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Search for information in nursing. Sources and resources☆

Búsqueda de información en enfermería. Fuentes y recursos

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Introduction

Nurses need access to scientific information to update their knowledge, resolve doubts regarding their everyday practice and carry out research. Online resources, particularly through mobile devices, offer fast access to large amounts of information. Using the Internet for accessing pertinent, updated and complete indexed literature based on bibliographic data bases has become part of the everyday life of nurses. However, several drawbacks exist with regards to approaching information sources. There are millions of sites where information on any subject may be found. This leads to an overload of information, termed intoxication or infobesity.[1–3] Furthermore, skills and appropriate techniques need to be acquired to save nurses time and improve the quality of data recovery in literature searches. Most nurses do not efficiently use bibliographic searches on the Internet but we need to remember that an effective search of the literature is not an innate talent but a skill that can be learned.

Classification of information sources

The sources may be divided into primary and secondary, depending on the information they contain. Primary sources include scientific articles from journals. These are an essential unit of information in our environment but other documentary typologies are also useful, such as books, theses, guides, reports, communications from congresses and other grey literature.

Secondary sources organise the primary sources so we are able to locate information from them. Here we find reference data bases where the information of each document is grouped into different fields (authors, title, source, etc.) and indexed by descriptors that guide their location.

Another form of source organisation is the Haynes 6S pyramid of evidence hierarchy.[4,5] This model classifies the information sources into a pyramidal hierarchy, depending on the level of evidence design. The model which has evolved from the 4S pyramid includes primary studies at its base and rises up to more pre-assessed studies and systems (Fig. 1).

Repository

A location in which open access full text materials are stored. They may be from institutions if materials derived from scientific production are collected, or subjects of open access studies. Their purpose is to help the international

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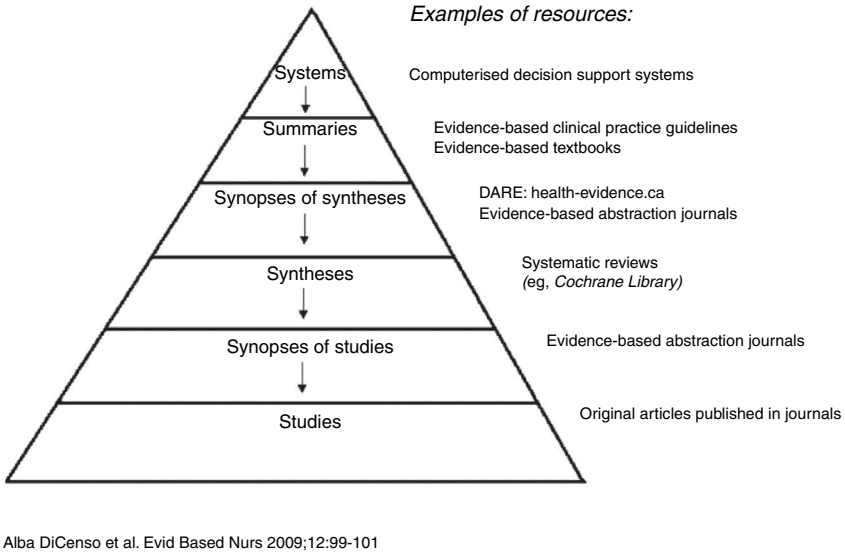

Figure 1 The 6th century hierarchy of pre-evaluated evidence. Reproduced with the permission of DiCenso et al.[4]

scientific community gain access to research results provided by its members and increase visibility of the scientific production of the institution. They usually include doctoral theses, scientific articles, lectures or communications to congresses, electronic journals published by the institution or teaching materials, created by the lecturers and researchers from the institution.

Noteworthy repositories include: *RECOLECTA*, the platform which groups all the national scientific repositories together and provides open access to the whole national scientific production; *SciELO*, which is a virtual library formed by a collection of scientific journals on health sciences in Spain and Latin America and PubMed Central (*PMC*), which is the digital archive of biomedical journals and life sciences of the national Institutes of Healthcare in the United States of North America. It has now become one of the primary worldwide archives with open access to journal articles in full text with over 4l7 million articles.

Google scholar

Google scholar is recommended when searching for scientific information. This searches a selection of pages of scientific interests (studies reviewed in pairs, theses, books, abstracts and articles from published scientific studies, professional associations, universities, etc.). It has been estimated that this search engine offers free access to 26% of indexed health science documents.[6] It has an initial screen and an advanced search, with the possibility of applying different filters.

Meta search engine or federated search engine

This is a search engine of search engines, a powerful tool which carries out searches of different data bases and resources, providing a combination of the best results. There are specific meta search engines for health sciences such as *EPISTEMONIKOS*, *TRIP*, *Accesss* and *SUMSearch*.

