Scientific production in bioethics in Spain through MEDLINE

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(La producción científica española en bioética a través de MEDLINE)

Abstract

Objective: To describe Spain's scientific production in the field of bioethics from 1966 to 2003.

Methods: Manuscripts published by Spanish authors between 1966 and 2003 and containing key word references to bioethics, ethics, and 22 other related terms were retrieved from the Medline database.

Results: 858 documents were selected: 78 (9.1%) were published between 1966 and 1983, 163 (19%) between 1984 and 1993, and 617 (71.9%) between 1994 and 2003. The main subject areas treated were laws and rights (15.4%) and research and ethics committees (13.1%). The last of these periods witnessed an increase in publications on genetics and human cloning and a decrease in those treating abortion. Institutional affiliations referred mainly to universities (38.9%) and hospitals (38.5%).

Conclusions: There was a progressive increase in the number of scientific publications on bioethics by Spanish authors during the study period.

Key words: Bibliometrics. Bioethics. Ethics. Publications.

Resumen

Fundamento: Describir la producción científica española en bioética entre 1966 y 2003.

Métodos: Se seleccionaron los documentos publicados por autores españoles y recogidos en la base de datos MEDLINE, mediante el cruce de las palabras bioética con otras diversas del mismo ámbito.

Resultados: Se estudiaron 858 documentos, de los cuales 78 (9,1%) se publicaron entre 1966 y 1983, 163 (19%) entre 1984 y 1993, y 617 (71,9%) entre 1994 y 2003. Los principales temas publicados fueron: legislación y derechos (15,4%) e investigación y comités de ética (13,1%). En el último período se ha observado un aumento significativo de las publicaciones sobre genética y clonación y un descenso sobre las de aborto. El 38,9% de los documentos se atribuyó a universidades y el 38,5% a hospitales.

Conclusiones: La publicaciones científicas de bioética se incrementó durante el período de estudio, lo que demuestra un aumento progresivo de la producción científica española sobre bioética.

Palabras clave: Bibliometría. Ética. Bioética. Publicaciones.

Introduction

Recent scientific and technological developments have given mankind an unprecedented capacity to influence its environment, particularly in the fields of biology and medicine[1]. These new knowledge horizons also offer new possibilities for influencing the quality of human life and present new challenges that require moral reflection. It was this situation that gave rise to bioethics, a scientific discipline that studies the ethical aspects of medicine, and indeed biology in general, and also examines relationships between mankind and other living beings[2].

Recent decades have witnessed the progressive development of bioethics and this relatively new phenomenon has encouraged studies and research that have culminated in scientific publications. To date, several different studies have so far undertaken the task of investigating Spain's scientific production in the fields of biomedicine and health[3-5], but none had sought to assess the scientific production of professionals from Spanish centres and institutions working on the main themes relating to bioethics. For this reason, we decided

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to describe Spain's scientific production in this field between the years 1966 and 2003.

Methods

The main source of data was the WEBSPIRS version of MEDLINE. The final reference data used for the search (using the field «Update Code») was 1st August 2004 and information was crossed according to the following three strategies:

1. «Bioethic*» or «ethic*» or «morals» or «moral deliberation» or «jurisprudence» or «legislation» or «medical responsibility» or «informed consent» or «patient consent» or «personal autonomy» or «confidentiality» or «free-will» or «autonomy» or «quality of life», or «euthanasia» or «dying» or «thanatology» or «terminal sedation» or «fierce» or «attitude to death» or «medical decisions» or «medical dilemmas» or «death» or «human rights» or «patient rights» or «cloning».

2. «Spain» or «España» or «Spanien» or «Espagne» or «Espanha» or «Spagna» in the «AD» or «Address» field.

3. «Spain» in «CP» or «Country of publication». The combination employed was: #1 AND (#2 OR #3).

We checked the works obtained from the database and excluded references that that were not related to bioethics and any works by foreign authors published in Spanish journals («Spain» in «CP»). The total study period (1966-2003) was divided into three sub-periods: 1966-1983, 1984-1993 and 1994-2003. We only considered the affiliation of the first listed author, as the MEDLINE database only lists the institutional address of the first author. Letters to the director and editorials do not include the institutional address. Articles that were encountered several times during the search process were only considered once.

