National health research system mapping in 10 Eastern Mediterranean countries

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اختطاط النظام الوطني للبحوث الصحية في عشرة بلدان في إقليم شرق المتوسط

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الخلاصة: تفتقر نظم البحوث الصحية في إقليم شرق المتوسط إلى درجة من التطور تكفي لإنتاج المعارف المتعلقة بتحسين الصحة وتقليص الإجحاف والمساهمة في التنمية الاقتصادية. وتستهدف هذه الدراسة توفير المعطيات الأساسية للنظم الوطنية للبحوث الصحية في عشرة بلدان في إقليم شرق المتوسط، توخياً لبناء الأنشطة المستندة على المعلومات وتعزيز إدارة وحكامة البحوث الصحية. وعلى الرغم من توافر أمثلة على الممارسات الجيدة، فإن بضعة بلدان تفتقر إلى نظم وطنية رسمية للبحوث الصحية وإلى الكثير من القواعد الأساسية لبناء نظام فعَّال. ومع أن هذه الدراسة محدودة النطاق، إلا أنها تقدم معلومات هامة للبلدان لكي تبدأ في العمل على تعزيز النظم الوطنية للبحوث الصحية فيها.

ABSRACT Health research systems in the Eastern Mediterranean Region are not well developed to generate and use knowledge to improve health, reduce inequity and contribute to economic development. This study aimed to provide core data on National Health Research Systems (NHRS) in 10 Eastern Mediterranean countries in order to inform actions to strengthen health research system governance and management. Whilst there were examples of good practice, few countries had a formal NHRS and many basic building blocks needed for an effective system had not been put in place. Although limited in focus, the study provides useful information for countries to initiate action to strengthen their NHRS.

Cartographie des systèmes nationaux de recherche en santé dans dix pays de la Méditerranée orientale

RÉSUMÉ Les systèmes de recherche en santé dans la Région de la Méditerranée orientale ne sont pas suffisamment développés pour produire et utiliser les connaissances nécessaires à l'amélioration de la santé, à la réduction des inégalités et au développement économique. Cette étude visait à fournir des données essentielles sur les systèmes nationaux de recherche en santé dans dix pays de la Méditerranée orientale, afin de guider des actions destinées à renforcer la gouvernance et la gestion des systèmes de recherche en santé. Il existait certes des exemples de bonnes pratiques, mais peu de pays étaient dotés d'un système national de recherche en santé officiel et la plupart des composantes élémentaires nécessaires à des systèmes efficaces n'avaient pas été mises en place. Bien que limitée dans sa portée, cette étude apporte aux pays des informations utiles pour engager une action visant à renforcer leur système national de recherche en santé.

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Introduction

"Research and Development" (R&D) is an acknowledged catalyst for socioeconomic development and demands have increased for investment in R&D on the one hand and for evidence to measure the return on these investments on the other. Traditionally, monitoring and evaluating research and innovation systems has been done using macro level indicators of inputs (usually financial and human) and outputs (research papers and patents) [*1*]. This approach has severe limitations in measuring the returns from "research for health", as it neglects the most important outcomes of: improved health, more efficient health systems and reduced health inequities.

The concept of National Health Research Systems (NHRS) emerged from the International Conference on Health Research for Development held in Bangkok in 2000 [*2,3*]. In attempting to understand the relation between health and health research, it was recognized that health research systems involve not only the health sector but also other key sectors such as science and technology, education, and development, and sometimes international or private sector organizations. Thus, decision-makers within a NHRS often have little direct authority over the entire range of institutions and individuals that need to act if change is to result in health system improvements, health gains and reduced health inequity. Improvements to NHRS depend therefore to a large extent on transparent, inclusive and evidence-based decision-making. This is especially relevant to countries in the Eastern Mediterranean Region, where in spite of significant human capacity in the research sector, there are low levels of research production and application [*4,5*].

