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BETTER POLICIES FOR BETTER HEALTH

WORKING PAPER

Health Policy and Systems Research:
Evidence Gap Map in 15 Countries of the
Eastern Mediterranean Region

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Key Summary Points

Current situation

- Research evidence is still underutilized in policymaking in the Eastern Mediterranean region (EMR).
- Underutilization of research evidence in the EMR is attributed to many factors, including the limited production of policy-relevant research that responds to policymakers' priorities, limited capacities, and the inadequacy of resources invested in research, especially health policy and systems research (HPSR).
- Mapping and identifying the gaps in the production of HPSR would inform researchers, funders, and policymakers to better invest time and resources where research is needed.

Main objectives of this briefing note:

1. Map the existing gaps in the production of HPSR in 15 countries of the EMR.
2. Assess the alignment of existing HPSR with high-level regional and global priorities.
3. Provide recommendations for researchers, funders, policymakers, and stakeholders.

Findings

- The production of HPSR in EMR is low; only 8.88% of the 29,126 identified articles published during the period from 2000 to 2013 match the criteria for HSPR.
- Low- and middle-income countries in the EMR produce more HPSR than high-income countries, with the exception of Saudi Arabia.
- The production of HPSR has increased since 2005, with the highest peak reached in 2008.
- Most HPSR articles produced focus on delivery arrangements followed by implementation strategies.
- 67.3% of articles do not address the identified priorities, reflecting a misalignment between the production of HPSR and the priorities in the region.
- Most of the articles provide or yield information to address priorities pertaining to human resources for health (25.4%) followed by health financing (6.9%), non-communicable diseases (6.9%) and the role of the non-state sector (3.7%).

Recommendations

Researchers and knowledge translation platforms

- Build the capacity of researchers in conducting HPSR, including in systematic review methods at the individual, institutional, and system level.



- Produce HPSR addressing the health systems gaps identified in this mapping exercise.
- Improve the alignment of HPSR systematic reviews and primary studies produced with policy needs and priorities, taking into consideration the mismatch identified in this study.
- Raise the awareness of policymakers on the importance of HPSR (primary studies and systematic reviews) and evidence-informed policymaking to increase the demand and the funding for HPSR studies.
- Conduct studies to evaluate the impact of published HPSR on policymaking.
- Build the capacity of researchers in knowledge translation activities, such as writing policy briefs and engaging policymakers in priority-setting exercises and policy dialogues.
- Examining the factors behind the low production of HPSR in terms of primary studies and systematic reviews. This would inform capacity building, knowledge translation and awareness raising activities, and funding agendas.
- Promote the establishment of HSPR journals at the country and regional levels.
- Incorporate HPSR in post-graduate courses and training curricula.
- Establish evidence-informed policy and practice centers/units in academic institutions.

Funders

- Support the production of HPSR primary studies and systematic reviews that address the health systems gaps identified in this mapping exercise.
- Support the production of HPSR systematic reviews and primary studies that address policy needs and priorities in the EMR.
- Support knowledge translation work in the EMR that includes priority-setting exercises, policy briefs, and dialogues.
- Support the establishment/operation of evidence synthesis units in academic institutions, public institutions, and knowledge translation platforms and units.
- Support capacity building and training activities for researchers in HPSR and knowledge translation activities, mainly priority-setting exercises in the EMR.

Policymakers and stakeholders

- Support the production of policy-relevant HPSR by increasing funding and improving research infrastructure.
- Identify and communicate with researchers the policy concerns, priorities, and needs for research evidence.
- Establish decision support units in Ministries of Health and other public institutions.
- Institutionalize the practice of using evidence before making policies or decisions.



Issue

Evidence-informed health policies can strengthen health systems, improve health outcomes, and reduce health inefficiencies and inequities. Research evidence is still underutilized in policymaking in the Eastern Mediterranean region (EMR). Reasons behind this underutilization include the limited production of policy-relevant research that responds to policymakers' priorities, limited capacities, and the inadequacy of both financial and human resources invested in research, especially health policy and systems research (HPSR) (Lavis et al. 2006; El-Jardali et al. 2012a; El-Jardali et al. 2012b; Decoster, Appelmans, and Hill 2012).

