.

Results.

The Spanish journals included in MEDLINE are 45 and 111 are indexed by EMBASE, with 31 included in both (Table 1)

Table 1. - Spanish biomedical journals in MEDLINE and EMBASE

Database	Spanish Journals
MEDLINE	45
EMBASE	111
Journals in both MEDLINE and EMBASE	31
Journals in MEDLINE only	14
Journals in EMBASE only	80

The 31 common journals in both databases are:

Acta otorrinolaringológica española	International journal of developmental biology
Actas urológicas españolas	Journal of physiology and biochemistry
AIDS reviews	Medicina clínica
Allergología et immunopathología	Medicina oral
Anales de medicina interna	Methods and findings in experimental and clinical pharmacology
Anales de pediatría	Neurocirugía
Anales del sistema sanitario de Navarra	Neurología
Archivos de bronconeumología	Nutrición hospitalaria
Archivos españoles de urología	Revista clínica española
Atención primaria	Revista de neurología
Drug news and perspectives	Revista española de cardiología
Drugs of today	Revista española de enfermedades digestivas
Enfermedades infecciosas y microbiología clínica	Revista española de quimioterapia
Farmacia hospitalaria	Revista española de salud pública
Gastroenterología y hepatología	Revista iberoamericana de micología
Histology and histopathology	

The selection criteria used by MEDLINE and EMBASE for the inclusion of journals in their databases are practically coincident and the subject fields essentially the same, though each uses different subject headings and EMBASE gives a special relevance to drug and pharmacological studies. However, reviewing Spanish journals in both databases, the unequal quantity of journals cannot be apparently explained from the point of view of editorial quality nor the subjects implied.

In order to verify if this situation happens with journals of other countries, the coverage of both database for journals of other European countries has been examined. Some results are shown in Table 2. For comparison reasons we have also included the coverage of journals from the United States.

Table 2. -Journals of European countries and the United States in MEDLINE and EMBASE

Country	Journals in MEDLINE	Journals in EMBASE
Austria	12	36
Belgium	19	19
<i>Bosnia-Herzegovina</i>	<i>1</i>	<i>0</i>
Bulgaria	6	17
Croacia	8	27
Czech Republic	22	40
<i>Denmark</i>	<i>41</i>	<i>32</i>
<i>Finland</i>	<i>5</i>	<i>3</i>
France	89	139
Germany	234	337
Greece	6	11
Holland	211	275
Hungary	12	13
Ireland	37	51
Italy	86	159
<i>Lithuania</i>	<i>1</i>	<i>0</i>
<i>Luxembourg</i>	<i>1</i>	<i>0</i>
Norway	34	46
Poland	49	57
Portugal	2	8
<i>Rumania</i>	<i>13</i>	<i>6</i>
<i>Russia (Federation)</i>	<i>59</i>	<i>1</i>
Slovaquia	5	12
Slovenia	0	3
Spain	41	109
<i>Sweden</i>	<i>11</i>	<i>5</i>
<i>Switzerland</i>	<i>127</i>	<i>115</i>
Ukraina	0	1
United Kingdom	740	923
Yugoslavia	5	5
Total Europe	1. 877	2. 450
United States	1. 592	1. 432
TOTAL Europe and USA	3. 469	3. 882
TOTAL of all countries	4. 780	4. 523

Data in Table 2 shows that although EMBASE gathers a 5 % less journals than MEDLINE, but includes 30 % more European journals than the latter. Biomedical journals of twenty one European countries are represented in equal or greater quantity in EMBASE than in MEDLINE. The most outstanding difference corresponds to journals published by the Russian Federation, which are practically absent in EMBASE, only 1, while MEDLINE indexes 59. Nine countries with more journals in MEDLINE than in EMBASE have been highlighted in red. On the other hand, the number of journals from the United States indexed by MEDLINE is a 10 % superior to those included by EMBASE.

The Spanish databases with an exclusive Health Sciences coverage are:

IME Índice Medico Español (*Spanish Medical Index*) developed in 1971 by the Instituto de Historia de la Ciencia y Documentación López Piñero (CSIC and Valencia University) (12).

IBECS Índice Bibliográfico Español de Ciencias de la Salud (*Spanish Bibliographic Index of Health Sciences*) created in the year 2000 by the Biblioteca Nacional de Ciencias de la Salud (Institute of Health Carlos III) (13).