In 2002 and 2003, the World Health Organization Regional Office for the Eastern Mediterranean (WHO-EMRO) sponsored 5 country-based studies to describe the health research situation in the Region [*6*]. This was the first study of its kind in the Region and it provided much useful information on the health research systems of the countries involved. However, as each country team developed its own approach to the assessment, there was a limited potential for comparative analysis and for the development of a common model for system strengthening. The Islamic Republic of Iran and Pakistan from the Eastern Mediterranean Region participated in a global health research system analysis study, started in 2002 [*3*], but which has yet to report its findings.

The current collaboration was formed to strengthen the capacities of health research systems in the Region to address national health research needs, specifically health sector changes that would improve health and reduce health inequities. WHO-EMRO and the Council on Health Research for Development (COHRED) decided in 2005 to conduct a study with several countries in the Region that had not been included in the earlier work. Subsequently, the Executive Board of the Health Ministers' Council of the Gulf Cooperation Council (GCC) States asked to be included in this effort as a way to support development of national health research in their member countries. A key demand from all parties involved was rapid and actionable results.

The aim of the study was to collect key information needed for NHRS strengthening, which would allow each country to initiate action at the policy and governance level at relatively short notice. This paper provides a summary of the information collected, and constitutes a first step towards NHRS strengthening. Further information from the study is available on the COHRED Health Research Web (www.cohred.org/

HealthResearchWeb) and, for the 7 GCC States, in Khoja and Hussein 2006 [7].

Methods

The collaboration started with a planning meeting in Riyadh, Saudi Arabia, in November 2005 which included 10 Eastern Mediterranean Region or GCC countries that had expressed a strong interest in strengthening their national systems of health research (Table 1).

The project leaders from each country met again in Muscat, Oman, in May 2006. The aim was to involve each project leader in defining the scope of the study, in outlining the problems facing the NHRS in their countries, and in deciding on the study approach needed to address these problems, and in jointly designing the mapping questionnaire to be used.

COHRED employs a "process" model for NHRS strengthening. It is designed not as a "one-off, data collection event", but rather as an action-oriented, ongoing process of system development. In this approach, compiling and analysing the evidence are complementary "process" activities and need to be iterative with actual interventions made in support of NHRS development. The COHRED model can therefore be phased, depending on resources available, on the level of sophistication of the existing systems, and on actions taken following analysis. NHRS analysis is conducted at 4 levels:

1. Mapping: of the people, structures, institutions and policies that make up the NHRS;
2. Profiling: of the human, institutional, financial, production and utilization capacities of the system;
3. Performance assessment: of the NHRS and its impact on health sector decision-making, health and health equity;
4. Evaluation: of interventions, which is a long-term commitment to a cycle of evidence-based management of the NHRS based on routine and ad hoc monitoring and evaluation.

During the Oman workshop, the national project leaders decided on a phased approach, i.e. a NHRS mapping study as the first phase to decide on priorities for strengthening the health research system. A shortened version of the COHRED NHRS mapping form was prepared (available from: www.cohred.org/NHRSsupport/em2006). The form elicits mostly qualitative information, and consists of a series of questions to guide a standardized description of a NHRS in 4 key areas:

1. Governance and management of the NHRS
2. Institutions engaged in research for health
3. Key stakeholders involved in research for health
4. Available literature and data review.

The form was to be completed by the project leader from each country, based on information gained from document review and interviews with senior staff engaged in health research in the countries. Due to the considerable variation in NHRS set-ups, information was collected in an open question format and the responses were then coded for analysis. Data collection took place during July and August 2006.