HPSR is a multidisciplinary and interdisciplinary field that is defined by the Alliance for Health Policy and Systems Research as an emerging field that seeks to understand and improve how societies organize themselves in achieving collective health goals, and how different actors interact in the policy and implementation processes to contribute to policy outcomes. HPSR covers a wide range of questions from financing to governance, the delivery of care, and issues surrounding the implementation of services in both the public and private sectors. Health policy is defined by Walt and Gilson (1994) as the formal written documents, rules, and guidelines that present policymakers' decisions about what actions are deemed legitimate and necessary to strengthen the health system and improve health. HPSR is a broader term than health systems that shows the interconnection between policy and systems and highlights the political and social nature of this field (Sheik et al. 2011; Gilson et al. 2011; Bennett et al. 2011).

The literature suggests a number of strategies to improve the uptake of research evidence in health policymaking. These strategies include making research findings more accessible to policymakers; the dissemination and translation of research findings; increasing opportunities for interaction and contact between policymakers and researchers; and increasing the availability of research relevant to policymakers' concerns (Campbell et al. 2009; El-Jardali et al. 2012; Lavis et al. 2006; Innvaer et al. 2002). Providing policymakers with research evidence that responds to their priorities is one of the various mechanisms that would increase the uptake of evidence in policymaking as suggested by the literature. Additionally, given the scarcity of resources, it is crucial that they are used wisely. Therefore mapping and identifying the gaps in the production of HPSR and assessing the alignment of HPSR with high-level priorities would inform researchers, funders, and policymakers how to better invest their time and money where research is needed

Main objectives of this working paper

- Map the existing gaps in the production of HPSR in 15 countries of the EMR (Bahrain, Egypt, Jordan, Kingdom of Saudi Arabia (KSA), Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Sudan, Syria, Tunisia, and Yemen).
- Assess the alignment of existing HPSR with high-level regional and global priorities.
- Provide recommendations for researchers, funders, policymakers, and stakeholders.



Methods

A systematic search on the Medline database was conducted to identify HPSR articles published between 2000 and 2013 for the 15 countries under study. Medline is a bibliographic database that contains over 21 million references to journal articles in the life sciences with a concentration on biomedicine. Medline also includes journals and newsletters related to health services research, AIDS, environmental health, and others. The database covers material from the year 1946 and currently cites approximately 5,600 international journals in about 40 languages. Records on Medline are indexed using terms known as medical subject headings (MeSH) (Medline Fact Sheet, 2015). The search was focused on published articles in academic databases and did not cover grey literature.

The search was conducted using the country name as a MeSH term. This allowed the identification of all articles published in regional and international journals on the study countries indexed on Medline. A keyword search was used for Palestine, as there is no MeSH term associated with the country. Keywords for Palestine included: Palestine, West Bank, Gaza, and Occupied Palestinian territories. The search was not restricted by language or full-text availability. A total of 29,126 articles were identified from the search. The results were imported to Endnote X7 and the coding was then performed on an Excel coding sheet.

We assessed the retrieved data for inclusion using a coding form adapted from Law et al. (2011). The coding form uses a thoroughly developed taxonomy for health system topics (Table 1) and was updated from the Health System Evidence database of the McMaster Health Forum, where the coding sheet is used to code syntheses of research evidence on governance, financial and delivery arrangements within health systems, and on implementation strategies that can support change in health systems. It included themes pertaining to governance arrangements, financial arrangements, delivery arrangements, and implementation strategies. Governance arrangements included codes relating to policy authority, organizational authority, commercial authority, professional authority, and consumer and stakeholder involvement. Financial arrangements covered areas including financing systems, funding organizations, remuneration, incentivizing consumers, and purchasing products and services. Delivery arrangements covered several topics, mainly how care is designed to meet consumers' needs, by whom care is provided, where care is provided, and with what support care is provided. Implementation strategies comprised three main themes: consumer-targeted strategies, provider-targeted strategies, and organization-targeted strategies (Appendix 1). The coding sheet has a total of 112 codes under the four themes. Appendix 1 provides a list of the themes and sub-themes. Box 1 provides examples of HPSR questions for primary studies and systematic reviews.

