

RESEARCH ETHICS

Finding European bioethical literature: an evaluation of the leading abstracting and indexing services

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Objectives: In this study the author aimed to provide information for researchers to help them with the selection of suitable databases for finding medical ethics literature. The quantity of medical ethical literature that is indexed in different existing electronic bibliographies was ascertained.

Method: Using the international journal index Ulrich's Periodicals Directory, journals on medical ethics were identified. The electronic bibliographies indexing these journals were analysed. In an additional analysis documentalists indexing bioethical literature were asked to name European journals on medical ethics. The bibliographies indexing these journals were examined.

Results: Of 290 journals on medical ethics 173 were indexed in at least one bibliography. Current Contents showed the highest coverage with 66 (22.8%) journals indexed followed by MEDLINE (22.1%). By a combined search in the top ten bibliographies with the highest coverage, a maximum coverage of 45.2% of all journals could be reached. All the bibliographies showed a tendency to index more North American than European literature. This result was verified by the supplementary analysis of a sample of continental European journals. Here EMBASE covered the highest number of journals (20.6%) followed by the Russian Academy of Sciences Bibliographies (19.2%).

Conclusion: A medical ethics literature search has to be carried out in several databases in order to reach an adequate collection of literature. The databases one wishes to combine should be carefully chosen. There seems to be a regional bias in the most popular databases, favouring North American periodicals compared with European literature on medical ethics.

Research in the interdisciplinary field of medical ethics usually requires extensive literature searches. Before technical development made possible the establishment of larger electronic literature databases, scientists had to rely on extensive printed bibliographies from multiple disciplines. Because the bibliography selected for the search limited which articles were found and which were not,^{1,2} the researcher often had to search more than one bibliography to get an adequate overview of the relevant literature. Thus, finding suitable articles was often complicated and time consuming.

Recently, the possibilities of finding the right literature in the field of medical ethics have been widely extended: nowadays various computer based bibliographic databases are available to assist scientists and other users in their search for the required literature (for examples, see the National Reference Center for Bioethics Literature's scope note 38³). This development sufficiently accelerates the process of searching for the documents in question. Nevertheless, the database selected for research—as with the classical printed bibliography—still determines which literature will be found.⁴ For this reason researchers are usually recommended to use various resources parallel and in combination to find literature in the field of medical ethics⁴ or in other different medical specialties.^{5–8} It appears that a “best database” for searching for published materials in medical ethics does not exist. Furthermore, most of the existing literature databanks seem to show a regional bias: they index literature from their point of origin to a greater extent than literature from other regions.⁹ Although this bias might not affect medical research too much, it might be relevant to research in the field of medical ethics for several reasons, including the fact that a possible preference for a region or language by a bibliographic database could result in cultural distortion of the facts illustrated in the literature,

or a particular emphasis on issues of regional or local importance.

In this study I aimed to ascertain, for different electronic bibliographies, the coverage of international periodicals on medical ethics. Focusing, as a case study, on French, German, Italian, and Scandinavian medical ethical literature I also did an analysis of the quantity of continental European bioethical literature that is indexed in different electronic bibliographies. Using this two way approach I hope to provide information for researchers to help them with the selection of suitable databases for finding medical ethics literature.

With this aim in mind, the questions asked were:

- which literature databases index the highest number of periodicals dealing with medical ethical questions?

and

- do different databases show decisive regional or language preferences in their indexing practise?

METHODS

A suitable resource for the clarification of these two questions is the database which can be found at ulrichsweb.com. This database, which is updated weekly, is the electronic version of one of the most comprehensive periodicals catalogues in the world, Ulrich's Periodicals Directory.¹⁰ In this international index more than 250 000 serials and periodicals of all specialties are registered, whether they are published regularly or irregularly. In Ulrich's Periodicals Directory, not only basic information such as the title of a periodical, place of publication, editors, ISSN number, and so on can be found, as is the case with many other periodical catalogues (for example, library catalogues) but also specialties dealt with in a periodical (in the data field “subject” via a subject

Table 1 Abstracting and indexing services collecting at least 15 periodicals dealing with medical ethical issues

