

Using bibliomining and information visualization in the Egyptian health and biomedical bibliographic databases: a new approach for health knowledge representation

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EAHIL Workshop
5-8 July 2011 | İstanbul, Turkey

Active Learning and Research Partners in Health

Health research

Health research has been receiving increasing attention and new interest as one of the essential factors to develop the national health information system to support the decision makers in developing countries.

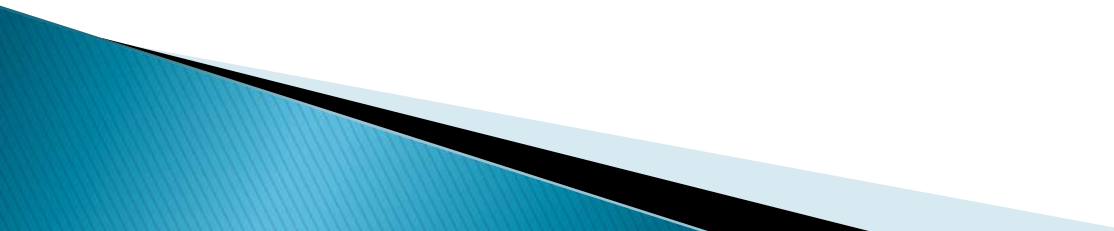
Meanwhile, the global move towards *evidence-based medicine* and *evidence-based decision-making* in public health has given health and biomedical information a new life.

Health Information

In order to use the health information for specific decisions, it must be *relevant* and of a *sufficient quality* for the decision at hand.

It also needs to be *presented* in a way that researchers and decision makers will *understand*, taking account of their *personal preferences, skills,* and *available time*.

Investing in Health

- ▶ Health is not byproduct of economic growth, but an essential input into development. (*World Bank Report, 1993*)
 - ▶ 4 out 10 of the Millennium Development Goals (MDG) are directly focused on health.
 - ▶ Locating and mapping the health knowledge on health issues affecting developing countries.
 - ▶ Building the local health knowledge in developing countries
- 

Bibliographic Databases

The most important category of the health and biomedical sciences databases are the *bibliographic databases* or *citation databases*, which are also called *literature reference databases*.

The content of this database consists of *citations* or *pointers* to medical literature (i.e., journals articles, books, reports, academic dissertations).

Therefore, bibliographic databases are considered the most important *information resources* on health research

WHO-EMRO Index Medicus

- ▶ Index Medicus for the Eastern Mediterranean Region (IMEMR) started in 1987 in order to document the health and biomedical journals published in the EMR.
- ▶ More than 120,000 citations with free online access for 500 peer reviewed journals published in 19 countries from the Region.
- ▶ <http://www.emro.who.int/lin/imemr.htm>

Bibliometrics

Bibliometric is a type of research method used in library and information sciences.

It utilizes *quantitative analysis* and *statistics* to describe patterns of publication within a given field or body of literature.

Researchers may use bibliometric methods of *evaluation* to determine the influence of a single writer or to *describe* the relationship between two or more writers or works.

Data Mining and Data Visualization

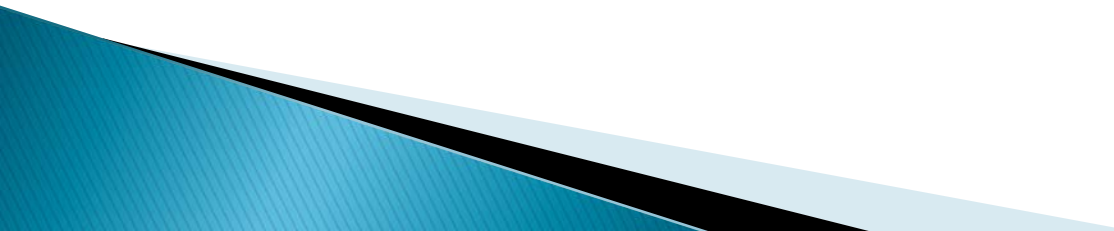
Data mining is one of the central areas of activity associated with *understanding*, navigating and exploiting the large and complex databases.

Data visualization is the *graphical presentation* of *information*, with the goal of providing the viewer with a qualitative *understanding* of the information contents.