TRIP is a clinical search engine designed to allow its users to rapidly find and use research evidence of high quality to endorse their practice or care provision. These tools also return information at all levels of the evidence pyramid.[4] Results are organised into different categories of the scientific evidence pyramid (Fig. 2) and a phrase to describe the content (e.g. systematic review, guide, etc.). It has a colour code found on the left of each result through which the column on the right can be filtered.

Data base

Out of all available data bases in health sciences CINAHL and MEDLINE/PubMed are essential for bibliographic search into nursing. Other health science data bases available are EMBASE, PyscINFO, CUIDEN, MEDES, ENFISPO, etc., and also multi-disciplinary addresses of access to different resources described below (Table 1).

MEDLINE/PubMed (free). MEDLINE is a bibliographic data base from the National Library of Medicine of the United States containing over 23 million references to articles from 5600 journals since 1946. Its subject matter is health sciences, particularly biomedicine, covering fields of medicine, nursing, odontology, veterinary science, health systems, preclinical or public health sciences, among others. The registers are indexed thesaurus of Medical Subject Headings. Coverage has English speaking bias since the majority of the journals are from the USA and to a lesser extent, from another 80 countries. Approximately 93% are published in English and around 85% have abstracts from the original article. A large number of citations in MEDLINE contain a link to the full text of the article which is freely filed in PMC or on other sites. The reference may also be linked to the

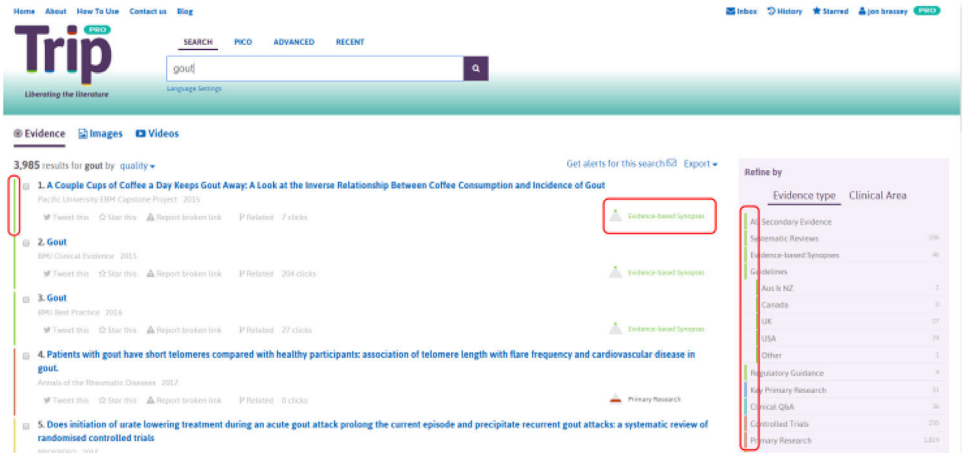

Figure 2 Trip results page: on its right side you can see the ordered result in categories of the pyramid of evidence.

Table 1 Addresses of the main information sources in health sciences and nursing.

Resource	URL
RECOLECTA	https://www.recolecta.fecyt.es/buscador
Scielo	http://www.scielo.org/
PMC	https://www.ncbi.nlm.nih.gov/pmc/
Google scholar	http://scholar.google.es/
EPISTEMONIKOS	https://www.epistemonikos.org/es
TRIP	https://www.tripdatabase.com/
Access	https://plus.mcmaster.ca/MacPlusFS/
SUMSearch	http://sumsearch.org/
PubMed	https://www.ncbi.nlm.nih.gov/pubmed/
CINAHL Complete	https://www.ebscohost.com/nursing/products/cinahl-databases
EMBASE	https://www.embase.com/
PyscINFO	http://psycnet.apa.org
Lilacs	http://lilacs.bvsalud.org/es
CUIDEN	http://www.index-f.com/new/cuiden/
MEDES	https://www.medes.com/
IBECS	http://ibecs.isciii.es
ENFISPO	https://biblioteca.ucm.es/enf/enfispo
PEDro	https://www.pedro.org.au/spanish/
Biblioteca Cochrane Plus	http://www.bibliotecacochrane.com/
JBI COnNECT+	http://es.connect.jbiconnectplus.org/
WOS	https://www.fecyt.es/es/recurso/web-science
Scopus	https://www.fecyt.es/es/recurso/scopus

web site reference of the publisher or another fee-paying full text provider.

CINAHL Complete (subscription). This is a data base of 1350 journals in full text on areas of nursing consumer health, biomedicine, alternative and complementary medicine, physical therapy, occupational therapy and much more. With coverage from 1937, it contains over 5000 indexed titles, and 4.2 million bibliographic registers. The thesaurus it uses is the CINAHL Headings (CINAHL descriptors).