In accordance with the main subjects covered by bioethics, one of the authors (I.B.) assigned each document to one of the following categories: *1)* legislation and human rights (laws, regulations, declarations, consensuses, policy, forensic medicine, and history); *2)* biotechnology and economics (patents and management); *3)* terminal illness and euthanasia (therapeutic effort, therapeutic relentlessness, palliative care, euthanasia, terminal sedation, end of life decisions, questions related with death, and terminal illness); *4)* informed consent and information given to the patient; *5)* health personnel-patient relations (physician-patient relationship, nurse-patient relationship, sociological, philosophical and psychological considerations); *6)* research and ethics committees; *7)* transplants and donations; *8)* pharmaceutical industry (dilemmas and conflicts of interest); *9)* abortion («Pro-life», contraception, prenatal diagnosis, family planning, legal aspects of abortion); *10)* conscientious objection; *11)* genetics and cloning (mother cells, human genetic data, research with embryos, genetic advice, genetic engineering, sex selection, assisted reproduction and legal considerations);*12)* living wills and anticipated intentions; *13)* deontology and teaching; *14)* confidentiality (data protection, professional secrets); *15)* general ethics, with clinical and therapeutic ethical dilemmas; *16)* informed consent in research.

The statistical analysis was conducted using version 11.0 of the SPSS program for Windows (SPSS Inc., Illinois, USA). We used the χ^2 for tendencies to analyse the tendencies between the three study periods. The level of statistical significance was set at 0.05.

Results

The search strategy recovered 1,846 documents of which 858 were analysed: the rest were discarded in accordance with the previously described exclusion criteria. The number of publications progressively increased over the study period. For the period 1966 to 1983, we collected 78 (9.1%) documents, we registered 163 (19%) for 1984 to 1993, and a further 617 (71.9%) for the final ten-year period (1994-2003).

The 858 articles were published in 125 journals: 68 (54.4%) were non-Spanish publications and the other 57 (45.6%) were published in Spain. The journal that published the greatest number of these documents was *Medicina Clínica* (21%). Three other journals published 24.9% of the documents; *Law and the Human Genome Review*, *Revista de Enfermería*, and *Atención Primaria*. Detailed information regarding the other publications is presented in table 1.

The main subjects treated in the 858 published articles were: legislation and human rights (15.4%), research and ethics committees (13.1%); general ethics (11.1%) and genetics and cloning (11.1%). If we compare the coverage of different subjects over the three periods, it is possible to observe an increase in interest in genetics and cloning ($p = 0.005$), information for the patient ($p = 0.005$) and the pharmaceutical industry ($p = 0.03$). It is possible to observe a parallel decline in interest in subjects such as abortion ($p = 0.001$), general ethics ($p = 0.01$) and deontology and teaching ($p = 0.08$) (table 2).

We only had information about the institution which signed the manuscript for 431 (50.2%) of the 858 documents. The majority of the works were presented by universities (n = 170; 39.4%), followed by hospitals (n = 166; 38.5%) and other public centres (n = 38; 8.8%). The institutions identified included the Universidad Complutense de Madrid (6%), the Universi-

Table 1. Journals containing Spanish publications on bioethics (1996-2003)

Journals	Number of publications	%
Med Clin (Barc)	180	21.0
Law Hum Genome Rev	96	11.2
Rev Enferm	66	7.7
Aten Primaria	52	6.1
An R Acad Nac Med (Madr)	40	4.7
Rev Med Univ Navarra	34	4.0
Rev Clin Esp	29	3.4
An Esp Pediatr	22	2.6
Gac Sanit	19	2.2
Rev Neurol	17	2.0
Transplant Proc	16	1.9
Rev Esp Anestesiol Reanim	14	1.6
An Med Interna	12	1.4
Folia Clin Int (Barc)	11	1.3
Actas Luso Esp Neurol Psiquiatr Cienc Afines	11	1.3
Rev Esp Med Nucl	10	1.2
2 journals with 9 documents	18	2.0
2 journals with 8 documents	16	1.8
2 journals with 7 documents	14	1.6
2 journals with 6 documents	12	1.4
4 journals with 5 documents	20	2.4
8 journals with 4 documents	32	3.7
6 journals with 3 documents	18	2.1
16 journals with 2 documents	32	3.7
67 journals with 1 document	67	7.8
Total	858	100.0

dad de Navarra (3.9%) and the Hospital Clínic de Barcelona (3.2%).

Discussion

The results of this study show that scientific production on the subject of bioethics by Spanish professionals increased from 1966 to 2003: this also occurred with publications in other areas of medicine[6-9]. This tendency was associated with an increased interest in bioethics, probably due to an improved grounding in what is still a relatively young discipline, and also to a desire to increase health care assistance in all of its areas. In the area of health care, it is also important to stress the impact of legislation. Relevant examples include the law governing Medication of 1990, regulations concerning the conducting of clinical trials and norms relating to patient autonomy and rights and obligations associated with information and clinical documentation. On the other hand, this growth in production may, at least in part, have also been influenced by the progressive increase in the number of national and foreign journals included in the MEDLINE database; this has certainly been the case with respect to the Spanish journal *Law and the Human Genome Review*, which has only been included on MEDLINE since 1998.