Abstracting and indexing service (A&I)*	Number of indexed periodicals
Current Contents (CC)	66
MEDLINE†	64
Research Alert (Ralert)	54
Social Sciences Citation Index (SSCI)	54
Excerpta Medica. Abstract Journals (EMBASE)	51
AgeLine	50
Cumulative Index to Nursing & Allied Health Literature (CINAHL)	42
E-psyche	39
Sociological Abstracts (SocialAbs)	38
Family Index (FamInd)	36
Psychological Abstracts	32
PsycINFO	30
Biological Abstracts (BIOSIS)	30
Linguistics and Language Behavior Abstracts	30
Social Services Abstracts	30
Social Planning – Policy & Development Abstracts	29
Philosopher's Index	25
Religion Index One: Periodicals	23
Religion Index Two: Multi-Author Works	23
INIS Atomindex (Online Edition) (International Nuclear Information System)	22
Environmental Science and Pollution Management	21
Hospital and Health Administration Index	21
Risk Abstracts	21
Referativnyi Zhurnal	20
Arts & Humanities Citation Index	20
IBZ Internationale Bibliographie der Geistes-und Sozialwissenschaftlichen Zeitschriftenliteratur	20
Social Sciences Index	19
ASSIA Net (Applied Social Sciences Index & Abstracts)	19
AMED (Allied and Complementary Medicine Database)	17
Health and Safety Science Abstracts	17
PAIS International in Print (OCLC Public Affairs Information Service, Inc.)	16
Russian Academy of Sciences Bibliographies	16
Chemical Abstracts	15
Inpharma Weekly	15
Reactions Weekly	15
Science Citation Index	15

*Names of databases that differ from the original A&I names are written in capital letters.

†Database which includes the Cumulated Index Medicus (beginning 1960), the International Nursing Index, the Index to Dental Literature, and Bioethicsline.

catalogue), reviews on the respective periodical, and short descriptions of the periodicals' contents (data fields "description" and table "reviews") are collected. This greatly helps to narrow down a search for journals on a selected topic. Furthermore, ulrichsweb.com provides information about whether articles of a periodical are indexed and abstracted in bibliographic databases (data field "abstracting & indexing services" under the heading of "document access") and identifies these databases. Thus, ulrichsweb.com forms a representative directory for answering the two questions raised. The method of determining how specialties are covered in bibliographic databases with the help of Ulrich's International Periodicals Directory has already been tested successfully for psychiatric periodicals,¹¹ health education literature,¹² and for periodicals from 45 other medical specialities.⁹ A corresponding survey for medical ethics literature, however, does not yet exist.

As with the studies of McDonald *et al*¹¹ and Obst⁹ ulrichsweb.com served as a source to identify a representative sample of international periodicals dedicated to medical ethics, and to determine the abstracting and indexing services for these periodicals. The ten indexes that provided the best coverage in a frequency count were examined for possible regional preferences. Periodicals cited in ulrichsweb.com dealing explicitly with medical ethics issues were determined first. In order to interpret the scope of the search as narrowly as possible and as broadly as necessary, both a "subject search" in the data field "subject" and a relatively open search with keywords were carried out. By contrast with

a targeted "subject search" in the respective data field, a "keyword search" screens all fields of an entry for the occurrence of the search term. The keyword search was performed as a Boolean search for the truncated terms "ethic*" and "medic*". To the results of this search (247 entries) a keyword search for the truncated term "bioethic*" was added (54 entries: 43 already found plus 11 additional entries). The search was completed by a Boolean subject search for the entries "medical sciences" and "philosophy" (65: 38 plus 27 additional) as well as "medical sciences" and "humanities" (7: 2 plus 5 additional). The subject terms were taken from the subject catalogue of ulrichsweb.com.