Bibliomining

- ▶ *Bibliomining* defined as the combination of data mining, bibliometrics, statistics and reporting tools that are used to extract patterns of behavior-based artifacts from library system. (*Nicholson, S. and Stanton, J., 2003*)
- ▶ So, applying Bibliomining technique in health bibliographic databases could be very powerful and efficient to move researchers and decision makers from measurement and evaluation phase to *understanding* and *prediction* phase.

Bibliographic Data Visualization (BDV)

- ▶ BDV is a combination technique of bibliomining, and data visualization that are used in bibliographic databases with the goal of providing researchers and decision makers with a qualitative *understanding* of the information contents as a new approach for health knowledge representation.
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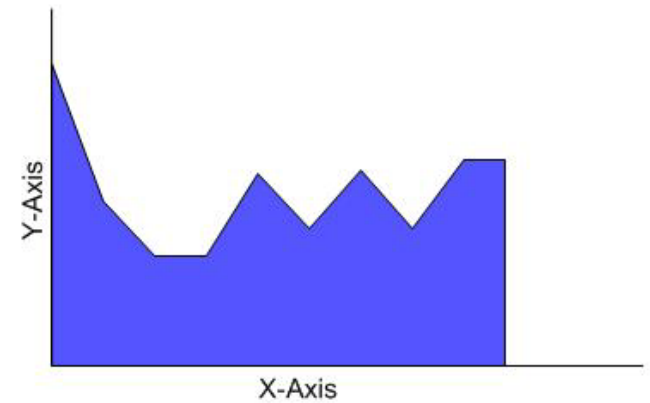
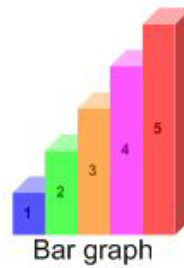
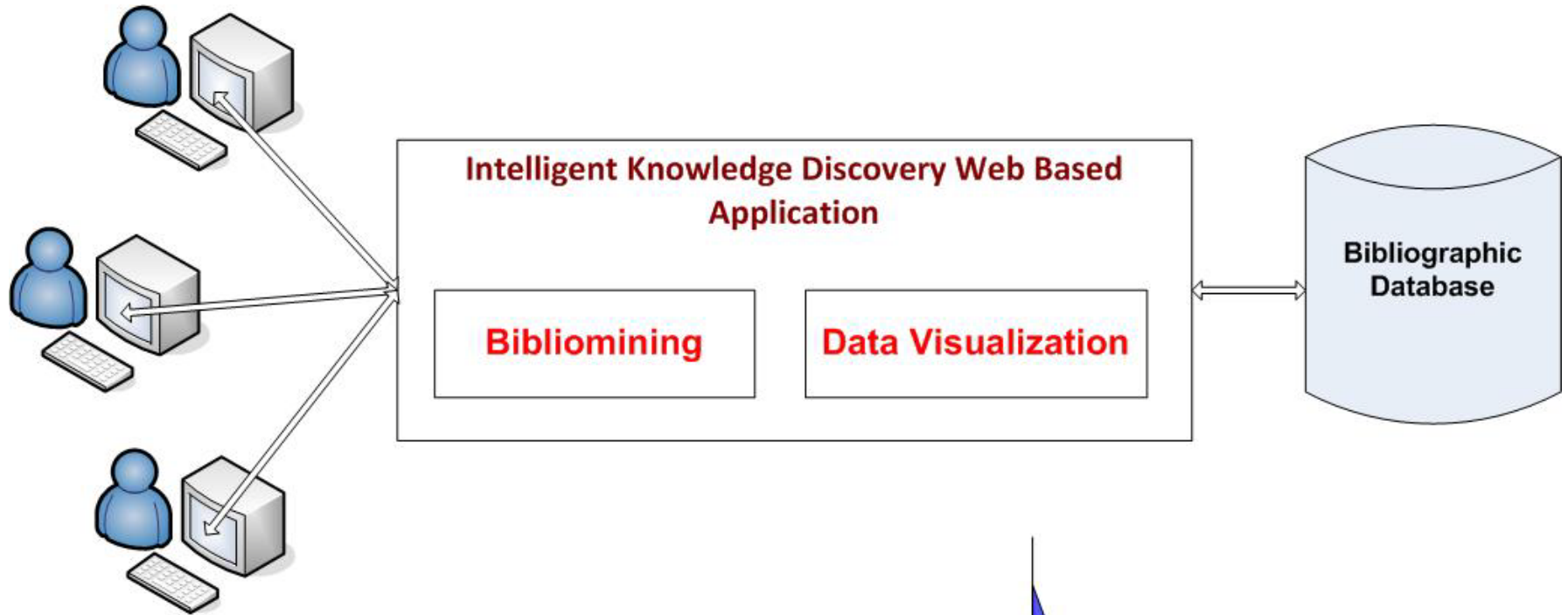
System Analysis and Design