The journal containing the greatest number of documents was *Medicina Clínica*. This was followed by *Law*

Table 2. Subject areas treated in 858 documents on bioethics 1966-2003 and the journals with the greatest number of publications on bioethics

Subject areas	Periods				Journals			
	Total 1966-2003	1966-1983	1984-1993	1994-2003	*Med Clin* (Barc)	*Law Hum Genome Rev*	*Rev Enferm*	*Aten Primaria*
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Legislation and human rights	132 (15.4)	14 (17.9)	20 (12.3)	98 (15.9)	22 (12.2)	25 (26.0)	7 (10.6)	4 (7.7)
Biotechnology and economics	23 (2.7)	0	6 (3.7)	17 (2.8)	5 (2.8)	5 (5.2)	0	4 (7.7)
Terminal illness and euthanasia	87 (10.1)	5 (6.4)	21 (12.9)	6 (19.9)	26 (14.4)	0	10 (15.2)	5 (9.6)
Information conset	58 (6.8)	0	7 (4.3)	51 (15.9)[a]	16 (8.9)	0	2 (3.0)	1 (1.9)
Health personnel-patient relations	55 (6.4)	9 (11.5)	8 (4.9)	38 (6.2)	8 (4.4)	4 (4.2)	7 (10.6)	5 (9.6)
Research and ethics committees	112 (13.1)	10 (12.8)	29 (17.8)	73 (1.8)	48 (26.7)	0	4 (6.1)	6 (11.5)
Transplants	44 (5.1)	4 (5.1)	5 (3.1)	35 (4.1)	3 (1.7)	2 (2.1)	0	0
Pharmaceutical industry	18 (2.1)	0	0	18 (2.9)[a]	4 (2.2)	0	2 (3.0)	6 (11.5)
Abortion	27 (3.1)	15 (19.2)	2 (1.2)	13 (1.6)[a]	3 (1.7)	0	3 (4.5)	1 (6.9)
Conscientious objection	5 (0.6)	0	2 (1.2)	3 (0.5)	1 (0.6)	0	2 (3.0)	0
Genetics and cloning	95 (11.1)	0	10 (6.1)	85 (13.8)[a]	6 (3.3)	57 (59.4)	2 (3.0)	0
Living wills	3 (0.3)	0	0	3 (0.5)	1 (0.6)	0	0	2 (3.8)
Deontology and teaching	59 (6.9)	8 (10.3)	16 (9.8)	35 (5.7)[a]	6 (3.3)	0	18 (27.3)	7 (13.5)
Confidentiality	37 (4.3)	0	6 (3.7)	31 (5.0)	13 (7.2)	2 (2.1)	2 (3.0)	6 (11.5)
General ethics	95 (11.1)	13 (16.7)	26 (16.0)	56 (9.1)[a]	15 (8.3)	1 (1.0)	7 (10.6)	2 (3.8)
Informed consent	5 (0.6)	0	5 (3.1)	0	3 (1.7)	0	0	0
Total	858 (100.0)	78 (100.0)	163 (100.0)	617 (100.0)	180 (100.0)	96 (100.0)	66 (100.0)	52 (100.0)

[a]$p < 0.05$.

and the Human Genome Review, which contains documents written in both Spanish and English and is included in the bioethics category of the PubMed database. This publication has included a significant number of documents on this subject since it was included in the MEDLINE database.

With respect to the thematic profile of the documents, over the course of the study period there was a noticeable increase in the proportion of publications relating to legal aspects of genetics, providing information to the patient, confidentiality, genetics and cloning. Over the same period, was a noticeable decrease in the proportion of articles covering subjects such as abortion, research and general ethics. This evolution in the subject matter is interesting and probably parallels the development of biotechnology, and especially that of genetics and cloning. It is clear that these changes have supposed the adaptation of publications on bioethics to changes observed in clinical practice, research and the epidemiology of biomedicine[9] and their legal implications.

The limitations of this work stem from the restrictions imposed by the very nature of bibliometric studies and the bias inherent to the databases from which the documents were chosen[1]. We chose MEDLINE because it includes the main Spanish publications in the field of biomedicine that tend to be recognised by the global scientific community[10]. However, MEDLINE only lists the institutional address of the original documents and reviews but not those of editorials and letters to the editor. In the present work, we therefore only had information about the institutional address for 50.2% of the documents reviewed. It should also be added that as we did not collect information from any other databases, we not have information on all of the documents published on bioethics by Spanish authors.

In this work, we have shown that there has been a progressive increase in Spanish scientific production relating to bioethics and particularly treating such currently relevant subjects as genetics, cloning and the legal regulation of such practices.

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