A supplementary analysis focusing on continental Europe was carried out following the method of Horowitz *et al*¹² A panel of documentalists from documentation centres indexing bioethical literature from France, Germany, Italy, and Sweden were asked to identify periodicals they index that contain articles on medical ethics. The centres involved were: Le Centre de Documentation en Éthique des Sciences de la Vie et de la Santé de l'INSERM (CDEI) (www.inserm.fr/); Centre de Recherches Interdisciplinaires en Bioéthique (CRIB) (www.ulb.ac.be/rech/inventaire/unites/ULB026.html); Fondazione Lelio e Lisli Basso (www.fondazionebasso.it/); Karolinska Institutet Bibliotek (www.kib.ki.se/), and Informations- und Dokumentationsstelle Ethik in der Medizin (IDEM) (www.aem-online.de/main.htm). They were not restricted to journals explicitly dedicated to medical ethics. The identified journals were checked for their appearance on ulrichsweb.com. Using ulrichsweb.com, a

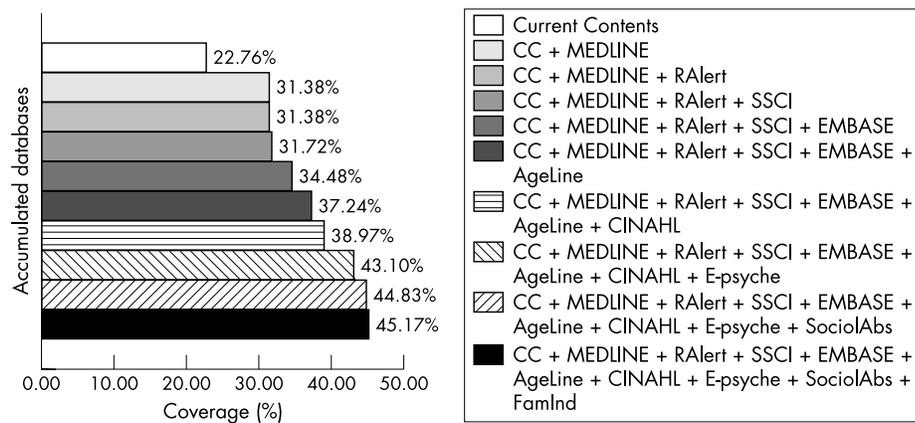


Figure 1 Coverage of international medical ethical journals by several databases in combination.

frequency count of the abstracting and indexing services indexing these journals was carried out.

RESULTS

A total of 290 periodicals could be identified which, according to Ulrich’s, explicitly publish articles about medical ethical issues. It was shown that 284 different “abstracting and indexing services” index at least one of the 290 periodicals: 117 periodicals (40.3%) are not abstracted or indexed in any bibliography. The bibliographic sources, including current awareness services and citation indexes indexing the highest number of journals are shown in table 1.

The top ten bibliographic databases that collect the highest number of periodicals publishing on medical ethical issues are:

1. Current Contents (www.isinet.com) (indexes 66 periodicals out of 290 found in Ulrich’s; coverage 22.8%).
2. MEDLINE (www.nlm.nih.gov) (n = 64; 22.1%).
3. Research Alert (www.isinet.com) (n = 54; 18.6%).
4. Social Science Citation Index (www.isinet.com) (n = 54; 18.6%).
5. EMBASE (www.excerptamedica.com) (n = 51; 17.6%).
6. AgeLine (www.research.aarp.org/ageline/home.html) (n = 50; 17.2%).
7. CINAHL (www.cinahl.com/) (n = 42; 14.5%).

8. E-psyche (www.e-psyche.net) (n = 39; 13.5%).
9. Sociological Abstracts (www.csa.com) (n = 38; 13.1%).
10. Family Index (www.famindx.com) (n = 36; 12.4%).

The degree of coverage of the individual databases is rather lower than might have been expected by a user searching for medical ethics literature. The maximum coverage is 22.8% (66 out of 290 possible periodicals in Current Contents).

Only users extending their search from a single to several databases can reach a higher degree of coverage. Even here, however, because there is overlap within the databases concerning the indexed periodicals, the degree of coverage that can be reached by using all ten databases mentioned can only be raised to a maximum of 45.2% (fig 1).

