

Mental health publications from the Arab world cited in *PubMed*, 1987–2002

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أبحاث الصحة النفسية المنشورة في العالم العربي والتي أبرزتها نشرية *PubMed* خلال الفترة من 1987 إلى 2002

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الخلاصة: كانت الغاية من هذه الدراسة تحديد الأبحاث التي نشرت عن الصحة النفسية في العالم العربي وأبرزتها نشرية *PubMed* خلال الفترة من 1987 إلى 2002 وإجراء تحليل لسنة النشر، والمجلات التي نشرت فيها، وبمجال البحث، ولاسيما الدراسات التي أجريت عن الصحة النفسية للأطفال والمراهقين. وقد تم البحث في جميع ما نشر في نشرية *PubMed* من دراسات عن الصحة النفسية، وتبع ذلك تحليل لدراسات الصحة النفسية للأطفال والمراهقين التي تم إبرازها والإشادة بها. وقد بلغ إجمالي الدراسات المنشورة في العالم العربي والمتعلقة بأبحاث الصحة النفسية 338 دراسة أو ما نسبته 1.2% من إجمالي الأبحاث الطبية التي نشرت. وقد كان 17% من بين هذه الدراسات البحثية عن الصحة النفسية عند الأطفال والمراهقين. وكان القلق والاضطرابات المزاجية وتعاطي المخدرات هي أكثر مجالات هذه الدراسات ديناميكية. وتبرز هذه الدراسة حقيقة أن حالات الطب النفسي في الأطفال، وخصوصاً ضعف الانتباه واضطرابات فرط النشاط، والذاتوية (التوحد) لا تحظى باهتمام كبير لدى الباحثين العرب.

ABSTRACT The study aimed to identify mental health publications in Arab countries cited in *PubMed* from 1987 to 2002 and to analyse the year of publication, journal and field of research, specifically for child and adolescent mental health studies. A *PubMed* search was performed for all mental health publications followed by an analysis of child and adolescent mental health citations. The total number of mental health research citations published in Arab countries over the last 15 years was 338, 1.2% of the total number of citations for biomedical research; 17% were on child and adolescent mental health. The most dynamic fields of mental health research are anxiety and mood disorders and substance abuse. Child psychiatry, especially attention deficit hyperactivity disorder and child autism, are not gaining much interest from Arab researchers.

Publications sur la santé mentale provenant du monde arabe citées dans *PubMed*, 1987-2002

RÉSUMÉ Cette étude visait à identifier les publications sur la santé mentale dans les pays arabes citées dans *PubMed* de 1987 à 2002 et à analyser l'année de publication, la revue et le domaine de recherche, notamment pour les études sur la santé mentale de l'enfant et de l'adolescent. Une recherche dans *PubMed* a été effectuée pour toutes les publications sur la santé mentale suivie d'une analyse des citations concernant la santé mentale de l'enfant et de l'adolescent. Le nombre total de citations de recherches en santé mentale publiées dans des pays arabes au cours des 15 dernières années était de 338 – 1,2 % du nombre total de citations pour la recherche biomédicale ; 17 % concernaient la santé mentale de l'enfant et de l'adolescent. Les domaines de recherche en santé mentale les plus dynamiques étaient l'anxiété et les troubles de l'humeur ainsi que la toxicomanie. La psychiatrie infantile, notamment le trouble d'hyperactivité avec déficit de l'attention et l'autisme de l'enfant, ne suscite pas beaucoup d'intérêt chez les chercheurs arabes.

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Introduction

The geographical distribution of publications as an indicator of the research productivity of individual regions, countries or institutions has recently become a field of interest [1]. It has been investigated for European Union countries [2], the United States of America (USA) [3], Gulf Cooperation Council countries [4], Colombia [5], South Korea [6] and a Turkish medical school [7]. The research output of individual and selected countries [8–12] for single specialties has also been reviewed. To the best of the author's knowledge, such an investigation has not been carried out in Arab countries in the field of psychiatry and mental health.

Gaining access to suitable databases is crucial for successful scientific work in the biomedical fields. The *PubMed*[®] online database is developed by the United States National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) and currently indexes over 12 million biomedical citations extracted from more than 4600 journals, published in more than 70 countries and dating back to the mid-1960s [13]. *PubMed* is not only a simple search engine for biomedical citations, but also a powerful tool for conducting certain statistical analyses [14].