Coding was performed independently and in duplicate by two reviewers. Agreement between the two reviewers was checked and disagreements resolved by a third reviewer. All reviewers were trained to conduct the review process and were well informed about the HPSR domains included in the coding sheet. All reviewers used the standard MS Excel sheet for data

entry. MS Excel was also used for compiling data from each of the 15 countries and for the analysis component and table construction.

Table 1: Health systems arrangements

Themes	Sub-themes
Governance arrangements	Policy authority
	Organizational authority
	Professional authority
	Commercial authority
	Consumer and stakeholder involvement
Financial arrangements	Financing
	Funding organizations
	Remuneration
	Incentivizing consumers
	Purchasing products and services
Delivery arrangements	How care is designed to meet consumers' needs
	By whom care is provided
	Where care is provided
	With what support is care provided
Implementation strategies	Consumer targeted strategies
	Provider targeted strategies
	Organization targeted strategies

Box 1: Examples of HPSR questions for primary studies and systematic reviews

Health systems arrangement	Primary study example	Systematic review example
Governance arrangement	Does deliberation make a difference? Results from a citizens' panel study of setting priority health goals.	Can public reporting impact patient outcomes and disparities? A systematic review.
Financial arrangement	Targeted health insurance in a low-income country and its impact on access and equity in access: Egypt's school health insurance.	The impact of user fees on access to health services in low- and middle-income countries.
Delivery arrangement	Impact of a brief intervention on the burnout levels of pediatric residents.	Interventions for supporting nurse retention in rural and remote areas: an umbrella review.

Articles that were identified as HPSR articles were then matched with regional and global priorities to assess the extent to which the existing HPSR produced in the EMR addresses regional and global priorities. Each article was separately assessed to determine whether the evidence provided could yield information to address one or more of the regional priorities. The matching exercise was also done using MS Excel.

A search of the literature was conducted to identify regional and global priorities. The search was conducted in Medline. Box 2 presents the Medline search strategy for priorities in the

EMR. A Google search was also conducted to identify reports from gray literature. Regional priorities were identified from four priority-setting exercises conducted in the region (El-Jardali et al. 2010; Rashidian et al. 2011; Alwan 2014; El-Jardali et al. (manuscript under review)). Additional priorities were identified from WHO (2012a; 2012b), Cape Town statement (2014), Beijing statement (2012) and Montreux statement (2010). The priorities identified pertain to 11 themes: human resources for health (HRH), health financing, role of the non-state sector, access to medicine, primary health care, non-communicable diseases, achieving universal health coverage, emergency preparedness and response, use of health technologies, national health information systems, and evidence-informed health policies and programs (Table 2).

Box 2: Medline search strategy for priorities in the EMR

<p>Database: Ovid Medline(R) without revisions <1996 to April Week 3 2015> Search strategy:</p> <p>1 middle east/ or Africa, Northern/ or egypt/ or libya/ or morocco/ or tunisia/ or afghanistan/ or bahrain/ or iran/ or iraq/ or jordan/ or kuwait/ or lebanon/ or oman/ or qatar/ or saudi arabia/ or syria/ or united arab emirates/ or yemen/ or pakistan/ (58366) 2 ((middle or mediterranean) adj2 east*).ti,ab. (6092) 3 (egypt or libya or morocco or tunisia or afghanistan or bahrain or iran or iraq or jordan or kuwait or lebanon or oman or qatar or (saudi adj2 arabia) or syria or (united adj2 emirates) or yemen or Pakistan).ti,ab. (44343) 4 (arab adj2 countr*).ti,ab. (312) 5 1 or 2 or 3 or 4 (72212) 6 health priorities/ (6664) 7 priorit*.ti,ab. (50094) 8 6 or 7 (53583) 9 5 and 8 (916)</p>
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Table 2: List of identified regional and global priority themes

Health policy and systems priorities	
Theme 1	Human resources for health
Theme 2	Health financing
Theme 3	Role of the non-state sector
Theme 4	Access to medicine
Theme 5	Non-communicable diseases
Theme 6	Primary health care
Theme 7	Achieving universal health coverage
Theme 8	Emergency preparedness and response
Theme 9	Use of health technologies
Theme 10	National health information systems
Theme 11	Evidence-informed health policies and programs

Findings

I- HPSR production by country

- The production of HPSR in the EMR is low, as only 8.88% of the 29,126 identified articles published during the period from 2000 to 2013 match the criteria for HSPR (Table 3).
- Qatar produced the least number of HPSR articles (32), followed by Kuwait (88) and Bahrain (92).
- KSA produced the highest number of HPSR articles (396), followed by Jordan (319) and Egypt (284).