The periodicals we identified in Ulrich’s Periodicals Directory for this analysis are published in 24 different countries, with a clear regional predominance of North American literature. In the USA, 152 periodicals are published (52.4%); 95 in Europe (32.8%). In Europe, British (n = 38), Dutch (n = 25), German (n = 8), Italian (n = 7), and French (n = 7) periodicals predominate. Places of publication represented in Ulrich’s from other regions than Europe or the USA are: Canada (n = 12); Australia (n = 9); Israel (n = 5); Japan (n = 3); China; Colombia, and New Zealand (n = 2 each), and India, Mexico, and Puerto Rico (n = 1 each). For five periodicals two places of publication in different regions were given: Netherlands/

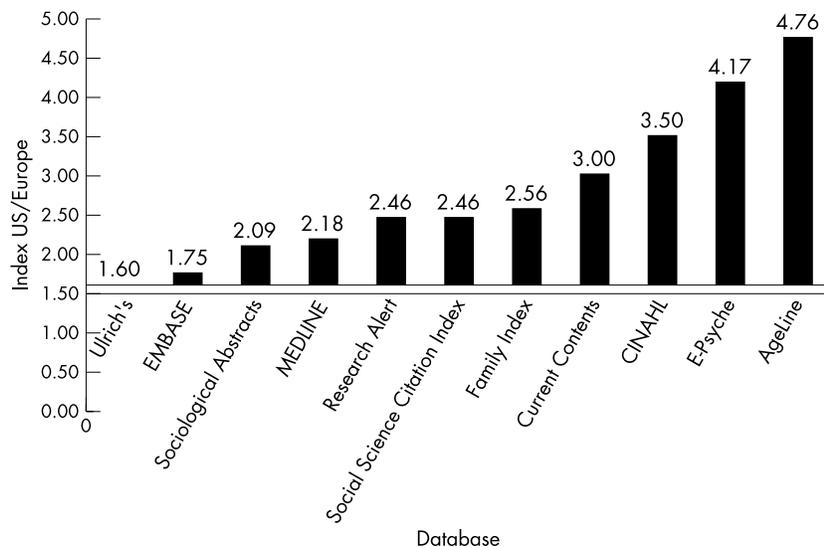


Figure 2 Regional preferences.

China (1); Netherlands/USA (2); United Kingdom/Australia (1), and United Kingdom/USA (1). They had not been counted in the regional analysis to avoid unclear regional classifications.

In this study I compared the representation of European and North American periodicals in the examined bibliographic databases. Determining the proportion of the European and North American periodicals indexed in these databases serves as a tool for assessing a possible regional preference for European or North American literature comparing these regions (USA/Europe rate). The low number of Asian journals found and the lack of African journals may suggest that Ulrich's Periodicals Directory itself might show a regional bias. Therefore, the rate occurring in Ulrich's of 152 USA to 95 European periodicals (1.6 times more USA periodicals than European ones) has to serve as a base point for a normal value with which a preference can be evaluated. For the eight databases with the highest degree of coverage described above, the regional preference for either Europe or the USA is shown in figure 2.

A comparison of the rates shows that none of the top 10 databases index more European periodicals than would correspond to their share in all periodicals indexed in Ulrich's Periodicals Directory. Only EMBASE comes close. All the other databases show a tendency to represent a majority of North American literature.

To verify these findings and to find out which abstracting and indexing services help to find European literature on medical ethics I examined, as a case study, French (only France), German (including German, Swiss, and Austrian), and Italian and Scandinavian (Danish, Finnish, Norwegian, and Swedish) journals. I asked documentalists indexing bioethical literature from the documentation centres cited above to inform me about national core journals they regularly screen to index articles on medical ethics. In contrast to the search for medical ethics literature in Ulrich's (which because of the limitation of the search possibilities only revealed journals and serials explicitly dedicating pages to medical ethics) the lists of journals I received from the documentation centres included a wide range of clinical, religious, philosophical, political, and legal periodicals.

The total number of journals compiled was 96: 26 Italian, 25 Scandinavian, 21 German, 16 French, five Swiss, and three Austrian. Seventy three of them are listed in Ulrich's. Thirteen are classified by Ulrich's as explicitly being dedicated to medical ethics (following the criteria applied above). These journals were included in the first analysis of international journals. The other 60 are classified differently and thus not included in the first analysis.