For the proposed study two main web techniques are adopted.

The first technique is the database driven web application applied in the two XML databases *EGYMED* and *Medical Subject Headings (MeSH)*.

The second technique is the *Bibliographic Data Visualization (BDV) tools*, which provide the researchers and decision makers with graphical analysis of the content of the EGYPTMED site.

Knowledge Discovery



Implementation and Results



EGYPTMED Home Page



EGYPTMED | Egyptian Health and Biomedical Sciences Literature



Site Menu

- ▼ [EGYPTMED Home Page](#)
- ▼ Search EGYPTMED
 - ▷ Basic Search
 - ▷ Advanced Search
- ▼ Search EGYPTMED and MeSH
 - ▷ Basic Search
 - ▷ Advanced Search
- ▼ EGYPTMED Site Analysis
 - ▷ Publication Date
 - ▷ Publication Type
 - ▷ PhD Degree
 - ▷ MSc Degree
- ▼ EGYPTMED Questionnaire
 - ▷ Questionnaire
- ▼ EGYPTMED Guest Book
 - ▷ Guest Book
- ▼ Useful Links
 - ▷ EMR Journals Directory
 - ▷ EMR Online Journals
 - ▷ IMEMR
 - ▷ AESD
 - ▷ ENSTINET
 - ▷ CMDL
- ▷ EGYPTMED Site Access Statistics
- ▷ Contact us



Home

Egyptian Health and Biomedical Literature Database (EGYPTMED) is a major resource of the Egyptian health and biomedical research articles and dissertations.

EGYPTMED is a comprehensive bibliographic database which includes 15550 records. The content has been selected from the two most important databases that cover health and biomedical literature: [Egyptian Scientific Data Bank \(AESD\)](#) and [WHO-EMRO Index Medicus for the Eastern Mediterranean Region\(IMEMR\)](#).

EGYPTMED has been developed using the standard bibliographic record according to [Dublin Core Metadata Element Set](#) while the National Library of Medicine [Medical Subject Headings \(MeSH\)](#) was used for indexing.

The main objective of EGYPTMED web site is to improve knowledge of health care professionals as well as to improve awareness of decision makers about health and biomedical issues especially in Egypt. Therefore, in order to evaluate the content of EGYPTMED web site, I am conducting a [survey](#) as part of the requirements for a MSc degree in Information Technology, [Institute of Graduate Studies and Research \(IGSR\), Alexandria University](#). I tried to make it easy, to navigate through the questionnaire just by clicking on the answer or answers that apply and click on the 'Next' button.

Please note that all responses are confidential. No individuals will be identified as a result of this survey. You will not be contacted as a result of your response to this survey. All results will be treated statistically as tables and percentages.

For future communications regarding EGYPTMED database, please fill in our [Guestbook](#)

Thank you for your feedback. It is very valuable to us.

Hatem Nour El-Din
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WHO-EMRO
Cairo-Egypt

Basic Search Results



EGYPTMED | Egyptian Health and Biomedical Sciences Literature



Site Menu

- ▼ EGYPTMED Home Page
 - ▼ Search EGYPTMED
 - ▷ Basic Search
 - ▷ Advanced Search
 - ▼ Search EGYPTMED and MeSH
 - ▷ [Basic Search](#)
 - ▷ Advanced Search
 - ▼ EGYPTMED Site Analysis
 - ▷ Publication Date
 - ▷ Publication Type
 - ▷ PhD Degree
 - ▷ MSc Degree
 - ▼ EGYPTMED Questionnaire
 - ▷ Questionnaire
 - ▼ EGYPTMED Guest Book
 - ▷ Guest Book
 - ▼ Useful Links
 - ▷ EMR Journals Directory
 - ▷ EMR Online Journals
 - ▷ IMEMR
 - ▷ AESD
 - ▷ ENSTINET
 - ▷ CMDL
 - ▷ EGYPTMED Site Access Statistics
 - ▷ Contact us