Both databases require that the analyzed journals fulfill their requirements that include:

- **Formal aspects.** - (regularity, disposition of the of bibliographical description elements, abstract, etc),
- **Contents aspects.** - (related with the Editorial Committee, type of contents included, bibliographical references included in articles) and
- **Diffusion aspects.** - (Databases in which they are indexed and diffusion through Internet)

Although there are some small differences in the weight of each requirement, there is some concordance in the selected journals, which is summarised in Table 3:

Tabla 3. Journals indexed in IME and IBECS.

Database	Journals
IME	190
IBECS	135
Both in IME e IBECS	100
Only in IME	90
Only in IBECS	35

The number of coincident journals will probably be greater when IBECS concludes the selection process and the agreements with the publishers, in course in many cases. A criterion that is mandatory in this data base and not indicated by IME specifically, is that all the articles must have a Spanish abstract.

The coverage of the journals included in these databases by MEDLINE and EMBASE has been examined. The results are presented in Table 4.

Table 4. - Spanish journals in Medline and Embase and in Spanish databases

Database	Spanish journals	IME	IBECS
MEDLINE	45	33	33
EMBASE	111	81	65

The number of the Spanish journals included by MEDLINE is the same, 33, for IME and IBECS. They are not the same titles although they are common to a large extent.

Table 5 shows the list of journals indexed by MEDLINE which are not included in both Spanish databases.

Table 5. Spanish journals indexed by Medline and not included in both IME and IBECS

Journal	IME	IBECS	tes
AIDS Reviews			Without Spanish abstract
Anales de la Real Academia Nacional de Medicina			Does not publish original works but conferences read in the sessions of the Academy
Anales otorrinolaringológicos iberoamericanos		X	
Drug news and perspectives			Without Spanish abstract
Drugs of today			Without Spanish abstract
Gastroenterología y Hepatología	X		
Histology and Histopathology			Without Spanish abstract
International Journal of Developmental Biology	X		
International microbiology		X	
Journal of Physiology and Biochemistry	X		
Methods and findings in experimental and clinical pharmacology			Without Spanish abstract
Nefrología		X	
Revista de derecho y genoma humano		X	
Revista Iberoamericana de Micología	X		
Spanish journal of psychology			
Timely topics in medicine. Cardiovascular diseases			It is not a conventional journal, but an analysis of Web resources

It can be observed that both IME and IBECS do not include 12 journals each one which are indexed by MEDLINE, being 8 journals coincident for both Spanish databases and 4 different for each database. In table 5 the 8 coincident journals which are not included by IME or IBECS are highlighted in red. Seven of these journals are published in English language, 5 do not have Spanish abstract and one is not a conventional journal, but an electronic resource which compiles medical news from other Webs. This implies that only two of this list of journals could enter the Spanish databases:

*Anales de la Real Academia Nacional de Medicina, and
Spanish journal of psychology*

As indicated in the column for notes in Table 5, the first, mainly contains the conferences read in the scientific Sessions of the Royal National Academy of Medicine, with a few number of original articles in a year.

Regarding the journals indexed by EMBASE, there are significant differences between IME and IBECS. of the 111 Spanish titles included by EMBASE, 81 are present in IME and 65 in IBECS. Altogether there are 52 journals, listed in Table 6, which are not contained in both Spanish databases.

Table 6. – Journals indexed by Embase not included in IME and/or IBECS

Journal Title	IME	IBECS	Notes
Acta Ginecológica	X		
Actualizaciones en Anestesiología y Reanimación	X		
AIDS Reviews			Without Spanish abstract
Anales de cirugía cardíaca y cirugía vascular	X		
Anales de la Real Academia de Farmacia		X	
Anuario de Psicología			
Atención Farmacéutica	X		
Circular Farmacéutica			No abstract
Cirugía plástica Ibero-Latinoamericana		X	
Clínica cardiovascular		X	
Cuadernos de Artroscopia			
Cuadernos de medicina reproductiva			Monographic series, is not a proper journal,
Dolor	X		
Drug news and perspectives			Without Spanish abstract.
Drug R and D Backgrounders			Without Spanish abstract. Is not a journal
Drugs of today			Without Spanish abstract
Drugs of the future			Without Spanish abstract
Enfermedades Emergentes	X		
European journal of anatomy		X	
European journal of psychiatry		X	
GOZE			Discontinued since 2000
Gastroenterología y Hepatología	X		
Ginecología clínica y quirúrgica*			
Hematología. Citocinas, Inmunoterapia y Terapia Celular	X		
Histology and Histopathology			Without Spanish abstract
International Journal of Developmental Biology	X		
Investigación Cardiovascular	X		

