

NPC POPLINE: A Tool for Population and Reproductive Health Evidence-Based Decisions in Egypt

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Abstract

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BACKGROUND: Population and Reproductive Health Research (PRHR) should have a crucial role in the policy process in Egypt, providing the evidence for problem identification, priority setting, laying out the alternatives, monitoring and evaluation of implemented evidence-based decisions. Minimally, the practice of evidence-based population and reproductive health requires the access and visibility of such information.

AIM: In response to the current situation, the Egyptian National Population Council in collaboration with the Information and Decision Support Centre of the Egyptian Cabinet developed the first online bilingual PRHR database entitled "NPC POPLINE" aiming at providing a tool for evidence-based decisions in the field of population and reproductive health in Egypt

METHODS: NPC POPLINE is operated by the electronic Library Information System using MARC21 format. Data was collected from all research centres and institutions conducting PRHR in Egypt; the Egyptian Universities Library Consortium and the international POPLINE database by using structured data collection forms.

RESULTS: NPC POPLINE combines a unique coverage in terms of language (English and Arabic); subject (population and reproductive health) and publication type (peer-reviewed research and grey literature), in addition to the marked search flexibility and the availability of different formats to display the search results.

CONCLUSION: NPC POPLINE goes beyond the definition of an advanced search engine; it can be used to perform bibliometric studies to evaluate the quantitative and qualitative aspects of PRHR conducted in Egypt. Further studies should be initiated to assess the alignment of the database content to the national and international priorities regarding population and reproductive health.

Introduction

Health research generates knowledge that is necessary for countries to achieve better health, equity and development [1]. Through research, countries can improve their health systems, discover new ways to prevent and treat diseases, understand people health needs and consequently improve individuals' and populations' health [2], [3], [4]. In this context, Population and Reproductive Health Research (PRHR) is considered a multifaceted domain that is closely linked to a wide scope of population health services [5].

However, research is a complex process, generation of knowledge is only one output of the research process; for knowledge to be useful, it should be shared with other researchers and

communicated to all users and stakeholders as health professionals, policymakers, patients ...etc [6]. So, the two processes should work side by side, the production of knowledge in addition to sharing and dissemination of the old through an accessible and free resource [7], [8], [9]. Furthermore, research should have a key role in the policy process, providing the evidence for problem identification and prioritisation, laying out the alternatives for addressing policy issues, and feeding back the appropriateness of the implemented evidence-based decisions [10].

According to the United Nations estimates, Egypt is considered one of the most populous countries in the world [11]. With a 2016 estimated population of 92 million, accounting for almost 1.2% of the global population and occupying the 15th rank. Moreover, Egypt's population is generally rising at an extremely progressive rate, which is causing a

growing concern within the government, and an increase in expenditure on reproductive health policies [12]. The demand for evidence-based population and reproductive health policies and programs seems likely to grow as never before. Minimally, the practice of evidence-based population health requires the availability and access to such information [13].

In response to this critical situation, the Egyptian National Population Council (NPC) which is the official entity responsible for planning and setting strategies and policies related to population and reproductive health issues [14], [15], developed the first online PRHR database as a part of the electronic library of the information centre under the auspice of the NPC to achieve all the above mentioned purposes and beyond under the name of "NPC POPLINE".

NPC POPLINE was developed to provide a tool for decision makers to access the PRHR conducted in Egypt through one unified portal considering the marked variation in the capacity of research users to access the different types of existing research evidence across the country. NPC POPLINE also supports and catalyses PRHR transfer from producers to potential users namely, decision-makers, policy-makers, planners, service providers and researchers to enhance the utilisation of knowledge generated from research in decision-making and policy development at the national level.

This article describes the development of NPC POPLINE as well as the scope, geographic coverage, services and types of publications targeted by the database.

Methods

Database Design and Technology Platform

NPC POPLINE is an online electronic bibliographic database that has two user interfaces (English and Arabic) targeting PRHR conducted in Egypt from the year 2005 till 2017. NPC POPLINE is a free online resource maintained by the NPC information centre in collaboration with the Information and Decision Support Centre (IDSC) of the Egyptian Cabinet.