In coding the responses, 2 principles were observed. First, the main focus of the study was on structures, policies or statements dealing with the overall national research and health research system rather than on specific parts of the system, e.g. sections of the Ministry of Health or research in specific institutions. Second, the questions were intended to gauge the formal system and not to deal comprehensively

Table 1 **Country characteristics (2004)**[a]

Characteristic	Bahrain	Jordan	Kuwait	Lebanon	Oman	Qatar	Saudi Arabia	Tunisia	United Arab Emirates	Yemen
Human development[b]										
HDI	0.859	0.760	0.871	0.774	0.81	0.844	0.777	0.760	0.839	0.492
HDI rank	39	86	33	78	56	46	76	87	49	150
National commitment to health and education[b]										
Public health expenditures (% GDP)	2.8	4.2	2.7	3.0	2.7	2.0	3.0	2.5	2.5	2.2
Public education expenditures 2002–04 (% GDP)	–	–	8.2	2.6	4.6	–	–	8.1	1.6	–
Technology and knowledge creation[b]										
Patents granted to residents (per million people)	–	–	–	–	–	–	–	–	–	–
Receipts of royalties and licence fees (US$ per person)	–	–	< 0.0	–	–	–	< 0.0	1.8	–	–
R&D expenditure 2000–03 (% GDP)	–	–	0.2	–	–	–	–	0.6	–	–
Researchers in R&D 1990–2003 (per million people)	–	1 927	69	–	–	–	–	1 013	–	–
Academic research output										
Research publications indexed by ISI (No.)	85	568	489	412	261	109	1351	898	498	43
Health research publications indexed by ISI [No. (% of all research publications)]	43 (51)	181 (32)	245 (50)	229 (56)	93 (36)	47 (43)	631 (47)	298 (33)	187 (38)	20 (47)

[a]*Data refer to 2004 unless otherwise stated*
[b]*Adapted from the UNDP Human Development Report 2006 [8].*
– data not available.
HDI = human development index; GDP = gross domestic product; R&D = research and development; ISI = International Science Institute.

with ad hoc or occasional examples of good practice.

The following definitions and distinctions were used to guide coding:

- "NHRS governance" is concerned with the relationships, systems, processes and rules for making decisions within the system. It also provides the structure through which the objectives of the system are set, and performance and achievement of these objectives are monitored. "Research management" was defined for the purposes of this study as being concerned with the planning and execution of the activities required to achieve the objectives of the system in an effective and efficient manner.
- As there is a wide range of ways in which countries create policies to deal with research, any formal plan or strategy providing direction for the health research system of the country was accepted. Such plans could be part of broader policy documents, for example focused on health, research, science and technology or national development. In such cases, these documents were classified as "health research policies" if they had significant health research content, as opposed to the simple identification of health research as a strategy with no further elaboration.
- "Values" were defined as guiding principles for the system. Stipulations to adhere to ethical or other principles, but without an explicit statement of underlying values, were not considered as a valid value statement.
- "Aims" were identified from statements of aims, goals or objectives, or from a vision or mission statement for the system.

The responses for all countries were coded by COHRED to provide consistency (AK), the results were then circulated to the national project leaders for verification and clarification on areas of uncertainty.

To classify participating countries in terms of socioeconomic development, the United Nations Development Programme (UNDP) Human Development Report classification was used [*8*] (Table 1).

An impression of national academic research output and of the proportion related to health research was obtained by extracting data on published articles and reviews from the Science Citation Index, Social Science Citation Index and the Arts and Humanities Citation Index, published by the International Science Institute (ISI) for each country. The ISI classifies each indexed journal according to subject matter and those fully focused on health were identified using the classification developed by Paraje and colleagues [*9,10*]. An inherent limitation of this approach is that journals indexed by the ISI form only a subset of all academic research journals and that journal publications constitute just one of many outputs of NHRS [*11*].

Results

Country characteristics

The 10 countries in this study fall within the high [Bahrain, Kuwait, Oman, Qatar and the United Arab Emirates (UAE)] and middle (Jordan, Lebanon, Saudi Arabia and Tunisia) categories of the human development index (HDI); only Yemen has a low HDI score (Table 1).