Journal Title	IME	IBECS	Notes
Investigación Clínica	X		
Journal of investigational allergology and clinical immunology			Not published in Spain
Journal of Physiology and Biochemistry	X		
Medicina Paliativa	X		
Medicina veterinaria			Discontinued since 1999
Methods and findings in experimental and clinical pharmacology			Without Spanish abstract
Pediatría integral	X		
Pharmaceutical care España		X	
Psicología conductual		X	
Puesta al Día en Urgencias Emergencias y Catástrofes	X		
Química clínica			
Revisiones en Cáncer	X		
Revisiones en ginecología y obstetricia			Discontinued since 2001
Revista de ginecología clínica y quirúrgica*			Appears twice (marked with *)
Revista de psicogeriatría			
Revista de la Asociación Española de especialistas en Medicina del trabajo			Discontinued since 2002
Revista Española de medicina legal			Discontinued since 1999
Revista Iberoamericana de Fertilidad y Reproducción Humana	X		
Revista Iberoamericana de Micología	X		
Revista Multidisciplinar de Gerontología	X		
Sangre			Discontinued since 1999
SD. Revista Médica Internacional sobre Síndrome Down	X		
Seminarios de la Fundación Española de Reumatología	X		
S. N.			Discontinued since 2000
Toko Ginecología Práctica	X		

It can be observed that of the 52 journals that are not included in both Spanish databases, 22 are indexed only by IME and 7 only by IBECS. Going through the column of notes of the remaining 23 journals in Table 6, there are:

- 7 discontinued. journals,
- 7 journals without Spanish abstract,
- 1 journal which is no longer published in Spain,
- 1 Title does not correspond to a proper journal, but to an electronic site which gathers information from different Medical webs,
- 1 journal is duplicated under two different names (*Ginecología clínica y quirúrgica* and *Revista de Ginecología clínica y quirúrgica*)

On the list, 6 journals qualify for their presence in the Spanish databases.

*Anuario de Psicología,
Cuadernos de Artroscopia,
Cuadernos de medicina reproductiva,
Ginecología clínica y quirúrgica,
Química clínica, and
Revista de Psicogeriatría.*

Though the first journal is named Anuario (yearbook), it is published on a quarterly schedule. Possibly due to its title it has not been considered for evaluation by the Spanish databases, as both prefer a greater publication frequency.

Conclusions:

- The selection criteria for journals demanded by MEDLINE and EMBASE are very similar, and do not seem to explain the difference in coverage of Spanish biomedical journals.
- A clear influence of geographic origin can be stated in both databases revealed in a greater presence of European publications in EMBASE and of USA journals in MEDLINE.
- The list of journals included in EMBASE is not frequently updated, and contains discontinued titles from long ago.
- The selection criteria applied by Spanish Biomedical databases IME and IBECS are also very similar, with the differences that IBECS specifies the exigence of abstracts in Spanish and greater frequency than annual as major factors.
- Journals whose quality is guaranteed for its inclusion in prestigious International databases as MEDLINE and EMBASE should be included in the Spanish Biomedical databases.
- The difference between the journals included in both Spanish databases can be related to agreement problems with the publishers more than to different quality criteria.

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- 13) IBECs database description and list of journals indexed <http://bvs.isciii.es/E/bases.php>

APPENDIX 1

Spanish journals in Medline (last edition 2004)

Acta otorrinolaringológica española
 Actas españolas de psiquiatría
 Actas urológicas españolas
 AIDS reviews
 Allergología et immunopathologia
 Anales de la Real Academia Nacional de Medicina
 Anales de medicina interna
 Anales de pediatría
 Anales del sistema sanitario de Navarra
 Anales otorrinolaringológicos iberoamericanos
 Archivos de bronconeumología
 Archivos de la Sociedad Española de Oftalmología
 Archivos Españoles de Urología
 Atención Primaria
 Cirugía Pediátrica
 Drug news and perspectives
 Drugs of today
 Enfermedades Infecciosas y Microbiología Clínica
 Farmacia Hospitalaria
 Gaceta Sanitaria
 Gastroenterología y Hepatología
 Histology and Histopathology
 International Journal of Developmental Biology
 International microbiology
 Journal of Physiology and Biochemistry
 Law and human genome review
 Medicina Clínica
 Medicina Oral
 Methods and findings in experimental and clinical pharmacology
 Nefrología
 Neurocirugía
 Neurología
 Nutrición Hospitalaria
 Revista Clínica Española
 Revista de Medicina de la Universidad de Navarra
 Revista de Neurología
 Revista Española de Anestesiología y Reanimación
 Revista Española de Cardiología
 Revista Española de Enfermedades Digestivas
 Revista Española de Medicina Nuclear