NPC POPLINE is managed and operated by the electronic Library Information System (eLIS) developed by the IDSC. eLIS is a web-based software program that uses Machine Readable Cataloging 21 (MARC21) format to build the electronic bibliographical database. eLIS provides many facilities to assist performing archiving and indexing activities as acquisition, serial control, cataloguing, information services as well as flexible search and filter engines.

Data Collection Source

Data Collection work was divided according to the source of data collection into field and office work. The fieldwork included manual data collection from all research centres and institutions in Egypt conducting research related to population or reproductive health domains. The NPC list of all research centres and institutions conducting PRHR in Egypt was updated at an experts' meeting during the preparation of the study. The list included 35 research centres and institution all over Egypt. On the other hand, office work was confined to electronic data collection from; the online website for the Egyptian Universities Library Consortium (EULC) to retrieve all theses addressing our target and the online international POPLINE database to retrieve all indexed work from Egypt.

EULC is the national consortium providing a wide range of academic services to all the university libraries in Egypt, supervised and monitored by the Egyptian Supreme Council of Universities. It includes an online database indexing all theses approved by the Egyptian Supreme Council of Universities [16]. The international POPLINE database is the world's most comprehensive resource for population, family planning and reproductive health literature. Its main mission is to share knowledge that has been produced, synthesised, or encapsulated in this crucial field, to help users in low- and middle-income countries as well as supporting agencies and organisations to gain access to this type of literature [17].

A two days training program on manual and electronic data collection was conducted at the NPC (40 trainees), followed by recruitment of the 2 data collection teams from NPC based on the results of pre and post-training tests. The first team (20 researchers) was assigned for the fieldwork and the second (5 researchers) was responsible for the office work.

Data Collection Tool

A bibliographic data collection form was developed in English and Arabic languages to include the following items:

- Title of the research;
- Names and affiliations of the authors;
- Publication year;
- Publication type;
- Publication source;
- Major publication subject;
- Minor publication subject;
- Abstract (the researchers were trained on how to write an abstract if it is not available in the original document).

Data Entry

Data entry was conducted by five full-time staff who works for the NPC information centre after receiving a five-day training program at the IDSC of the Egyptian Cabinet on the data entry as well as the utilisation of different facilities of the NPC POPLINE.

Data Quality Control

Each bibliographic data collection form was given a record number and reviewed by an independent data quality control team (3 trained researchers from outside the NPC) for completeness, consistency and proofreading. Duplicated records were omitted.

Launching of NPC POPLINE

Before the online launching of NPC POPLINE, testing of the database was carried out for 3 months. Additionally, backup and data retrieval operations were tested and secured.

Ethical Considerations

All the administrative approvals were obtained from the targeted research centres and institutions before conducting the fieldwork. Regarding the online data sources, a link to the original data source was provided for each record.

Results

Geographic Coverage

NPC POPLINE covers all research conducted in Egypt related to population or reproductive health during the period 2005-2017. However, no restrictions were made regarding the nationality of the authors.

Table 1: NPC POPLINE Subject Coverage

1.	Adolescent reproductive health
2.	Family planning methods
3.	Family planning programs
4.	Gender
5.	Communication programs
6.	AIDS/HIV
7.	Maternal and child health
8.	Population dynamics:
a.	Fertility
b.	Mortality
c.	Migration
d.	Marriage and family
e.	Geographic distribution
f.	Population growth and size
9.	Population strategy and Laws
10.	Population, health and Environment
11.	Population characteristics:
a.	Vital characteristics
b.	Labor force
c.	Age composition
d.	Social characteristics
12.	Population and economic resources and poverty
13.	Population and non economic factors:
a.	Population Problem
b.	Human Development
c.	Nutritional status
d.	Unemployment
e.	Education
14.	Sexually transmitted diseases

Subject Coverage

The international POPLINE database subject index was used after adding specific subjects to match the Egyptian priorities to finally end up with 14 main subjects as shown in Table 1. Each publication is classified according to the major subject (only one subject) and minor subject(s) (more than one subject can be selected).