Figure 1 shows the scores for the HDI sub-components. Life expectancy is broadly comparable across the countries, except in Yemen. The differences are greater for education and gross domestic product (GDP). Public sector commitments to health mostly fall in the range of 2.5% to 3.0% of GDP,

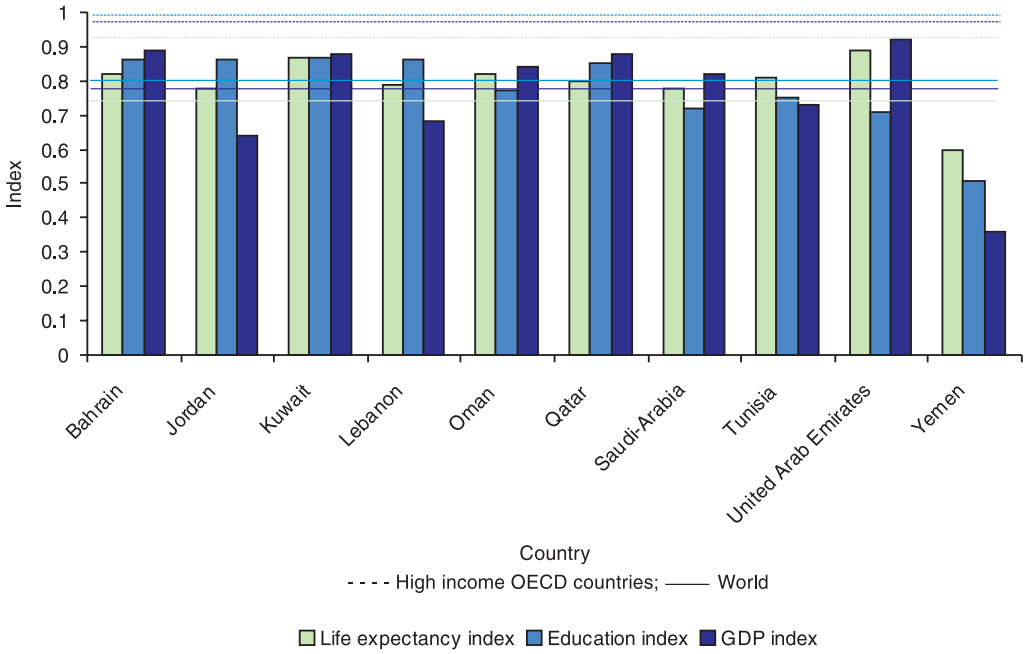

Figure 1 **Human development index sub-components for 10 Eastern Mediterranean countries, 2004 (adapted from the UNDP Human Development Report 2006 [*8*])**

with only Qatar and Yemen falling below this level and Jordan considerably exceeding it with a commitment of 4.2% (Table 1). There is greater variation in commitment to education, which ranges from 1.6% to 8.2% of GDP. There has been a considerable increase in public sector commitment to education since 1991 in 3 countries: Kuwait (4.8% to 8.2% of GDP), Oman (3.4% to 4.6% of GDP) and Tunisia (6.0% to 8.1% of GDP). Data are lacking on education commitment for half the countries and on commitment to technology and knowledge creation for even more.

In all fields of research, Saudi Arabia and Tunisia produced the most academic research papers of the 10 countries in 2004. If only health-related research publications are considered, then Kuwait and Lebanon join Saudi Arabia and Tunisia as the major producers (Table 1).

NHRS governance

Four countries (Jordan, Lebanon, Oman, and Tunisia) described formal governance structures for their NHRS (Table 2). In 3, (Lebanon, Oman and Tunisia), governance is located within a general research council, covering all fields of research, not just health. In Lebanon, the Board of Administrators of the National Council for Scientific Research, appointed by the Council of Ministers, carries out the governance function for the whole research system. In Tunisia this function is carried out by the Superior Council for Research, which is chaired by the Prime Minister and has representatives of all ministries involved in research as

members. Jordan reported multiple formal governance structures based within different government ministries depending on the type of research or where it was conducted.