EGYPTMED & MeSH

Basic Search [Advanced Search](#)

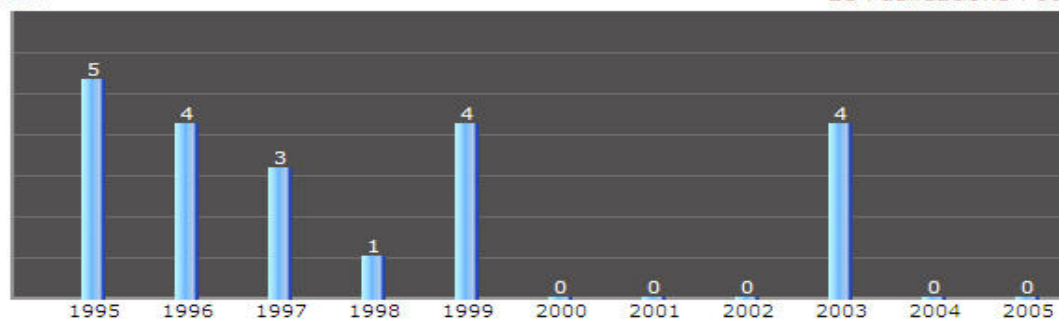
MeSH Term :

View search results

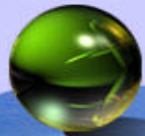
MeSH Term	
<input type="radio"/>	Antimalarials
<input checked="" type="radio"/>	Malaria
<input type="radio"/>	Malaria Vaccines
<input type="radio"/>	Malaria, Avian
<input type="radio"/>	Malaria, Cerebral
<input type="radio"/>	Malaria, Falciparum
<input type="radio"/>	Malaria, Vivax
<input type="radio"/>	Plasmodium malariae

Malaria

21 Publications Found



Advanced Search Results



EGYPTMED | Egyptian Health and Biomedical Sciences Literature



Site Menu

- ▼ EGYPTMED Home Page
 - ▼ Search EGYPTMED
 - ▷ Basic Search
 - ▷ Advanced Search
 - ▼ Search EGYPTMED and MeSH
 - ▷ Basic Search
 - ▷ [Advanced Search](#)
 - ▼ EGYPTMED Site Analysis
 - ▷ Publication Date
 - ▷ Publication Type
 - ▷ PhD Degree
 - ▷ MSc Degree
 - ▼ EGYPTMED Questionnaire
 - ▷ Questionnaire
 - ▼ EGYPTMED Guest Book
 - ▷ Guest Book
 - ▼ Useful Links
 - ▷ EMR Journals Directory
 - ▷ EMR Online Journals
 - ▷ IMEMR
 - ▷ AESD
 - ▷ ENSTINET
 - ▷ CMDL
 - ▷ EGYPTMED Site Access Statistics
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EGYPTMED & MeSH

[Basic Search](#) [Advanced Search](#)

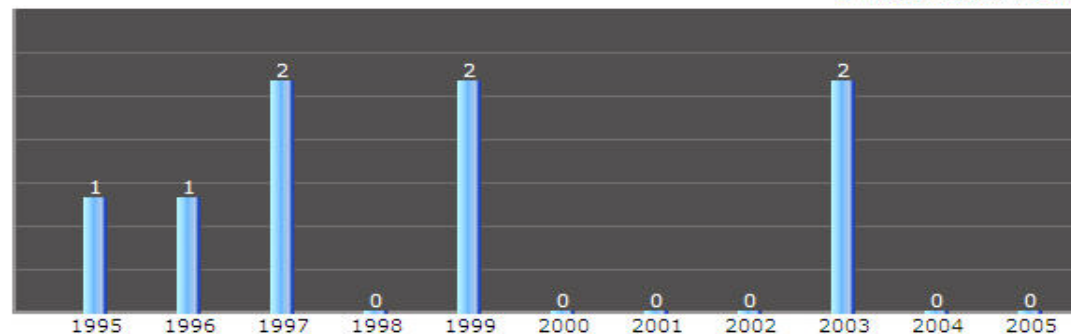
MeSH Term :

