# Publications indexed in *Medline* and *Embase* originating from the Syrian Arab Republic: a survey

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المطبوعات المفهرسة في ميدلاين وإمباس والمستمدَّة من الجمهورية العربية السورية: دراسة مسح حسام الدين مطر، محمد قتيبة المر، كلايف آدامز، أديب العسالي

الخلاصة: يواجه الباحثون الصحيون في الجمهورية العربية السورية الكثير من الصعوبات، منها محدودية الموارد، والبنية التحتية، ووسائل التواصل. وقد أجرى الباحثون في شهر آذار/ مارس 2006 بحثاً في قواعد معطيات ميدلاين وإمباس لاستخلاص المعطيات حول 386 من الأوراق المنشورة في مجال الطب والبيولوجيا والتي صدرت من الجمهورية العربية السورية. وقد كان لإمباس قدر رفيع من التغطية، وكان 64 من إجمالي الأوراق منشوراً في مجالات تصدر في أوروبا، و22٪ منها منشوراً في مجالات تصدر في أمريكا الشهالية، و12٪ منها منشوراً في دوريات تصدر في الشرق الأوسط. وقد زاد إنتاج أوراق البحوث بمقدار 1.4 مقالة نسبته منذ عام 1979. وكانت المواضيع التي تتناولها 57٪ من أوراق البحث طبية بيولوجية، أما ما تبقَّى منها فكان بحثاً في الأوراق الطب الزراعة والطب البيطري. وكان طب الأسنان والصحة العمومية والجراحة أكثر المواضيع شيوعاً في الأوراق الطبية البيولوجية. أما التمويل فكان في معظم الحالات من الخومية.

ABSTRACT Health research in the Syrian Arab Republic faces many difficulties, including limited funds, infrastructure and means of dissemination. In a search of *Medline* and *Embase* databases in March 2006 we extracted data on 386 biomedical papers originating from the Syrian Arab Republic. *Embase* had the superior coverage. A total of 64% were published in journals from Europe, 22% from North American journals and 12% in periodicals from the Middle East. Output of papers increased by 1.4 articles/year since 1979. The topics of 57% of papers were biomedical, with the remainder being pure science or agricultural/veterinarian issues. Dentistry, public health and surgery were the commonest subjects of the biomedical papers. Funding was largely from government.

### Étude sur les publications indexées dans *Medline* et *Embase* provenant de la République arabe syrienne

RÉSUMÉ La recherche en santé en République arabe syrienne est confrontée à de nombreuses difficultés, notamment au caractère limité des ressources financières, de l'infrastructure et des moyens de diffusion. Lors d'une recherche dans les bases de données *Medline* et *Embase* en mars 2006, nous avons extrait des références relatives à 386 articles biomédicaux provenant de ce pays. La base *Embase* était celle qui en contenait le plus. Au total, 64 % des articles étaient publiés dans des revues d'Europe, 22 % dans des revues d'Amérique du Nord et 12 % dans des périodiques du Moyen-Orient. Le nombre d'articles publiés avait augmenté de 1,4 article/an depuis 1979. Pour 57 % des articles, le sujet était biomédical, alors que les autres articles traitaient de science pure ou de questions agricoles ou vétérinaires. Les sujets les plus courants des articles biomédicaux étaient la médecine dentaire, la santé publique et la chirurgie. Leur financement provenait en grande partie des pouvoirs publics.

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#### Introduction

The Syrian Arab Republic has a population of 18.8 million with a median age of 21 years (compared with 39 years in the United Kingdom) and a growth rate of 2.3% (UK 0.28%). The infant mortality rate is 28.6 deaths/1000 live births (UK 5.1) and the life expectancy at birth is 70.3 years (UK 78.5). The gross domestic product is estimated at US\$ 73.33 billion (UK \$1.83 trillion).

The structure of modern scientific research in the Syrian Arab Republic started to take shape in 1958 when the Higher Council of Science was established [1]. Research work in this country, however, faces difficulties such as low budgets and limited research capacity. Nevertheless, single centres have conducted research, although collaborative work between Arab universities or with international organizations is also evident [2,3].

Wide dissemination of research is a problem. Much biomedical research is published in specialist periodicals produced by local universities and not covered by bibliographic databases such as *Medline*, the most widely accessible database, produced by the National Library of Medicine in the United States of America [4]. Coverage is worldwide, but most records are from English language sources or have English abstracts. Embase is a European-based general biomedical database containing records of the contents of over 5000 international biomedical journals. It has been claimed that *Embase* provides greater coverage of non-English language publications and broader coverage of pharmaceuticals, psychiatry, toxicology and alternative medicine than Medline alone. The estimated overlap between Medline and Embase is only 30%–50%, and searchers comparing the 2 databases concluded that relevant information would be missed if only one of the databases was searched [5].

The objectives of the study were to produce a survey of widely accessible research publications from the Syrian Arab Republic.