In Bahrain, the Health Research Committee, and in Saudi Arabia, the Ministry of Health structures, act as proxies for national structures of health research governance. Kuwait reported structures at the institutional level only and the UAE described an ad hoc role played by government health "departments". Qatar is reported to be in the process of establishing a formal governance structure for its NHRS.

NHRS management

Lebanon (General Secretariat of the National Council for Scientific Research) and Oman (Scientific Research Council) have NHRS management structures within their general research councils. Jordan and Tunisia have multiple structures that conduct NHRS management functions within different ministries based upon the type of research carried out and the institution conducting the project. For Jordan, the institutions involved include their Higher Council for Science and Technology.

In Bahrain technical sub-committees of the Ministry of Health's Health Research Committee act as proxy for a national research management structure. In Kuwait, as with the NHRS governance, the management structures are at the level of institutions. Qatar is working to establish a formal NHRS management mechanism. Saudi Arabia has multiple structures within its Ministry of Health and the King Abdel Aziz City for Science & Technology, but these do not constitute a formal "mechanism" covering the NHRS as a whole. In Yemen, the Department of Research and Information, within the Ministry of Public Health and Population, fulfils some of the functions related to the day-to-day management of the NHRS.

Ministry of Health research "office"

All 10 countries reported that there was some mechanism through which the Ministry of Health coordinated its role in health research. For 7 countries this mechanism

Table 2 **Aspects of national health research system (NHRS) governance and management**

Component	No.	Countries
Formal NHRS governance structure (e.g. health research committee)	4	Jordan, Lebanon, Oman, Tunisia
Formal NHRS management structure (e.g. research council)	4	Jordan, Lebanon, Oman, Tunisia
National health research policy/plan/strategy	2	Oman, Tunisia
National health priorities	6	Bahrain, Oman, Qatar, Saudi Arabia, Tunisia, Yemen
National health research priorities	3	Lebanon, Oman, Yemen
Statement of values for the NHRS	2	Oman, Tunisia
Statement of aims for the NHRS	5	Jordan, Lebanon, Oman, Tunisia, Yemen
Monitoring and evaluation system for the NHRS	1	Oman

took the form of a directorate or department of research. Jordan and Lebanon have assigned this responsibility to their general research councils but with ministry of health representation on the research councils' health sub-committee. The Ministry of Health in Bahrain is in the process of establishing a position/unit to fulfil this role.

National health research policy

Two countries in the Region have a dedicated national health research policy (Table 2). Oman has a research plan formally integrated within its 5 year national health plan. In Tunisia, the focus of the health research plan is not to direct the type of research conducted, but rather to develop its health research capacity and research systems as an integral part of a broad plan of economic and social development for the country.

In Lebanon and Qatar, the issue of a policy for health research has been identified as a priority but it has yet to be realised. In Lebanon, the development of the Science, Technology and Innovation Strategy has been postponed due to the current political situation. In Qatar, the development of the plan will be the responsibility of the health research governance and management structure being developed.

For Bahrain and Saudi Arabia, health research is included as a strategy within national health plans, but there is no formal health research policy. Similarly, for Yemen there is health research content in the National Health Plan, the Health Sector Reform Strategy and the National Research Plan but this does not constitute a framework for a national health research policy. In Jordan, health research is addressed in the National Development Plan, the National Science and Technology Plan and the National Health Plan, but the health research coverage in these documents is unclear.

In Kuwait, research strategies have been developed at the institutional level only and in the UAE institutions are given the responsibility of deciding their own research directions.

National health priorities

Six countries have national health priorities (Table 2). Table 3 gives the priorities for 5 of the 6 countries that had set health priorities. The health priorities for Bahrain have been adopted by the Ministry of Health and included in the Ministry's budget for 2007–08, but had not been made publicly available by the time the study was completed. In developing its priorities, Oman conducted a number of participatory workshops as part of its Health Development Plan.