View search results

Antimalarials
Malaria
Malaria Vaccines
Malaria, Avian
Malaria, Cerebral
Malaria, Falciparum
Malaria, Vivax
Plasmodium malariae

Blood
Cerebrospinal Fluid
Chemically Induced
Classification
Complications
Congenital
Diagnosis
Diet Therapy
Drug Therapy
Economics
Embryology
Enzymology
Epidemiology

8 Publications Found



Site Analysis – Publication Date



EGYPTMED

Egyptian Health and Biomedical Sciences Literature



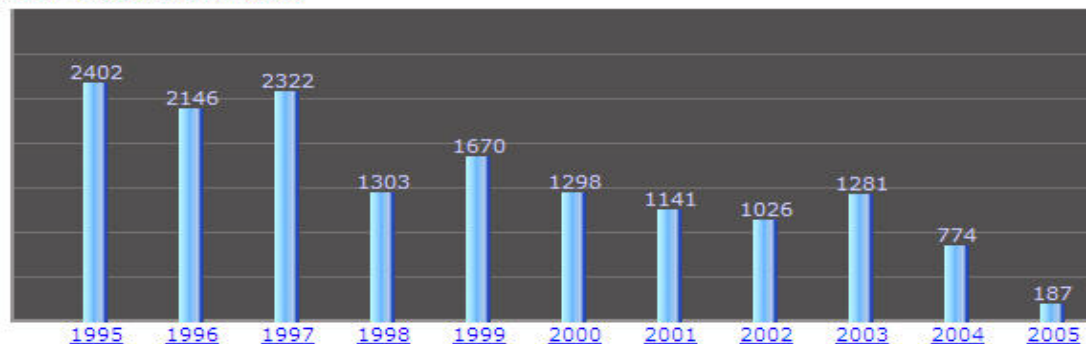
Site Menu

- ▼ EGYPTMED Home Page
 - ▼ Search EGYPTMED
 - ▷ Basic Search
 - ▷ Advanced Search
 - ▼ Search EGYPTMED and MeSH
 - ▷ Basic Search
 - ▷ Advanced Search
 - ▼ EGYPTMED Site Analysis
 - ▷ [Publication Date](#)
 - ▷ Publication Type
 - ▷ PhD Degree
 - ▷ MSc Degree
 - ▼ EGYPTMED Questionnaire
 - ▷ Questionnaire
 - ▼ EGYPTMED Guest Book
 - ▷ Guest Book
 - ▼ Useful Links
 - ▷ EMR Journals Directory
 - ▷ EMR Online Journals
 - ▷ IMEMR
 - ▷ AESD
 - ▷ ENSTINET
 - ▷ CMDL
 - ▷ EGYPTMED Site Access Statistics
 - ▷ Contact us

EGYPTMED Site Analysis

Publication Date [Publication Type](#)

15550 Publications Found



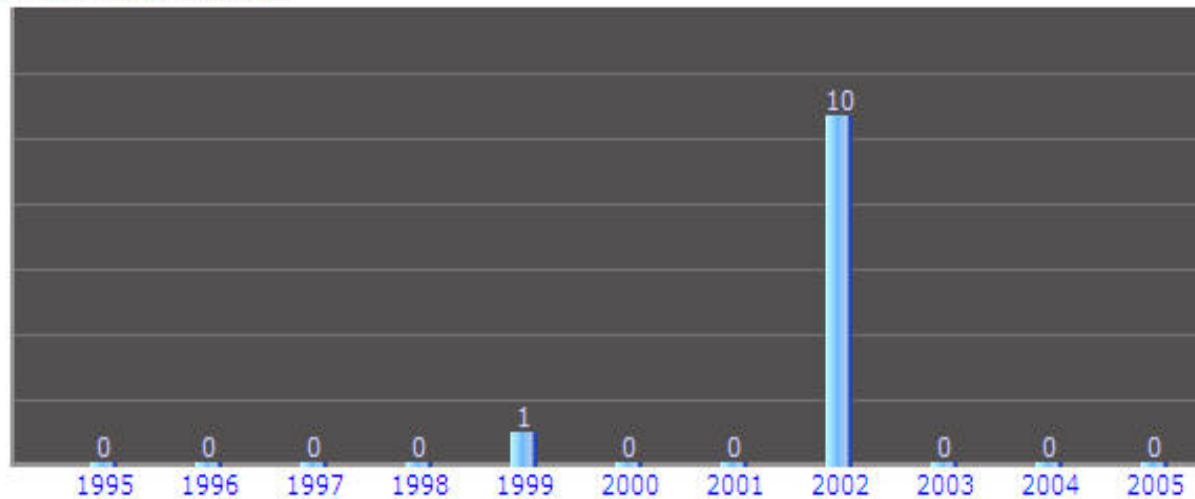
Site Analysis – Publication Type Per Year