Table 3: HPSR articles produced by country, 2000–2013

Country	Total articles	HPSR articles	% HPSR articles
Bahrain	352	92	26.14
Syria	540	106	19.63
Palestine	831	112	13.48
Yemen	636	109	17.14
Jordan	2,324	319	13.73
Lebanon	1,824	265	14.53
Oman	790	103	13.04
Sudan	2,294	229	9.98
Libya	1,090	106	9.72
KSA	4,971	396	7.97
Qatar	414	32	7.73
Morocco	2,590	174	6.72
Kuwait	1385	88	6.35
Egypt	5,108	284	5.56
Tunisia	3,977	171	4.30
Total	29,126	2,586	8.88

- It is worth noting that countries such as Egypt and Tunisia, despite having the highest number of articles identified through the search strategy, had the smallest percentage of articles relevant to HPSR (5.56% and 4.30% of all Egypt and Tunisia articles were HPSR). This fact also holds true for KSA, which had the most research articles identified, but a very low percentage of those were related to HPSR. In contrast, countries like Bahrain and Syria had the least number of articles produced, but a high percentage of these were on HPSR. This indicates that although some countries in the region are producing a large number of health research articles, those addressing HPSR are minimal. This may be due to the lack of interest in HPSR or the limited capacities to conduct this kind of research in these countries.
- The findings indicate that there is a low production of health research by EMR countries in general, not only in the sphere of HPSR. Such countries include Bahrain and Qatar. Even

though Bahrain has the highest percentage of HPSR in relation to total articles (26.14%), the number of identified articles (352) from the search strategy is already low.

- An interesting observation is that low- and middle-income countries produce more HPSR than high-income countries, with the exception of Saudi Arabia (Figure 1). This finding indicates that financial resources are not the sole reason for the low production of HPSR. Lack of interest and limited capacities in HPSR may also be reasons.