In Lebanon, the Ministry of Health started a process of setting national health priorities but this was postponed because of the recent conflict in the country. In the UAE, health priorities are dealt with at the department level within the Ministry of Health.

National health research priorities

Only 3 countries (Lebanon, Oman and Yemen) have set national health research priorities (Table 4). In Lebanon, 8 of the 16 priority research themes set by the National Research Council focused on health-related topics. These priorities were set by the health sub-committee of the National Council for Scientific Research even though the country does not have formally adopted national health priorities. This contrasts with Yemen where research priorities were developed to closely match national health priorities.

In Oman, national health research priorities were first established for the fifth and sixth 5-year national health plan 1996–2000

Table 3 **National health priorities for 5 countries**

Oman	Qatar	Saudi Arabia	Tunisia	Yemen
Vision 1: Delivery (providing) of the best health care to the community	Premature death and catastrophic injury from road trauma, workplace accidents, and infant and early childhood mortality	Actual activation of medical services provision by all hospitals and facilities at King Fahad Medical City	Reinforcement of reproductive health results, family health and the demographic policy	Fight against common and endemic diseases
Vision 2: Quality assurance of health services and patient safety	Early onset of preventable long-term conditions, particularly those where genetic factors may make the local population more vulnerable, e.g. diabetes and certain forms of cancer	Completion of tertiary referral hospital programme	Preservation of sanitary security capacity and reinforcement of the surveillance system and disease control	Combating malnutrition
Vision 3: Minimizing the threatening risk factors to public health	Lifestyle diseases that reduce life expectancy and quality of life, such as obesity and cardiovascular disease, respiratory disease related to smoking, and stress-related mental illness	Eradication of malaria	Control of noncommunicable diseases	Reduction in high risks threatening mother and child health
Vision 4: Promoting woman and child health		Completion of rebuilding and renewal of 450 PCCs out of the 2000 included in The King Fahad New 2000 PCCs Initiative	Improvement of the health of high-risk groups and people with particular problems	Strengthening curative and support services
Vision 5: Propagation of healthy lifestyle in the community		Implementation of health insurance	Development of capacities to assure safety of medicines, vaccines and needs of blood transfusion	Environmental health

Table 3 **National health priorities for 5 countries *(concluded)***

Oman	Qatar	Saudi Arabia	Tunisia	Yemen
Vision 6: Better quality of nutrition for all		Nationwide implementation of information technology in MoH health services as part of the National Electronic Government Project.	Human resources promotion	
Vision 7: Joint action for better community health			Control of the health budget growth and the development of the health system	
Vision 8: Discrimination in the access to administrative practices				
Vision 9: A health information and research system to meet the needs of the health system				
Vision 10: Sufficient and qualified human resources working in the health institutions				

PCCs = primary health care centres.
MoH = Ministry of Health.

Table 4 **National health research priorities for 3 countries**

Lebanon	Oman	Yemen
• Research and development towards the exploitation of new agricultural opportunities with clear economic benefits, including animal stocks, health and nutrition • Research in biotechnologies: quality and specifications of Lebanese ethnic diet and of locally produced food • Research on nutritional systems and their impact on public health in Lebanon • Research in basic and experimental sciences with promising societal benefits and applications • Research in molecular and cellular biology and related genomic applications • Research on chronic diseases prevalent in Lebanon and the region, and development of suitable treatments • Research on new genetic diseases and epidemics in Lebanon and the region • Research on the forecasting of natural disasters in Lebanon and the region, and mitigation approaches of economic, social and environmental impacts	• Malnutrition • Anaemia in pregnant women • Cardiovascular diseases and lifestyle risk factors • AIDS • Cancer • Road traffic accidents • Diabetes • Blindness • Viral hepatitis • Tuberculosis • Hospital management • Primary health care • Environmental health • Health systems research	• Communicable and endemic disease • Maternal and child health • Health systems • Health-enhanced behaviour and environments • Noncommunicable diseases

and 2001–05. A scoring system method developed in collaboration with WHO was used to prioritize the research topics. Criteria scored included: relevance, avoidance of duplication, feasibility, political acceptance, application of results, urgency of data needed and ethical acceptability. In the seventh health development plan 2006–10, research priorities were directed towards the identified health priorities.