The World Health Organization focused its 2001 *World health report* for the first time on a single public health topic: mental health [15]. This decision was taken based on the increasing recognition that the magnitude and burden of mental disorders are high, effective treatments exist for most mental disorders, the great majority of those in need of effective treatments do not receive them and there are high and unnecessary costs around the world in terms of suffering, disability and economic loss.

Although there is some research activity in the field of psychiatry and mental health in the Eastern Mediterranean Region, planned, purposeful research programmes linked to the development and improvement of services and training are rare. In addition, research programmes and activities are not aimed at the production of information systems through a national health plan; they are scattered, uncoordinated and often seem to be unrelated to needs [16].

This study was a geographical analysis of the number of psychiatry and mental health publications produced in 22 Arab countries over a 15-year period from 1987 to 2002. The aim was to estimate what proportion of each country's research was devoted to psychiatry and mental health and which countries were carrying out the majority of mental health research in the Arab world; also to study the settings and types of mental health research for each Arab country during this period.

Methods

An initial search was made for all biomedical studies published in 22 Arab countries from 1 January 1987 to 31 December 2002. The search made using the names of Arab countries in English as well in French and directing them to *PubMed* within a single hour limit on 4 July 2003 at the Faculty of Health Sciences, American University of Beirut.

The country affiliation search was performed in English as well as French because Arab biomedical scientists do not publish their results exclusively in English language journals and an important percentage of publications appear in French journals. Moreover, even in English language journals, authors from the Arab

Maghreb countries and Lebanon prefer to report their research in French. The ratio of French to English citations is about 1:4 in Lebanon, 1:1 in Algeria, rising to 2:1 in Tunisia, Morocco and Mauritania. The aim was to minimize false negative results, i.e. excluding publications in which the country affiliations are written in French. Another common error revealed in previous studies was false positives, especially for Lebanon and Jordan, since there are several cities in the USA called Lebanon and many USA universities have a Jordan Hall. Most entries where "USA" was in the full affiliation name were manually deleted and accurate publication counts were produced for each country. An example of a query is "Morocco[affiliation] OR Maroc[affiliation]", in which the Boolean operator "OR" had the function of collecting all published articles carrying any of the English or French names for Morocco in the affiliation field [14,17,18].

The second stage was to search in the *Medical subject heading (MeSH)* database of *PubMed* for articles about psychiatry and psychology for the whole world (the categories comprising "Mental disorders", "Behavior and behavior mechanisms", "Psychological phenomena and processes" and "Behavioral disciplines and activities").

The two search strategies were then combined using the Boolean operator "AND" to obtain the psychiatry and mental health publications for each Arab country over the last 15 years. The citations of psychiatry and mental health research for each Arab country were extracted from *PubMed* and transferred to Microsoft *Word* document files to be thoroughly read and inspected for any inconsistencies and to validate their attribution to mental health research. False positive publications for each country were deleted manually and the pro-

cess ended with the total number of mental health publications in the 22 Arab countries.

The citations were analysed using *SPSS*, version 6, in which country name, year of publication, field of study, type of study, study setting and remarks variables were identified.

The data were analysed using *SPSS* and Microsoft *Excel* to calculate the following:

- the number of mental health publications for each country;
- the proportion of mental health citations out of all biomedical citations in each country;
- the proportion of mental health publications in each country out of the total mental health publications of Arab countries; and
- the proportion of mental health citations in the Arab world in different types, settings and subtopics of mental health.

Results

Country distribution

The number of *PubMed*-listed biomedical research citations affiliated to Arab countries over the last 15 years totalled 27 395 articles. Saudi Arabia and Egypt together had the highest numbers of biomedical citations, 7421 and 6536 respectively, together accounting for 51.0% of the Arab world's biomedical publications (Table 1).

The number of *PubMed*-listed mental health research papers published and affiliated to Arab countries over the last 15 years (1987–2002) totalled 338 articles: 1.2% of the total number of biomedical citations (Table 1). Kuwait and Saudi Arabia together had the highest number percentage of mental health publications relative to the total mental health publications from Arab coun-

Table 1 Biomedical research publications affiliated to Arab countries: distribution by country for all mental health publications and for child and adolescent mental health publications