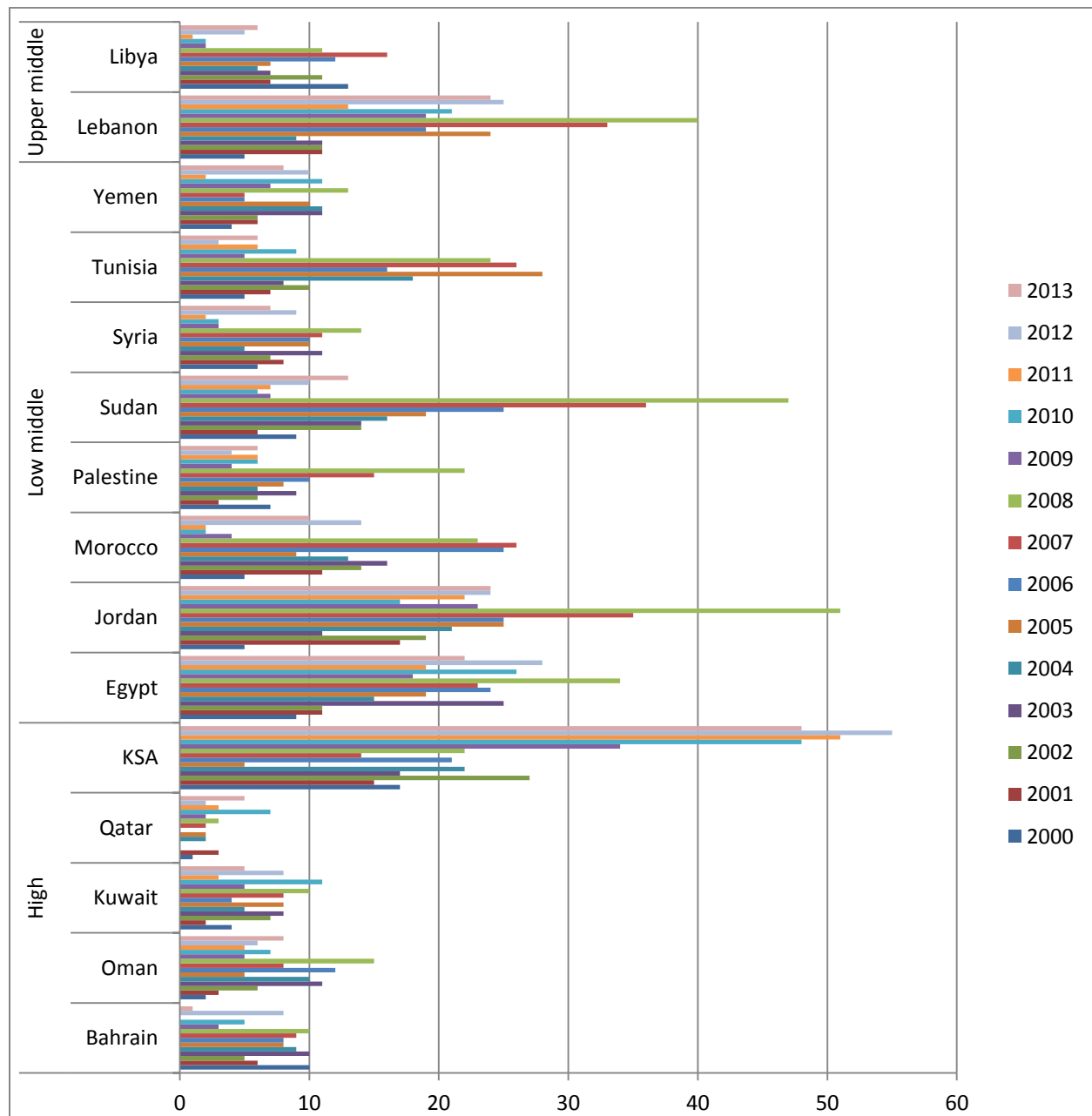


Figure 1: Production of HPSR in EMR countries by income status

II- Annual production of HPSR (2000–2013)

- The annual production of HPSR in EMR countries began to rise from 2005 and reached its highest peak in 2008, mainly in Jordan, Sudan, Egypt, Tunisia, and KSA, which experienced a major increase after 2005. Other countries like Qatar experienced no major change over the years (Figure 2). The observed increase in the production of HPSR in some countries following 2005 can be explained by the influence of international calls to support HPSR and its use in policymaking, issued at the Mexico Summit in 2004 and the World Health Assembly Resolution in 2005.