In Qatar, the NHRS governance and management structures being established will have the responsibility of setting national health research priorities. Saudi Arabia has no national health research priorities but priorities have been set for the King Abdel Aziz City for Science & Technology. Tunisia leaves decisions on health research priorities to individual institutions.

Stated values for the NHRS

Only Oman and Tunisia have formal value statements to guide their NHRS (Table 5). Saudi Arabia has a proposed value statement for the system, but this has yet to be adopted.

In Bahrain, the Ministry of Health has committed to ensure that research adheres to good ethical practices and is relevant to policy, service and equity. These values cover the Ministry of Health and external bodies if they use the Ministry's facilities, funds, patients or records. A number of other countries (Jordan, Kuwait, Lebanon and Saudi Arabia) commit researchers to adhere to ethical principles, but have no wider statement of underlying values for the system. In Qatar, a values statement will be incorporated into the principles of the NHRS structure they will establish.

Stated aims of the NHRS

Five countries (Table 2) have stated the major aims for their research systems. In Jordan, the aims are expressed in the general vision for science and technology, "Our vision is the achievement of internationally reputable capacity in frontier sciences and technologies, and maximum benefit of their applications for the sustainable socioeconomic development of Jordan". Similarly, in Lebanon aims have been stated for the National Council for Scientific Research but not separately for the sub-committee that focuses on health.

Oman states the aims of its NHRS as to: i) conduct studies and research necessary to provide data and information that are required by the health system; ii) develop the technical capabilities and skills of the health research team on research design and methodology and also develop and improve the capacity of research users at different levels to utilize the information as a tool for evidence-based planning; iii) develop the infrastructure of the health research system and ensure the quality of research.

For Tunisia the health research aims are the promotion of health, the resolution of health problems and the development of the health system to better face present and future health problems.

Bahrain and Saudi Arabia still have to adopt the aims proposed for their NHRS. In Bahrain, the following objectives have been proposed for the Ministry of Health: i) to improve the quality of health information; ii) to increase the number of policies and decisions that are based on the best available evidence.

In Saudi Arabia, the proposed aims include the promotion of individual and community health. The NHRS should adopt an evidence-based research policy as a base for the generation of health regulations and policies intended to achieve improvement and further promotion of health services quality. A further aim is to implement the best quality measures in research execution and dissemination of these concepts.

Monitoring and evaluation of NHRS

Only Oman has established a system of monitoring and evaluation for its NHRS. This is related to the implementation of research within the 5-year Health Development Plan. The specific research objectives are assigned measurable indicators and progress is reported on an annual basis.

In Tunisia, institutions are required to submit annual reports of their activities, but no further analysis of the documentation that would constitute a monitoring and evaluation system is reported. Jordan describes an institutional system of monitoring and evaluation, but there is no activity to collate this information and examine the system at the national level.

Research utilization

None of the countries reported systematic efforts to feed research results into decision-making within the health sector. Oman did cite some interesting examples

Table 5 **National health research system values**

Oman	Tunisia	Saudi Arabia (proposed)
• Quality of the research conducted • Directed to meet the planning needs (for the priority problems of the community and health programmes, vulnerable groups and health systems problems) • Encouragement of community participation and nongovernmental organization involvement	• Ethics • Excellence • Equity and fairness	• Adoption of agreed research ethics and professional health values • Strict following of the strategic • targets adopted by the National Centre for Health Research • Equity and justice • Consideration of special gender needs and social values of the Saudi society • Adoption of decentralization measures when conducting health researches • Continuous development and adoption of quality control measures • Best control and use of available resources, with consideration of efficacy and efficiency in the process of health research financing • Adoption of multidisciplinary and multisector team approach • Strict following of measures for transparency and open communication

of dissemination and utilization activities, including: conferences and workshops for dissemination and utilization of research output; workshops for training on utilization of research findings; and dissemination of results or recommendations through the Public Relations Department of the Ministry of Health to journalists and television and radio programmes.