#### Methods

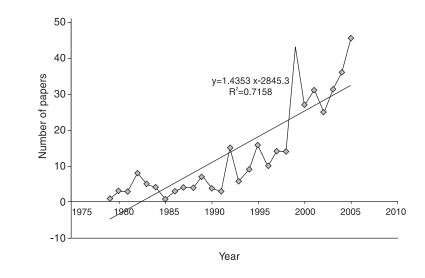
We searched *PubMed* (http://www.ncbi. nlm.nih.gov/entrez/) in March 2006 using the search phrase "Syria\$" in the affiliation field. This same search was then repeated for *Embase* (Ovid). Downloaded data from both databases were then merged in a bibliographic citation program (*ProCite*). Two authors (M.Q.M., H.E.M.), working independently, discarded duplicates, inspected all electronic records and extracted data on source database, periodical and research centre, the broad category of study methodology, biomedical specialty, source of funding and year of publication. Disagreement was resolved by discussion.

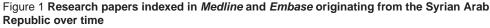
#### **Results**

The initial search resulted in a total of 492 records (163 duplicates). Duplicated records were removed, 17 other papers were excluded because they were not conducted in the Syrian Arab Republic, and another 7 records were discarded as they had been conducted by Syrian researchers outside of the country. Finally, 386 *Medline* or *Embase* reports seemed to be papers genuinely originating in the Syrian Arab Republic. Of these 47% were exclusively from *Embase*, 32% from *Medline* alone and 21% were cited in both databases.

The first publication we identified was in 1979. Thereafter the number of publications from the Syrian Arab Republic accessible in these widely used databases has increased sharply, particularly in recent years, with an overall rate of increase of 1.4 articles/ annum since 1979 (Figure 1).

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Most papers (247, 64%) were published in journals clearly originating from Europe. Within Europe, Syrian papers were most commonly found in British (110), Dutch (32), German (32) or Hungarian (30) periodicals. About a quarter (22%) of the papers were published in North American journals. Periodicals from the Middle East had published 12% of the papers and journals from Asia, Australia and New Zealand only 2%. Overall, the papers were published in 185 different journals; the medical journals that most commonly published work from the Syrian Arab Republic were the Eastern Mediterranean health journal (15 papers) and the Saudi medical journal (13 papers).

The majority of contact addresses were in the capital, Damascus (68%), but Aleppo, the industrial capital, was the source of 25% of papers. The remainder gave an address in Homs (3%), Lattakia (2%) and Hama (1%); 1% did not name a specific city.

When classified by the methods or type of paper, 6% seemed to be randomized

or possibly randomized clinical trials and another 5% were non-randomized clinical studies, 10% of papers seemed to be surveys and 13% were case reports and case series, but 38% seemed to be purely descriptive. Reviews and editorials made up 16% and 2% of papers respectively. It was difficult to classify the methods or type of paper for 9% of papers.

The biomedical field was heavily represented in our sample (219 of the 386 papers, 57%) (Table 1), although 31% were papers on pure science and 11% were on topics of agricultural or veterinarian interest.

Most papers acknowledged funding from government ministries (Ministry of Higher Education 144 papers, Health 54 papers, Agriculture 43 papers and Defence 17 papers, and the Atomic Energy Commission 114 papers) and 40 acknowledged support from other sources including the private sector.

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Table 1 Numbers of research papers indexedin Medline and Embase originating fromthe Syrian Arab Republic by biomedicalspecialty

Specialty	No. of papers	% of all papers ( <i>n</i> = 386)
Dentistry	41	11
Public health	36	9
Surgery	28	7
Dermatology	15	4
Cardiology	14	4
Laboratory	11	3
Urology	11	3
Gastroenterology	7	2
Medical history	7	2
Genetics	7	2
Obstetrics & gynaecology	7	2
Ophthalmology	6	2
Rheumatology	6	2
Chest medicine	5	1
Microbiology	5	1
Paediatrics	5	1
Anaesthesia	3	1
Neurology	2	1
Otology	1	0
Oncology	1	0
Psychiatry	1	0

#### Discussion

*Medline* searches inadequately reflected the extent of biomedical publications originat-

 Kharouf H. Report on scientific research in the Syrian Arab Republic. Damascus, Syrian Arab Republic, Ministry of Higher Education, 1997.

2. Statistics on Scientific Research in the Syrian Arab Republic. Damascus, Syrian Arab Republic, Ministry of Higher Education, 1998.

ing from the Syrian Arab Republic, and *Embase* had the superior coverage, but it is likely that our simple search has failed to identify other work from this region. No local bibliographic databases are available for comparison.

Nevertheless, this study highlights the wide publishing activity that is burgeoning in the Syrian Arab Republic. This is a growing research community that repeatedly succeeds in overcoming considerable difficulties and barriers to publish in widely disseminated journals. Although this activity is still largely focused in centres in Damascus, work from other cities is also evident. The majority of these published studies were discursive, but we found numbers of case series, cohort surveys and controlled trials. It is clear that researchers in the Syrian Arab Republic do have experience in all the key epidemiological methodologies and it seems likely that future years will bring yet more studies undertaken locally with, hopefully, findings clearly applicable to people in the Syrian Arab Republic.

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The Eastern Mediterranean Advisory Committee for Health Research (EM ACHR) comprises senior and outstanding researchers from the Region and represents a balanced disciplinary and geographical distribution. They serve in their individual capacity for a term of three to four years (sometimes extendable). The Committee has the mandate to provide advice to the Regional Director (as deemed necessary by him) on all issues and matters related to health research and development in the Region. The Committee performs its consultative mandate in accordance with its terms of reference, given to it by the Regional Director.

Further information can be found at the Research Policy and Cooperation website: http://www.emro.who.int/rpc/ACHR.htm#section3

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