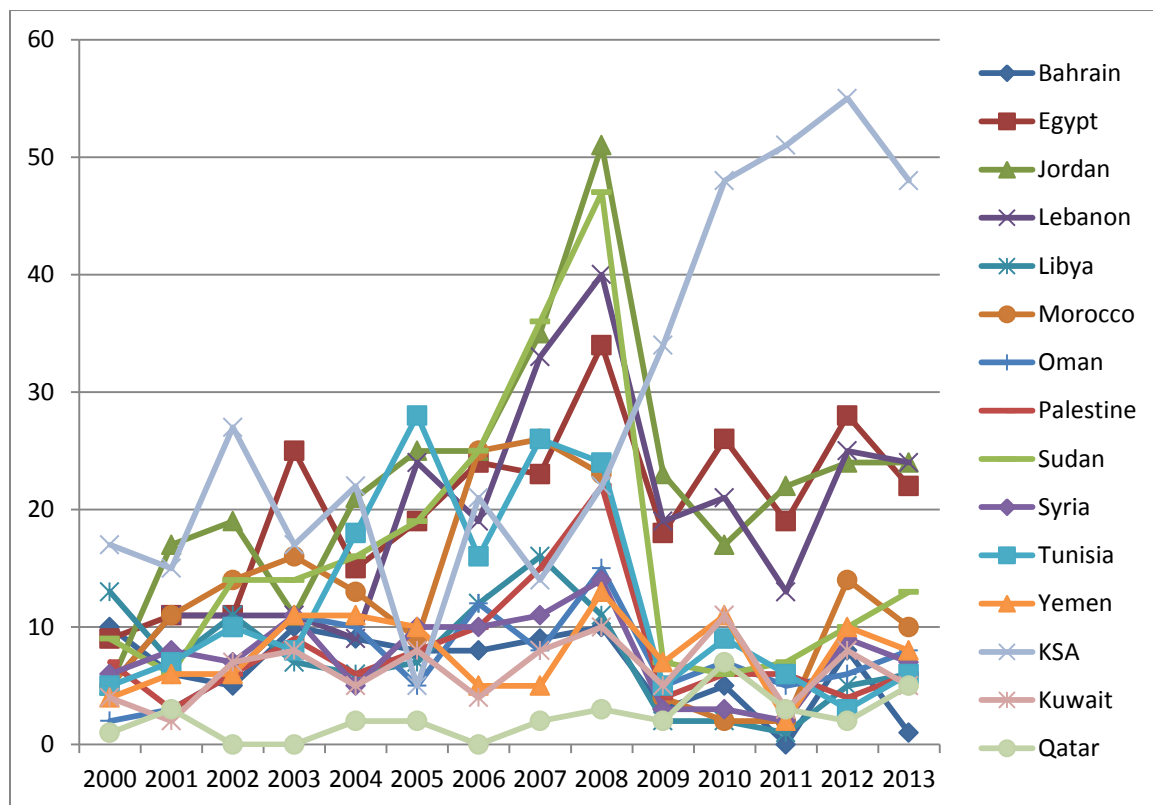


Figure 2: Annual production of HPSR

III- Gaps by health policy and systems themes

- HPSR produced by EMR countries is mainly focused on delivery arrangements (71.9%) (Figure 3). Gaps identified in the production of HPSR are mainly related to financial (2.8%) and governance (8.0%) arrangements. There is also a low production of research evidence on implementation strategies (16.5%) and research that can impact health policy and systems.
- It is interesting to observe that when it comes to the distribution of HPSR across the four themes, the trend is similar in all EMR countries. In all countries, the highest percentage of

HPSR articles is focused on delivery arrangements, followed by implementation strategies, governance, and finally financial arrangements (Table 3).