Country	All biomedical science		All mental health		Child and adolescent mental health	
	(n = 27 395) No.	%	(n = 338) No.	%	(n = 58) No.	%
Saudi Arabia	7 421	27.1	54	16.0	4	7.4
Egypt	6 536	23.9	52	15.4	10	19.2
Kuwait	2 184	8.0	72	21.3	11	15.3
Morocco	2 020	7.4	9	2.7	1	11.1
Tunisia	1 966	7.2	17	5.0	2	11.8
Lebanon	1 580	5.8	17	5.0	1	5.9
Jordan	1 344	4.9	9	2.7	2	22.2
United Arab Emirates	1 089	4.0	43	12.7	11	25.6
Sudan	659	2.4	3	0.9	1	33.3
Oman	577	2.1	12	3.6	2	16.7
Iraq	408	1.5	2	0.6	0	0
Algeria	406	1.5	4	1.2	0	0
Libyan Arab Jamahiriya	322	1.2	12	3.6	0	0
Qatar	228	0.8	1	0.3	0	0
Bahrain	227	0.8	13	3.8	3	23.1
Syrian Arab Republic	145	0.5	2	0.6	0	0
Yemen	92	0.3	2	0.6	0	0
Palestine	58	0.2	13	3.8	10	76.9
Mauritania	49	0.2	0	0	0	0
Somalia	46	0.2	1	0.3	0	0
Djibouti	28	0.1	0	0	0	0
Comoros	10	<0.1	0	0	0	0

n = total number of published citations.

tries, 72 and 54 respectively, accounting for 37.3% of mental health publications in the Arab world. The highest proportion of mental health studies in a country was in Palestine, where 22.4% (13/58) of biomed-

ical citations were mental health studies, followed by 5.7% (13/227) in Bahrain.

Of the 338 mental health publications, 58 (17.2%) were related to studies of mental disorders in children or adolescent age

groups. While Kuwait, Saudi Arabia and Egypt were the leading countries in mental health publications generally, Palestine and the United Arab Emirates led the Arab countries in child and adolescent mental health research.

More than half of the studies were published in the last 5 years with a major increase in the number of publications after 1998 (Table 2).

Types, settings and fields of research

Analysis of the study settings showed that most mental health research in Arab countries was based in hospital or primary care

facilities (55.6%) or the community (37.3%); a small proportion were based in other settings (a workplace, a prison and a medicolegal facility) (0.9%) (Table 3). The community-based mental health studies outnumbered the health-facility-based studies in the leading countries except in Saudi Arabia. A higher proportion of child and adolescent mental health studies (77.6%) were community-based compared with all mental health publications.

Regarding the type of study, the majority were epidemiological in nature (61.2%), followed by psychometric (10.7%) and clinical (10.4%) (Table 3). The majority (78.0%) of the psychometric studies were designed to measure depression, anxiety or obsessive-compulsive disorders. Mental health systems research comprised less than 5% of mental health studies. Almost half of these studies were in Saudi Arabia and dealt with topics such as manpower training and capacity building, evaluation of health facilities and assessment of performance, referral systems, utilization of mental health facilities and prescriptions in mental health facilities. More clinical and health systems research studies were carried out in Saudi Arabia than any other Arab country, while more epidemiological studies were carried out in Kuwait and more review publications were from Egypt. Basic science research constituted only 5% of all mental health studies and was not seen in the countries ranking first in mental health research.

The most dynamic fields of mental health research in the present analysis (accounting together for more than one-third of the total mental health publications) were substance abuse disorders (15.4% of the overall mental health publications), anxiety disorders (14.8%) and mood disorders (10.7%) (Table 3). Among child and adolescent mental health publications, disor-

Table 2 Mental health publications affiliated to Arab countries: distribution by year of publication

Year	All mental health (n = 338)		Child and adolescent mental health (n = 58)	
	No.	%	No.	%
1987	3	0.9	0	0
1988	15	4.4	1	1.7
1989	11	3.3	1	1.7
1990	15	4.4	2	3.4
1991	11	3.3	1	1.7
1992	17	5.0	2	3.4
1993	10	3.0	2	6.9
1994	15	4.4	0	0
1995	16	4.7	4	6.9
1996	21	6.2	3	5.2
1997	22	6.5	2	3.4
1998	20	5.9	7	12.1
1999	41	12.1	8	13.8
2000	32	9.5	6	10.3
2001	49	14.5	12	20.7
2002	40	11.8	7	12.1

n = total number of published citations.