Oman also highlighted how an effective research priority-setting process significantly aided research utilization – because most of the research priorities were identified by the research users. In Bahrain, clinical practice guidelines developed in conjunction with the Bahrain branch of the United Kingdom Cochrane Centre have been used to increase the use of evidence in Ministry of Health decision-making. Jordan, Kuwait and Lebanon reported ad hoc dissemination activities of a less comprehensive nature.

Other data

The data collected on institutions and relevant literature did produce some useful information; for example, a bibliometric

analysis of health research in Tunisia by Ben Abdelaziz and colleagues [*12*]. However as there was considerable variation in the methods used by country teams to identify institutions, literature and other information, this is not reported in our paper.

Discussion

This mapping of governance and management mechanisms of national health research has provided information that can be used by all countries involved to improve on key aspects of their NHRS. This study has identified that few countries have a formal NHRS, and that there is considerable fragmentation and limited coordination between the parts of the system that need to collaborate if health-related research is to be produced and used. The basic building blocks required for a responsive and needs-driven health research system are missing in many places. At the same time, there is growing interest in developing and strengthening national health research. With few exceptions, the most effective means to stimulate health research and the systems to manage this is through the following actions. These represent core features of good research systems that can be applied in almost all countries in this study.

1. Set national health research priorities through a credible and regularly updated process;
2. Develop a national health research policy, on its own or as part of the policy frameworks for science, technology and innovation;
3. Establish governance and management structures that will facilitate implementation of policies and actions.

With these in place, further strengthening of health research can be achieved by:

- Defining the underlying values and aims of the NHRS;
- Establishing an effective monitoring and evaluation system to increase accountability, relevance to research priorities and quality of research;
- Developing systems to include research knowledge in decision-making processes at all levels of the health sector.

The issue of ingraining science in society and effectively using research knowledge and capacity for development has been identified as a significant problem in the Eastern Mediterranean region [*4,5*]. The gaps in routine data observed in this study support this claim, as does the finding that 4 of the countries have not yet identified their national health priorities. A functioning health research system with strong leadership at the governance and management levels can help to ensure that demand for research in the health sector and production and utilization of such research can be realised.

A number of the countries that took part in this study have recognised the limitations of their current systems and are in the process of establishing formal mechanisms to better coordinate their systems of health research. Both Tunisia and the Gulf States have decided to engage in national health research priority setting in 2007, while WHO-EMRO plans to start this process in other countries. The study also identified interesting examples of good practice, notably in Oman and Tunisia, that can serve as models for others.

In addition to the immediate actions that countries can now take to improve governance and management, there is considerable scope for all the countries to extend their NHRS assessment and focus on capacity and performance assessments and the extent

to which the NHRS delivers research that can be used to improve health and health systems.

The countries with established governance and management structures for their NHRS had built these within the general research councils. Further research on these systems will be useful to assess whether these structures fulfil the needs of the health sector, or whether such systems favour research on priority areas for science and technology and economic development at the expense of research to inform health-related decision-making.

In spite of the limitations of data collection caused by the need to obtain rapid and actionable results, the methods employed in our study provide valuable evidence to allow country teams to assess the priority areas for further development of the governance and management of their health research systems. However, it is clear that once the large governance and management issues have been dealt with, further detailed mapping, profiling and performance assessment will be required to provide more specific information, including on how the NHRS can identify and address the issue of health equity.

The political and professional commitment to systematically analyse health research systems is a core requirement of NHRS building. Countries in the Region that have not yet examined their NHRS are encouraged to do so. The study shows that a phased action-oriented approach can enable decision-makers to quickly move to system improvement initiatives.

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