Forty nine of the 73 journals are indexed in 104 different abstracting and indexing services. Twenty four (32.9%) are not indexed at all. The top eight indexes indexing the highest proportion of journals are:

1. EMBASE (n = 15/20.6%) (www.excerptmedica.com)
2. Russian Academy of Sciences Bibliographies (RAS) (N = 14/19.2%) (www.rlg.org/cit-ras.html)
3. INIS Atomindex (n = 13/ 17.8%) (www.iaea.org/inis/inisdb.htm)
4. MEDLINE (N = 13/17.8%) (www.nlm.nih.gov)
5. Current Contents (CC) (n = 10/13.7%) (www.isinet.com)
6. Chemical Abstracts (ChemAbs) (n = 10/13.7%) (www.cas.org/)
7. IBZ Internationale Bibliographie der Geistes-und Sozialwissenschaftlichen Zeitschriftenliteratur (n = 10/ 13.7%) (www.saur.de/dietrich/)
8. BIOSIS (n = 9/12.3%) (www.biosis.org/).

The maximum coverage of a single abstracting and indexing service is 20.6% (15 out of 73 possible periodicals in EMBASE). By searching the top eight databases the coverage can be extended to 53.4% (fig 3).

DISCUSSION

Determining the right literature for medical ethics is difficult because dealing with medical ethics as a multidisciplinary scientific field involves dealing with medical, juridical, philosophical, and many other fields of literature. Thus, in my study I did not intend to cover the whole range of journals possibly comprising articles on medical ethics but I examined (1) a representative sample of journals explicitly including articles on or dedicated to medical ethics and (2) a representative sample of continental European journals that are screened and indexed by documentalists indexing bioethical literature.

Knowledge of using bibliographic databases assists researchers in finding literature on which they can build their research hypotheses. Because a database determines what the user finds the user has to know the gaps, thematic emphases, and indexing preferences of the different databases. This survey shows that the medical ethics literature is represented insufficiently in the most popular existing bibliographic databases. This is true for the international literature as well as for the examined sample of European literature. A combined search in the top 10 databases showing the highest coverage would only cover 45.2% of the journals in question.

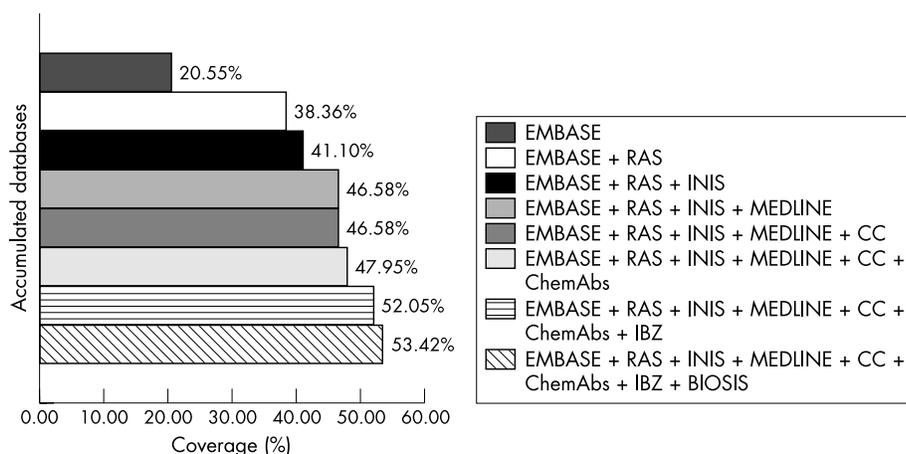


Figure 3 European medical ethics core journal coverage of several databases in combination.

The international analysis revealed that in comparison with the other databases Current Contents indexes the highest number of periodicals dealing with medical ethical issues (22.8%). Current Contents is a “current awareness service” citing literature from the last five years. The database showing the highest coverage that includes older titles (back to the sixties) is the well known MEDLINE. The good result for MEDLINE is not surprising if one takes into consideration that BIOETHICSLINE, one of the most important databases for medical ethics literature, was integrated into MEDLINE.¹³ Against this background, however, it is surprising that MEDLINE “only” indexes about one fifth of all periodicals.