Table 3 Mental health publications affiliated to Arab countries: distribution by type of study, study setting and type of disorder

Variable	All mental health (n = 338)		Child and adolescent mental health (n = 58)	
	No.	%	No.	%
<i>Type of study</i>				
Epidemiological	207	61.2	48	82.8
Psychometric	36	10.7	5	8.6
Clinical	35	10.4	3	5.2
Literature review	17	5.0	1	1.7
Basic science	16	4.7	0	0
Health systems research	16	4.6	0	0
Knowledge, attitudes & practice	11	3.3	1	1.7
<i>Study setting</i>				
Hospital	174	51.5	11	19.0
Community	126	37.3	45	77.6
Primary care facility	14	4.1	1	1.7
Other	3	0.9	1	1.7
Not applicable	21	6.2	0	0
<i>Disorder studied</i>				
Substance abuse disorders	52	15.4	4	6.9
Anxiety disorders	50	14.8	11	19.0
Mood disorders	36	10.7	6	10.3
Eating disorders	8	2.4	5	8.6
Learning disorders	5	1.5	5	8.6
Attention deficit hyperactivity and disruptive behaviour disorders	4	1.2	4	6.9

n = total number of published citations.

ders which appear for the first time among children and adolescents were the most common: learning disorders (8.6%), eating disorders (8.6%) and attention deficit hyperactivity disorder and disruptive behaviour disorders (6.9%). Most of the publications on anxiety disorders were affiliated to institutions in Palestine, mostly studies on post-traumatic stress disorders, whereas the majority of the studies on learning disorders were from Egypt.

Journals

About 71% of the mental health and psychiatry publications were published in 39 PubMed indexed journals (Table 4). The top 7 journals for Arab mental health publications overall were *Psychological reports*, *Eastern Mediterranean health journal*, *Acta psychiatrica scandinavica*, *British journal of psychiatry*, *L'Encephale*, *International journal of social psychiatry* and *Saudi medical journal*. All are in English

Table 4 Journals in which mental health articles from Arab countries were published

Journal	All mental health (n = 338)		Journal	All mental health (n = 338)	
	No.	%		No.	%
<i>Psychological reports</i> ^a	30	8.9	<i>Perceptual and motor skills</i>	3	0.9
<i>Eastern Mediterranean health journal</i> ^b	28	8.3	<i>Tunisie medicale</i>	3	0.9
<i>Acta psychiatrica scandinavica</i>	27	8.0	<i>American journal of medical genetics</i>	2	0.6
<i>British journal of psychiatry</i>	19	5.6	<i>American journal of psychiatry</i>	2	0.6
<i>L'Encephale</i> ^a	15	4.4	<i>Archives of women's mental health</i>	2	0.6
<i>International journal of social psychiatry</i>	15	4.4	<i>Behavioural brain research</i>	2	0.6
<i>Saudi medical journal</i>	11	3.3	<i>Bulletin de l'Academie nationale de medecine</i>	2	0.6
<i>Social psychiatry and psychiatric epidemiology</i>	10	3.0	<i>Clinical psychology review</i>	2	0.6
<i>Drug and alcohol dependence</i>	7	2.1	<i>General hospital psychiatry</i>	2	0.6
<i>Child abuse & neglect</i> ^c	6	1.8	<i>International journal of eating disorders</i>	2	0.6
<i>Comprehensive psychiatry</i>	5	1.5	<i>International journal of nursing studies</i>	2	0.6
<i>Journal of affective disorders</i>	5	1.5	<i>Journal of nervous and mental disease</i>	2	0.6
<i>Death studies</i>	4	1.2	<i>Journal of psychosomatic research</i>	2	0.6
<i>Le Journal medical libanais</i>	4	1.2	<i>Journal of substance abuse</i>	2	0.6
<i>Journal of tropical pediatrics</i> ^a	4	1.2	<i>Journal of traumatic stress</i>	2	0.6
<i>Biological psychiatry</i>	3	0.9	<i>Lancet</i> ^c	2	0.6
<i>General pharmacology</i>	3	0.9	<i>Medical teacher</i>	2	0.6
<i>International journal of emergency mental health</i>	3	0.9	<i>Neuroepidemiology</i> ^a	2	0.6
<i>International journal of geriatric psychiatry</i>	3	0.9	Other journals (n = 95)	95	28.1
<i>International journal of psychiatry in medicine</i>	3	0.9			

^aMost common journals in child and mental health.
n = total number of published citations.

except for *L'Encephale* which is French. The remaining 29% of the Arab publications were published in 95 journals. For child and adolescent mental health publications, roughly half were published in *Psy-*

chological reports, *Child abuse & neglect*, *Eastern Mediterranean health journal*, *Journal of tropical pediatrics*, *Lancet*, *L'Encephale* or *Neuroepidemiology*.