Language Coverage

NPC POPLINE has two user interfaces: English (Figure 1) and Arabic (Figure 2).

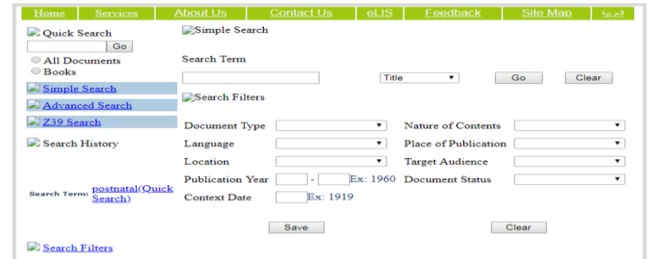


Figure 1: English interface of a simple search of NPC POPLINE

The database covers mainly all PRHR released in English or Arabic languages. Other languages are also covered as long as English or Arabic abstracts are available.



Figure 2: Arabic interface of a simple search of NPC POPLINE

Publication type

The database exclusively covers all types of publications including peer-reviewed articles; scientific conferences abstracts; research reports; books; booklets and all other technical, programmatic publications. Additionally, all theses (Master and Doctoral degrees) targeting PRHR and accepted by the Egyptian Supreme Council of Higher Education are included.

Search Engine Flexibility

NPC POPLINE is characterised by remarkable search flexibility as well as easy retrieval and storage of data. NPC POPLINE is a user-friendly database. It permits 3 different types of search: quick search, simple search and advanced search. Simple search provides searching by the affiliation of authors;

authors; ISSN; ISBN; publisher and keywords as illustrated in Figure 3. Moreover, the "filter" function that is incorporated in the search engine, limits the search by the type of publication; language; publication source; research source; publication year and the target audience as shown in Figure 1.

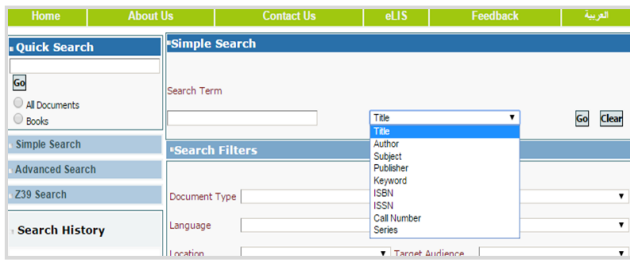


Figure 3: Dropdown list for simple search options of NPC POPLINE

Figure 4 displays the advanced search that offers a wide range of options, for example: using tags to search in various fields of the bibliographic record; using Boolean operators (AND, OR, NOT); using the "*" wildcard, a special character that will match any other(s), including "no character" to broaden a query as well as using the "filter" function that is incorporated in the search engine.



Figure 4: Advanced search interface of NPC POPLINE

Search results display

As illustrated in Figure 5, search results are displayed in different formats depending on the user requests, either full details or short records can be displayed. These results can be printed or exported to an external file for further processing or emailed.



Figure 5: The NPC POPLINE results page for the search term "natal."

Discussion

Over the last three decades, the NPC has worked hard to support the research capacity of individuals and institutions, in addition to providing technical assistance and policy analysis to support evidence-based decisions at the national level regarding population and reproductive health issues [14], [15]. In this context, NPC POPLINE was developed as a free online tool that compiles all forms of PRHR that were conducted in Egypt from the year 2005 to 2017. The NPC POPLINE seeks to fill the gaps regarding 2 critical drawbacks of PRHR conducted in Egypt, namely poor access to grey literature which remains for many years stuck in closed lockers inside different institutions and invisibility of PRHR produced in the Arabic language. The current work goes in accordance with the recommendations of the Canadian Institutes of Health Research, Institute of Population and Public Health (CIHR-IPPH) to support population and public health research generation, diffusion, transfer and uptake by key stakeholders through innovative use of different technologies and accessible language for various audience [13], [18].