This result, which appears to be meagre, is put into perspective by a comparison with other medical disciplines. Obst examined 45 medical specialties using the same method. He was able to prove that Current Contents on average only covers about 20% of the subject specific literature with an emphasis on the preclinical life sciences. MEDLINE on average only covers 24.7%. For MEDLINE the degree of subject specific coverage varies between 3.6% (state of health and hygiene) and 45.8% (anatomy, histology, cytology).⁹ Thus, the representation of the medical ethical specialty examined in our study shows an average value in Current Contents and MEDLINE.

Unlike McDonald *et al.*,¹¹ who in their analysis of the representation of psychiatric periodicals in bibliographic databases excluded from their calculation all periodicals that are not listed in at least one index, my survey included all periodicals in the calculation found in Ulrich’s Periodicals Directory. This procedure seems appropriate for answering the questions raised because for the determination of medical ethics discourses, not only articles published in established journals, but also reports and commentaries in non-indexed periodicals may be highly relevant. If the 98 periodicals that are not listed in any index at all are excluded from the calculation, Current Contents reaches 38.2% of all indexed periodicals, and MEDLINE 37%. Excluding the 98 unlisted periodicals, a cross search in the 10 most mentioned databases comprises 75.7% of all indexed periodicals. In comparison to this, for a psychiatric question a cross search in only four databases (PsycLIT, EMBASE, BIOSIS, and MEDLINE) is sufficient in order to cover 90% of the indexed literature dealing with psychiatric topics.¹¹ So, compared with the literature search in medical ethics, a search for a psychiatric topic can be carried out much more comprehensively in much less time.

On the assumption that Ulrich’s Periodicals Directory might itself show a regional preference in its indexing practice, the result of the analysis of regional preferences for North American or European literature in bibliographic databases has to be compared with the USA/Europe quotient of Ulrich’s of 1.6. All of the top 10 bibliographic databases show a higher USA/Europe quotient (1.75 for EMBASE to 4.75 for AgeLine). This result shows a predominance of North American literature in the indexing practice of the 10 analysed databases. It suggests a “publication bias” that by all means should be taken into account when searching for medical ethics literature. Otherwise, a European discussion might be reflected insufficiently.

In the second part of our study we tried to answer the consequent questions about which databases reflect a European discussion and how well they fulfil this task. As would be expected, as EMBASE showed the lowest USA/Europe quotient in the international analyses (meaning that it represents more European literature than the other databases) EMBASE was the database that indexed the highest number of continental European journals. But again, with coverage reaching only 20.6%, this must be considered

rather low. In comparison with that figure Horowitz *et al* found that Current Contents covered 83.8% of health education journals.¹²

For medical ethical literature not even a combined search of the top eight bibliographic databases comes close to that figure. Nevertheless, our study shows that a sophisticated combined search can minimise the effort of finding literature. By combining a search in EMBASE and in the Russian Academy of Sciences Bibliographies, a user can almost double the coverage of continental European literature and come close to the coverage reached by a combination of 10 databases identified as top indexes for the international sample (45.2%), whereas adding new bibliographies does not increase the coverage substantially.

All in all the analysis of the representation of bioethics literature in bibliographic databases produces four substantial results:

- Despite the integration of BIOETHICSLINE into MEDLINE and despite the existence of various specialised databases, a medical ethics literature search has to be carried out in several databases in order to reach an adequate collection of literature. Even a comprehensive search in eight electronic bibliographies produces only half of the existing literature (as listed in Ulrich’s Periodicals Directory—there is additional literature to that listed in Ulrich).
- The databases one wishes to combine should be chosen carefully to minimise the effort.
- There seems to be a predominance of North American literature in the most popular databases. Thus, a targeted search for European literature or literature from elsewhere in the world is even more difficult and yields even poorer search results than an unfocused search for medical ethical literature.
- Existing databases seem to be insufficient for a search for European literature on medical ethics.

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