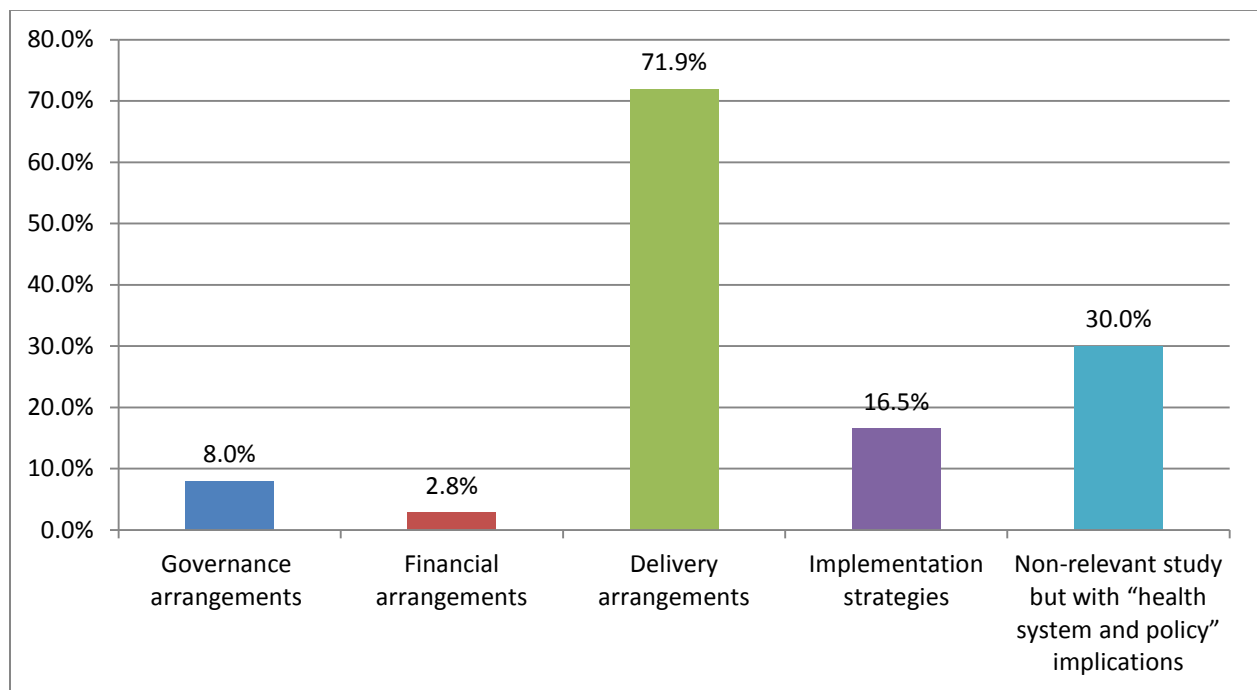


Figure 3: HPSR by theme

- Regarding the delivery arrangements theme, most of the articles focused on how care is designed to meet consumers' needs, followed by who care is provided for. These categories are the highest among all the sub-themes as well. In terms of governance arrangements, most codes focused on professional authorities, largely issues of training, licensing, and registration. As for financial arrangements, the focus was on financing and resource allocation, while only one study of the 2,586 articles identified tackled the issue of remuneration. With regard to implementation strategies, the focus was on information or education provision under the consumer-targeted strategies sub-theme, and on educational material and meetings under the provider-targeted strategies. Articles that could not be classified under any of the health systems themes but were included because they could impact health policy and systems accounted for 30%, with highest percentages in Syria, Bahrain, and Palestine. These articles are more public-health related with a focus on epidemiology or country-wide surveys that may have implications on health policy and systems.

Table 3: HPSR themes by country

	Governance arrangements N (%)	Financial arrangements N (%)	Delivery arrangements N (%)	Implementation strategies N (%)	Non-relevant but has health system and policy implications N (%)
Total	207 (8.0%)	73 (2.8%)	1859 (71.9%)	427 (16.5)	776 (30.0%)
County-specific					
Bahrain	11 (12.0)	0 (0.0)	44 (47.8)	1 (1.1)	40 (43.5)
Lebanon	26 (9.8)	9 (3.4)	159 (60.0)	39 (14.7)	93 (35.1)
Syria	6 (5.7)	2 (1.9)	76 (71.7)	19 (17.9)	45 (42.5)
Yemen	3 (2.8)	5 (4.6)	102 (93.6)	19 (17.4)	21 (19.3)
Oman	14 (13.6)	7 (6.8)	79 (76.7)	24 (23.3)	25 (24.3)
Tunisia	17 (9.9)	5 (2.9)	118 (69.0)	24 (14.0)	60 (35.1)
Egypt	31 (10.9)	12 (4.2)	166 (58.5)	69 (24.3)	122 (43.0)
Palestine	11 (9.8)	5 (4.5)	44 (39.3)	24 (21.4)	48 (42.9)
Jordan	16 (5.0)	2 (0.6)	257 (80.6)	72 (22.6)	59 (18.5)
Sudan	34 (14.8)	8 (3.5)	130 (56.8)	65 (28.4)	63 (27.5)
Morocco	16 (9.2)	5 (2.9)	137 (78.7)	30 (17.2)	50 (28.7)
Libya	3 (2.8)	0 (0.0)	91 (32.0)	10 (9.4)	29 (27.4)
KSA	14 (3.5)	11 (2.8)	335 (84.6)	25 (6.3)	93 (23.5)
Kuwait	4 (4.5)	1 (1.1)	93 (105.7)*	5 (5.7)	21 (23.9)
Qatar	1 (3.1)	1 (3.1)	28 (87.5)	1 (3.1)	7 (21.9)

* The same article may be categorized under different sub-themes within the same theme, which can result in percentages exceeding 100%.