EMBASE (subscription). Enables the simultaneous search in the bibliographic data base EMBASE produced by the company Elsevier and MEDLINE. It contains over 31 million registers of over 8500 international publications (5900 indexed in EMBASE and 5500 MEDLINE journals, of which 3000 overlap) and incudes around 600,000 congress abstracts. The main differences between EMBASE and MEDLINE is higher pharmacological cover (it is the data base of choice for drug searches) and the greater number of European and Asian journals. Its indexed thesaurus is EMTREE, which has 73,000 terms for drugs, diseases, medical devices and essential life science concepts, and an extensive coverage of drugs (around 31,000 terms), through which more information relating to drugs may be located.

PyscINFO (subscription). This is a bibliographic data base of the American Psychological Association which contains 3.5 million registers and abstracts from journal articles (78%), books (11%), doctoral theses and reports (10%). It indexes approximately 2540 journal titles of over 49 countries and in over 27 languages on the areas of psychiatry and psychology. It has the *Thesaurus of Psychological Index Terms*, with over 8400 controlled terms.

Lilacs (free). This data base is the result of cooperative efforts from the BIREME system with over 600 cooperating centres belonging to 37 countries in Latin America and the Caribbean. It contains articles from 1103 Latin American biomedical and Caribbean health sciences journals (76%). It also includes theses, book chapters, memorandums from congresses or conferences, scientific and technical reports and governmental publications.

CUIDEN. This bibliographic data base from the Index Foundation includes scientific production on healthcare in the Spanish and Latin American scientific space, with both clinical and healthcare content in all of its specialties and health promotion, such as methodological, historical, social or cultural approaches. It contains articles from scientific journals, books, monographs, and other documents including unpublished materials, the contents of which had previously been assessed by a committee of experts. A basic version is available for free and CUIDEN Plus is an advanced version exclusively for subscribers.

MEDES (free). Contains bibliographic references of articles published since the year 2001 in Spanish journals of medicine, pharmacy and nursing, edited in Spanish.

IBECS (free). Contains references to articles in over 200 scientific and healthcare journals, published in Spain. It includes publications on pharmacy, veterinary science, psychology, odontology, nursing and several branches of medicine such as public health, epidemiology, paediatrics, otorhinolaryngology, endocrinology and nutrition or rheumatology. The majority of references included in IBECS contain abstracts and also provide a link to the complete text of the article when it may be found in the SciELO collection.

ENFISPO (free). This data base was developed from the Complutense University of Madrid library and articles may be consulted free of charge from a selection of Spanish journals on nursing, physiotherapy and podology.

PEDro (free). This is a data base on physiotherapy based on free evidence with over 38,000 randomly controlled trials, systematic reviews and clinical practice guides on physiotherapy. From each trial, review or guide PEDro offers the title, abstract and when possible the link to the full text.

Biblioteca Cochrane Plus. The purpose of the Cochrane collaboration is to collect, create and disseminate systematic reviews through the Cochrane Library data base, the Spanish edition of which is the Cochrane Library Plus. Free universal access throughout Spain is possible thanks to subscription by the Ministry of Health, Social Services and Equality. There is a data base of Cochrane systematic reviews and CENTRAL reviews, which is the most complete source of clinical trial registration.

JBI COnNECT+. Provides access to the different resources with evidence to establish clinical decisions. These resources are mainly in Spanish and access is through temporary user access with limited duration.

Citation indices are bibliographic data bases which index citations and standard bibliographic content. The principal citation indices are WOS, Scopus and Google scholar.

WOS (subscription). This is a platform which contains the references from the main scientific publications of any discipline of knowledge, be it scientific, technological, humanistic and sociological, dating back to 1945. The main collection of WOS contains approximately 90 million records of 12,000 journal titles and 160,000 congress proceedings. Unlike MEDLINE and EMBASE, it has no thesaurus. It also provides access to tools such as *Journal Citation Reports* (resource for locating the impact factor), *Essential Science Indicators and EndNoteweb*. Access and licence are managed by the Spanish Foundation for Science and Technology (FECYT).

Scopus (subscription). This is the largest data base of scientific publications (subscription) and which contains, like the WOS, tools which allow for the control, analysis and visualisation of academic research. Both include useful metrics for research analysis, including citation counting, review impact and H index. It contains approximately 60 million records of 21,500 journal titles and 88,800 conference proceedings, which date back to 1823. Access and licence are managed by the FECYT.

Google scholar (free) this is a free academic search engine which uses automated web search engines to identify and index academic references, including published studies and grey literature. It is unknown what the exact number of indexed journals are available on google scholar because it does not use a list of previously specified journals for its content. However, there is evidence that it has sufficient coverage of citations to be considered an alternative to WOS *or* Scopus if these data bases are unavailable.[7,8]

As a result of information overload it is essential to learn to efficiently make searches of the literature. Carrying out a correct search is not a talent, it is a skill which must be acquired and taught and which forms part of health science professional training. Nurses must appreciate the importance of bibliographic searching during the research process, familiarise themselves with the different types of resources and documents, and be aware of the main sources of information in nursing.

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