According to the CIHR-IPPH, evidence-based decisions requires that the right people should have access to the right knowledge at the right time in the right usable format, by another meaning "just-in-time" use of evidence [13]. Despite that the question of how to define evidence is simple, the answer is still indefinite and complex. The definition of evidence in the scientific literature tends to line up with researchers' definitions (i.e., "evidence" means peer-reviewed research indexed in international bibliographic databases as Pubmed and Scopus). On the other hand, decision-makers define "evidence" more broadly to seek a range of evidence, only one of which is peer-reviewed research [19]. Results of studies from both developing and developed countries reveal that decision-makers use a wide array of evidence, including peer-reviewed research, grey literature including theses, governmental and nongovernmental reports and policy documents in addition to community views and complaints [20], [21].

Furthermore, studies show that when evidence is accessed and used correctly, research can be used as a tool to guide decision-makers rather than being used only in an instrumental fashion to defense an already made decision [22], [23]. Adding to the complexity, most of the research in the developing countries go to low-impact journals or local journals or remain unpublished such as scientific reports and theses. In addition, many of these journals do not have online access or are indexed in international bibliographic databases [6], [24]. From this perspective, NPC POPLINE covers all types of publications related to PRHR including peer-reviewed articles; theses; scientific conferences abstracts;

research reports; books; booklets and all other technical, programmatic publications to align with the current policy needs and facilitate making decisions related to advocacy, policy, planning and management, allocation of resources, and different programs development and strengthening.

One of the most important values added by this research database compared to other research databases as the international POPLINE database which cities worldwide literature in the field of PRHR [17], is the indexing of PRHR produced in the Arabic language. There is a widespread consensus that most international bibliographic databases ignore non-English research, which may be more important than mere invisibility of the existing scientific information; it can result in gaps and biases in our knowledge hindering appropriate evidence-based decisions [25], [26]. To the researcher's knowledge, NPC POPLINE is the first bilingual research database including both English and Arabic PRHR. It provides a unique model to other countries that face language barriers which impede compilation and application of scientific knowledge. Even though English is currently the language that dominates worldwide scientific research, yet many researchers and potential users of scientific information including decision-makers, communicate daily in their native languages, which without doubt hinders the transfer of knowledge and its translation into action [25], [27].

The unique feature of the NPC POPLINE is its combination of language (English and Arabic), geographic (Egypt), subject (population and reproductive health), publication type (peer-reviewed research and grey literature) coverage. The overlap between NPC POPLINE and other bibliographic databases is minimal as no other research database has the same mandate as the NPC POPLINE. Major bibliographic research databases as MEDLINE, EMBASE and international POPLINE databases don't index publications in the Arabic language [28]. Additionally, their selection criteria and indexing policies do not allow these to be indexed in such databases, being classified as a type of grey literature which is considered difficult to track and acquire [24], [28].

NPC POPLINE goes beyond the definition of an advanced search engine for PRHR citations; it can also be used to perform bibliometric studies to evaluate the quantitative and qualitative aspects of research outputs in the scope of the population and reproductive health. It is also worth mentioning that to date, researchers and decision makers in developing countries tend to exist in different worlds. Accordingly, research often has limited impact on or relevance to the policy process [8], [24], [29]. NPC POPLINE can be utilised to identify the discrepancies between researchers' priorities versus the national population and reproductive health policy priorities. Similarly, the current database can ensure that the research priorities are aligned to the international sustainable

development goals launched by the United Nations in 2002 [30]. Not to mention that NPC POPLINE aims at grouping homogenous and diverse academic and research institutes together through providing a central resource for knowledge transfer in the field of PRHR to achieve the optimum saving in expenses, avoid duplication and resources sharing through facilitating accessing all the potential information resources.

Limitations

The sustainability of NPC POPLINE in a developing country with scarce resources like Egypt poses a challenge in terms of upgrading of the software program, technical maintenance of the server and updating of the content of the database regularly. Additionally, to increase the recognition and visibility of the database to the potential users, a facility should be added to NPC POPLINE to allow it to be searchable through different commercial search engines like Google Scholar.