Publication Date

E
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Number of 'Controlled Clinical Trial' journal types per year

11 Publications Found



MSc Degrees Per Year



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Site Menu

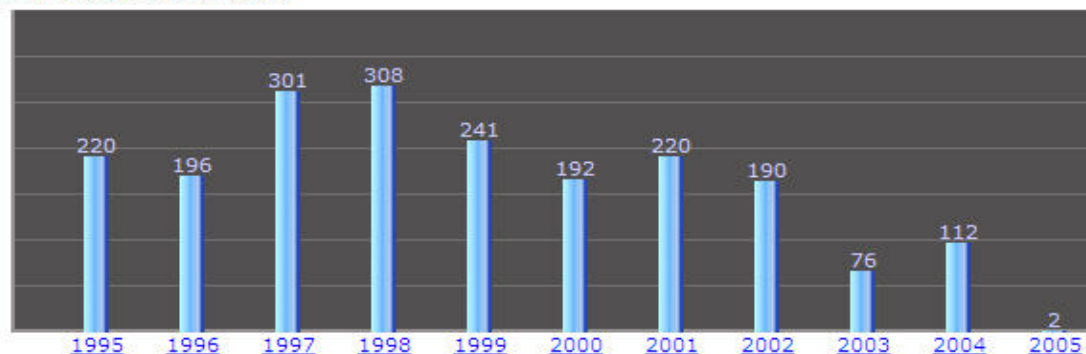
- ▼ EGYPTMED Home Page
 - ▼ Search EGYPTMED
 - ▷ Basic Search
 - ▷ Advanced Search
 - ▼ Search EGYPTMED and MeSH
 - ▷ Basic Search
 - ▷ Advanced Search
 - ▼ EGYPTMED Site Analysis
 - ▷ Publication Date
 - ▷ Publication Type
 - ▷ PhD Degree
 - ▷ [MSc Degree](#)
 - ▼ EGYPTMED Questionnaire
 - ▷ Questionnaire
 - ▼ EGYPTMED Guest Book
 - ▷ Guest Book
 - ▼ Useful Links
 - ▷ EMR Journals Directory
 - ▷ EMR Online Journals
 - ▷ IMEMR
 - ▷ AESD
 - ▷ ENSTINET
 - ▷ CMDL
 - ▷ EGYPTMED Site Access Statistics
 - ▷ Contact us