Revista Española de Quimioterapia
Revista Española de Salud Pública
Revista iberoamericana de Micología
Spanish journal of Psychology
Timely topics in medicine: Cardiovascular diseases

APPENDIX 2

Spanish journals in Embase (last edition 2003)

AIDS Reviews
Acta Ginecológica
Acta Otorrinolaringológica Española
Acta Pediátrica Española
Actas Dermo-Sifiliográficas
Actas Urológicas Españolas
Actualizaciones en Anestesiología y Reanimación
Adicciones
Alergología e Inmunología Clínica
Allergologia et Immunopathologia
Anales de cirugía cardíaca y cirugía vascular
Anales de medicina interna
Anales de Pediatría
Anales de psiquiatría
Anales de la Real Academia de Farmacia
Anales del Sistema Sanitario de Navarra
Angiología
Anuario de Psicología
Archivos de Bronconeumología
Archivos de Medicina del Deporte
Archivos de Psiquiatría
Archivos Españoles de Urología
Atención Farmacéutica
Atención Primaria
Ciencia Ginecológica
Ciencia y Tecnología Farmacéutica
Circular Farmacéutica
Cirugía plástica Ibero-Latinoamericana
Clínica cardiovascular
Clínica e Investigación en Ginecología y Obstetricia
Cuadernos de Artroscopia
Cuadernos de medicina reproductiva
Dolor
Drug news and perspectives
Drug R and D Backgrounders
Drugs of today
Drugs of the future
Endocrinología y Nutrición
Enfermedades Emergentes
Enfermedades Infecciosas y Microbiología Clínica
European journal of anatomy

European journal of psychiatry
Farmacia Hospitalaria
GOZE
Gastroenterología y Hepatología
Geríatrika
Ginecología clínica y quirúrgica
Hematología. Citocinas, Inmunoterapia y Terapia Celular
Histology and Histopathology
Inmunología
International Journal of Developmental Biology
Investigación Cardiovascular
Investigación Clínica
Journal of investigational allergology and clinical immunology
Journal of Physiology and Biochemistry
Mapfre Medicina
Medicina Clínica
Medicina Cutánea Ibero-Latino-Americana
Medicina Intensiva
Medicina Oral
Medicina Paliativa
Medicina veterinaria
Medifam
Methods and findings in experimental and clinical pharmacology
Neurocirugía
Neurología
Nutrición Clínica y Dietética Hospitalaria
Nutrición Hospitalaria
Oncología
ORL Dips
Pediatria Catalana
Pediatria integral
Pediatrika
Pharmaceutical care España
Psicología conductual
Psiquiatría Biológica
Psiquis
Puesta al Día en Urgencias Emergencias y Catástrofes
Química clínica
Radiología
Revisiones en Cáncer
Revisiones en ginecología y obstetricia
Revista Clínica Española
Revista de Calidad Asistencial
Revista de ginecología clínica y quirúrgica
Revista de Neurología
Revista de Ortopedia y Traumatología
Revista de psicogeriatría
Revista de Psiquiatría de la Facultad de Medicina de Barcelona
Revista de Toxicología
Revista de la Asociación Española de especialistas en Medicina del trabajo
Revista de la Sociedad Española del Dolor
Revista Española de Cardiología
Revista Española de Enfermedades Digestivas

Revista Española de Enfermedades Metabólicas Óseas
Revista Española de Geriátría y Gerontología
Revista Española de medicina legal
Revista Española de Nutrición Comunitaria
Revista Española de Pediatría
Revista Española de quimioterapia
Revista Española de salud pública
Revista Iberoamericana de Fertilidad y Reproducción Humana
Revista Iberoamericana de Micología
Revista Iberoamericana de revisiones en menopausia
Revista Latina de Cardiología
Revista Multidisciplinar de Gerontología
Sangre
SD. Revista Médica Internacional sobre el Síndrome de Down
Seminarios de la Fundación Española de Reumatología
S. N.
Toko Ginecología Práctica