In conclusion, NPC POPLINE is a shift from invisible, inaccessible and limited-sharing of PRHR to a free, bilingual, online and authorised central resource-sharing including all forms of PRHR conducted in Egypt. However, to attain the maximum expected benefit of NPC POPLINE as a tool for evidence-based decision-making in the field of population and reproductive health, further studies should be initiated for quantitative and qualitative evaluation of the content of the database and to assess its alignment to national and international population and reproductive health priorities.

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References

1. Lansang MA, Dennis R. Building capacity in health research in the developing world. *Bulletin of the World Health Organization*. 2004; 82:764-70. PMID:15643798 PMCID:PMC2623028
2. Remme JH, Adam T, Becerra-Posada F, D'Arcangues C, Devlin M, Gardner C, Ghaffar A, Hombach J, Kengeya JF, Mbewu A, Mbizvo MT. Defining research to improve health systems. *PLoS medicine*. 2010; 7(11):e1001000. <https://doi.org/10.1371/journal.pmed.1001000> PMID:21124816 PMCID:PMC2993153

3. Weatherall D, Greenwood B, Chee HL, Wasi P. Science and technology for disease control: past, present, and future. *Disease control priorities in developing countries*. 2006; 2:119-38.
4. Collins FS, Varmus H. A new initiative on precision medicine. *New England Journal of Medicine*. 2015; 372(9):793-5. <https://doi.org/10.1056/NEJMp1500523> PMID:25635347 PMCID:PMC5101938
5. Adanu R, Mbizvo MT, Baguiya A, Adam V, Ademe BW, Ankamah A, Aja GN, Ajuwon AJ, Esimai OA, Ibrahim T, Mogobe DK. Sexual and reproductive health research and research capacity strengthening in Africa: perspectives from the region. *Reproductive health*. 2015; 12(1):64. <https://doi.org/10.1186/s12978-015-0055-2> PMID:26226944 PMCID:PMC4521375
6. Arunachalam S. Information for research in developing countries—Information technology, a friend or foe? *The International Information & Library Review*. 2003; 35(2-4):133-47. [https://doi.org/10.1016/S1057-2317\(03\)00032-8](https://doi.org/10.1016/S1057-2317(03)00032-8)
7. Pang T, Sadana R, Hanney S, Bhutta ZA, Hyder AA, Simon J. Knowledge for better health: a conceptual framework and foundation for health research systems. *Bulletin of the World Health Organization*. 2003; 81:815-20. PMID:14758408
8. Mitton C, Adair CE, McKenzie E, Patten SB, Perry BW. Knowledge transfer and exchange: review and synthesis of the literature. *The Milbank Quarterly*. 2007; 85(4):729-68. <https://doi.org/10.1111/j.1468-0009.2007.00506.x> PMID:18070335 PMCID:PMC2690353
9. Hanney SR, Gonzalez-Block MA, Buxton MJ, Kogan M. The utilisation of health research in policy-making: concepts, examples and methods of assessment. *Health research policy and systems*. 2003; 1(1):2. <https://doi.org/10.1186/1478-4505-1-2> PMID:12646071 PMCID:PMC151555
10. Lee K, Mills A. Strengthening governance for global health research: the countries that most need health research should decide what should be funded. *BMJ: British Medical Journal*. 2000; 321(7264):775. <https://doi.org/10.1136/bmj.321.7264.775> PMID:11009495 PMCID:PMC1118594
11. Population Division, Department of Economic and Social Affairs, United Nations. *World Population Prospects: The 2015 Revision*.
12. Basera, United Nations Population Fund, National Population Council: *Population situation analysis: 2016 Egypt*. Basera, Egypt: Cairo, 2017.
13. Kiefer L, Frank J, Di Ruggiero E, Dobbins M, Manuel D, Gully PR, Mowat D. Fostering evidence-based decision-making in Canada: examining the need for a Canadian population and public health evidence centre and research network. *Canadian Journal of Public Health/Revue Canadienne de Sante'e Publique*. 2005; 96(3):11-9.