Discussion

In recent years, economic priorities have increasingly forced governments, normally the primary supporter of basic research, to adopt policies that link science and technology programmes more closely to broad organizational and societal goals. Consequently, the assessment of research output through citation analysis has progressively developed and become a priority issue for the scientific research community [19,20]. Quantifying and weighting the results of research are difficult tasks. The advantages of *PubMed* as a powerful database and search tool may be easily degraded if the user does not utilize proper keywords or correct syntaxes, and the results can be biased or even misleading [21]. Nevertheless, citation analysis remains a worthwhile way of evaluating the publication performance of individual scientists, research units or countries.

The present data show that the geographical distribution of publications in psychiatry and mental health does not follow the distribution pattern of publications in general biomedical research for the Arab countries. From the top two ranking countries of the Arab world in biomedical citations only one country, Saudi Arabia, led the Arab countries in mental health research along with Kuwait. Taking into account that Gulf Cooperation Council countries have a relatively short history of research, these countries are especially prolific in terms of *PubMed*-indexed biomedical citations (a finding which has been shown before [4]), as well as mental health research publications. To create an accurate picture, however, the frequencies of citations should be normalized, e.g. by country population, school enrolment, adult illiteracy or gross domestic product (GDP) [18]. In the current study Saudi Arabia was no longer

one of the two leading countries for mental health publications when the average number of publications was corrected for its population size in 2000. However, it was decided not to report normalized figures in this study, as it was difficult to obtain accurate estimates of population size for the year 2000 for some countries.

There is a real need to address major areas of research activity in the Arab countries as well as other countries of the Eastern Mediterranean Region in terms of mental health policy, economic evaluation of models of mental health delivery and evaluation of intersectoral linkages [22]. Child psychiatry, especially attention deficit hyperactivity disorder and child autism, are not gaining much interest from researchers in Arab countries, although other authors have reported that research into behavioural problems among children and adolescents is high in some Arab countries as well as other developing countries [23]. This calls for more attention to these issues by health policy-makers as well as researchers and clinicians, in order to improve diagnosis and treatment in Arab and other developing countries.

The basic demographic structure is rapidly changing in many Arab societies and a great shift in the age distribution of the population has occurred over the last two decades. Child and adolescent psychiatric disorders are seen more frequently, and earlier in a child's lifespan. Prolonged life expectancy and the resulting increase in the geriatric population who have good access to health services means that geriatric psychiatry needs to attract more attention from researchers in the Region [16]. More efforts have to be made to increase policy-makers' and the public's awareness of mental health problems and to promote activities and research into these issues.

Certain limitations of the present study have to be acknowledged. Only about 25% of around 280 medical journals published in the Arab world are indexed in *PubMed*. Thus the study may have underestimated the amount of research from Arab countries if researchers have published their studies in these local journals. Another limitation is not using a factor such as population size or GDP to normalize the number of publications for each country. However, the use of ratios could be misleading, especially with small numbers or using normalization by GDP indicator. Nevertheless, few studies have been undertaken in the Arab world to make a geographical analysis of biomedical publications and none of these, to the best of this author's knowledge, have reviewed the publications for a single specialty.

Conclusion and recommendations

Mental health research is still relatively neglected in the Arab world. Only 1.2% of the biomedical citations are related to the field of psychiatry and mental health. Issues related to utilization of general and mental health services and its association with

mental disorders need to be studied in-depth. Much research is missing concerning training in mental health or teaching in medical schools. Mental health systems research constituted less than 5% of the mental health research in the current study and this is also an important domain. Child and adolescent psychiatry is not gaining much attention: only 17% of the overall mental health publications. Some topics, such as child autism and attention deficit hyperactivity disorder, need to be thoroughly addressed and followed-up by well-designed studies. Unfortunately, given the cross-sectional nature of most of the mental health publications in the Arab world, the temporal or causal relationship between a child or adolescent's mental disorders and the long-term consequences in adulthood are not clear. Studies investigating gender roles in mental disorders and their prevalence, course and response to treatment are also very scarce in Arab world. Mental health problems of youth, women and elderly people have to be investigated, and Arab countries need to revise their mental health priorities on a regular basis according to their demographic as well as their epidemiological transitions.

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