EGYPTMED Site Analysis

MSc/Date

PhD/Date

2058 Publications Found



PhD Degrees Per Year



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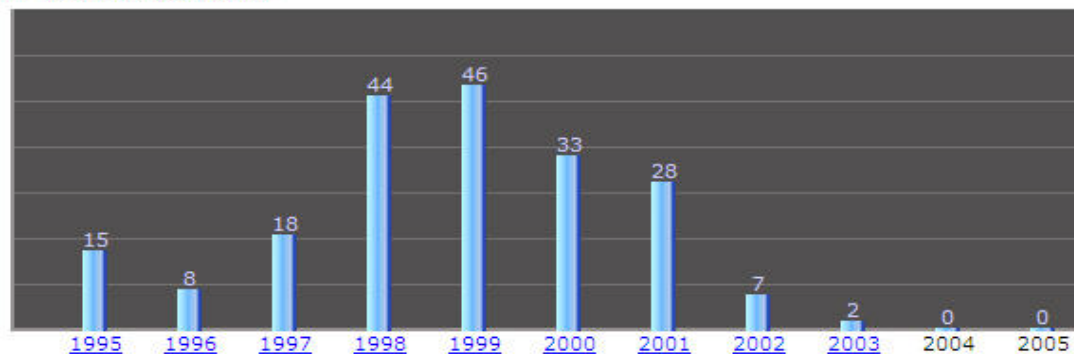
- ▼ EGYPTMED Home Page
 - ▼ Search EGYPTMED
 - ▷ Basic Search
 - ▷ Advanced Search
 - ▼ Search EGYPTMED and MeSH
 - ▷ Basic Search
 - ▷ Advanced Search
 - ▼ EGYPTMED Site Analysis
 - ▷ Publication Date
 - ▷ Publication Type
 - ▷ [PhD Degree](#)
 - ▷ MSc Degree
 - ▼ EGYPTMED Questionnaire
 - ▷ Questionnaire
 - ▼ EGYPTMED Guest Book
 - ▷ Guest Book
 - ▼ Useful Links
 - ▷ EMR Journals Directory
 - ▷ EMR Online Journals
 - ▷ IMEMR
 - ▷ AESD
 - ▷ ENSTINET
 - ▷ CMDL
 - ▷ EGYPTMED Site Access Statistics
 - ▷ Contact us

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PhD/Date

MSc/Date

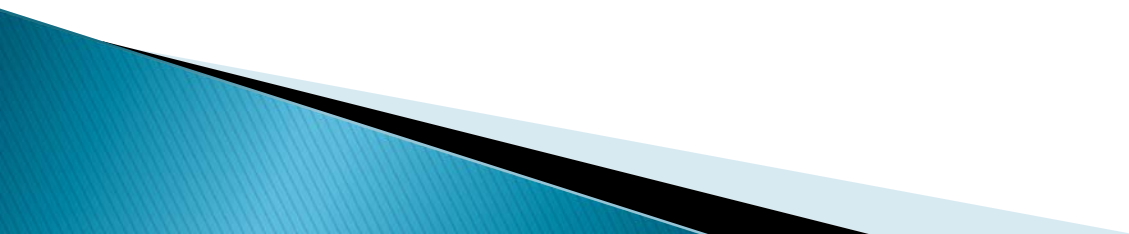
201 Publications Found



Conclusions



The interest in health and biomedical sciences research in developing countries, including Egypt has increased over time, until it has become a major contributor to national and international health knowledge systems.



Health knowledge has played an important role in identifying and developing the health strategies, policies, programs and proposals in develop countries.

However, in developing countries, still more efforts are needed to bridge the gap between how to act on health knowledge, how to use it in decision-making, the "know do gap"

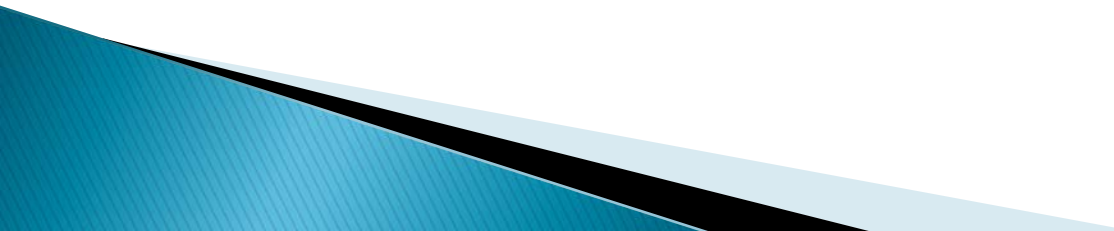
Organizing the health information in bibliographic databases is needed in all aspects of health knowledge, to understand each other, to learn about one's relationships, to fix things that are broken, to retrieve the relevant topics or simply to expand our knowledge



Consequently, in order to use the health information for specific decisions, it must be relevant and of a sufficient quality for the decision at hand.

It also needs to be presented in a way that decision makers will understand, taking account of their personal preferences, skills, and available time

As **Relevance**, **Quality**, and **Presentation** are the key components for useful health information. Applying **Bibliographic Data Visualization (BDV)** to the bibliographic databases is the critical task for the health and medical libraries in this age.



Knowledge is power







EAHIL



Thank You