14. Robinson WC, El-Zanaty FH. The evolution of population policies and programs in the Arab Republic of Egypt. *The Global Family Planning Revolution*. 2007:15.
15. Landolt LK. USAID, population control, and NGO-led democratization in Egypt: The fate of the ICPD programme of action. *Democratization*. 2007; 14(4):706-22. <https://doi.org/10.1080/13510340701449585>
16. Mohamed KA, Hassan A. Web usage mining analysis of federated search tools for Egyptian scholars. *Program*. 2008; 42(4):418-35. <https://doi.org/10.1108/00330330810912098>
17. POPLINE: About POPLINE. <https://www.popline.org/about>. Accessed on 25th March, 2017.
18. Glasgow RE, Emmons KM. How can we increase translation of research into practice? Types of evidence needed. *Annu Rev Public Health*. 2007; 28:413-33. <https://doi.org/10.1146/annurev.publhealth.28.021406.144145> PMID:17150029
19. Hardee K, Wright K, Spicehandler J. Family planning policy program and practice decision-making: The role of research evidence and other factors. Working Paper. Washington, DC: Population Council, The Evidence Project, 2015. <https://www.popline.org/node/650612>
20. Armstrong R, Waters E, Moore L, Dobbins M, Pettman T, Burns C, Swinburn B, Anderson L, Petticrew M. Understanding evidence: a statewide survey to explore evidence-informed public health decision-making in a local government setting. *Implementation Science*. 2014; 9(1):188. <https://doi.org/10.1186/s13012-014-0188-7> PMID:25496505 PMCID:PMC4314798
21. Nabyonga-Orem J, Nanyunja M, Marchal B, Criel B, Ssengooba F. The roles and influence of actors in the uptake of evidence: the case of malaria treatment policy change in Uganda. *Implementation Science*. 2014; 9(1):1. <https://doi.org/10.1186/s13012-014-0150-8> PMID:25294279 PMCID:PMC4193992
22. Smith E. Evidence for Family Planning Advocacy: An Assessment of Decision makers' and Advocates' Needs and Strategies in East Africa. Washington, DC: Futures Group. Health Policy Project, 2013.
23. Askew I, Matthews Z, Partridge R. Going beyond research: a key issues paper raising discussion points related to dissemination, utilisation and impact of reproductive and sexual health research. New York: Population Council, FRONTIERS, 2002. <https://www.popline.org/node/251427>
24. El Lawindi MI, Galal YS, Khairy WA. Health Research and Millennium Development Goals: Identifying the Gap From Public Health Perspective. *Global journal of health science*. 2015; 8(5):1. <https://doi.org/10.5539/gjhs.v8n5p1> PMID:26652084 PMCID:PMC4877206
25. Amano T, González-Varo JP, Sutherland WJ. Languages are still a major barrier to global science. *PLoS biology*. 2016; 14(12):e2000933. <https://doi.org/10.1371/journal.pbio.2000933> PMID:28033326 PMCID:PMC5199034
26. Meneghini R, Packer AL. Is there science beyond English?: Initiatives to increase the quality and visibility of non-English publications might help to break down language barriers in scientific communication. *EMBO reports*. 2007; 8(2):112-6. <https://doi.org/10.1038/sj.embor.7400906> PMID:17268499 PMCID:PMC1796769
27. Kushner E. English as global language: problems, dangers, opportunities. *Diogenes*. 2003; 50(2):17-23. <https://doi.org/10.1177/0392192103050002002>
28. Al-Shorbaji N. Index medicus for the Eastern Mediterranean region. *Emerging themes in epidemiology*. 2008; 5(1):14. <https://doi.org/10.1186/1742-7622-5-14> PMID:18826568 PMCID:PMC2565659
29. Cortner HJ. Making science relevant to environmental policy. *Environmental Science & Policy*. 2000; 3(1):21-30. [https://doi.org/10.1016/S1462-9011\(99\)00042-8](https://doi.org/10.1016/S1462-9011(99)00042-8)
30. Kates RW, Parris TM, Leiserowitz AA. What is sustainable development? Goals, indicators, values, and practice. *Environment (Washington DC)*. 2005; 47(3):8-21.