IV- Production of HPSR by institution

- To understand the production of HPSR by institutions, we examined the affiliation of researchers producing HPSR between the years 2009 and 2013. Findings showed that in each country there are one or two institutions that are leading the production of HPSR (Appendix 2). King Saud University accounted for the highest number of HPSR (42 publications) in the region during 2009–2013, followed by the American University of Beirut (28 publications) and Jordan University of Science and Technology (25 publications). It was interesting to observe that the Ministries of Health in some EMR countries produce a considerable amount of HPSR, demonstrating that governments are investing in this area of research. KSA has the highest number of articles produced by the Ministry of Health, followed by Oman, Sudan, and Morocco.

V- Alignment of HPSR with high-level regional and global priorities

- When identified HPSR articles were matched to regional and global priorities, it was found that 67.3% of articles do not address any priority theme. This shows a misalignment in the production of HPSR with the priorities in the region and globally (Table 4). Libya has the highest percentage of HPSR articles not in alignment with any of the identified priorities, followed by KSA and Qatar.

Table 4: HPSR articles matched to regional and global priorities

Policy-relevant priorities	N (%)
Theme 1: Human resources for health	658 (25.4)
Theme 2: Health financing	179 (6.9)
Theme 3: Role of the non-state sector	95 (3.7)
Theme 4: Access to medicine	47 (1.8)
Theme 5: Non-communicable diseases	178 (6.9)
Theme 6: Primary health care	82 (3.2)
Theme 7: Achieving universal health coverage	5 (0.2)
Theme 8: Emergency preparedness and response	7 (0.3)
Theme 9: Use of health technologies	37 (1.4)
Theme 10: National health information systems	20 (0.8)
Theme 11: Evidence-informed health policies and programs	44 (1.7)
Do not fit any priority	1740 (67.3)

- Of the 32.7% articles that provide or yield information addressing regional or global priorities, most of them matched priorities pertaining to the human resources for health theme and tackle education and training, followed by methods to measure performance and productivity. Bahrain, Jordan, and Tunisia had the highest percentage of articles focusing on human resources for health. Bahrain articles mainly focused on methods measuring HRH performance and productivity (25%) while those of Jordan and Syria focused on gaps in existing education and training programs (Appendix 3).
- With regard to health financing, most articles focused on population health status and needs, particularly with regard to allocating resources efficiently to meet population needs based on regular assessment. Palestine and Yemen had the highest percentage of articles (16.1% and 13.8% respectively) focusing on health financing. It was interesting to observe that Qatar and Kuwait had no articles addressing priorities pertaining to this theme.
- In terms of the role of the non-state sector, only a few articles addressed priorities within this theme. Lebanon had the highest number of such articles (11 in total). The majority of HPSR articles within this theme (5 and 3 from Lebanon and Egypt respectively) focused on ways to regulate and monitor the quality of care in the private sector. None of the articles provided information about national plans for the contribution of the non-state sector or a national database of the non-state sector.

- Access to medicine was the focus of only 1.8% of the articles. Within this theme, the issue of what happens at the dispensary (dispensing medicines or delivering primary health care) was the focus of 10 articles, of which 6 were from Bahrain.
- Non-communicable diseases theme was the focus of 6.9% of HPSR articles, of which the majority was focused on control and management and to a much lesser extent on prevention. Jordan accounted for most articles within this theme followed by Morocco.
- With regard to primary health care, 3.2% of the articles provided information on this theme, with Bahrain and KSA having the highest percentage of such articles; Libya had no articles focusing on this priority theme.
- Only 0.2% of the articles provided information on achieving universal health coverage, despite international calls to work towards universal coverage in low and middle-income countries. Additionally, given the importance of evidence-informed policies and knowledge translation, the work on evidence-informed health policies and programs was rather low (1.7% of articles). Most of the articles providing information on evidence-informed policies were from Lebanon, while none were from Qatar and Tunisia. National health information systems and use of health technologies were also among the regional priority themes that were the least addressed by HPSR articles (0.8% and 1.4% respectively).

VI- Gaps in the production of systematic reviews

- A study conducted by El-Jardali et al. (2014) assessing the extent to which published systematic reviews address policy priorities identified by policymakers and stakeholders in EMR countries also showed a gap in the production of systematic reviews addressing policymakers' and stakeholders' priorities in the EMR. Indeed, only 19.1% of the identified systematic reviews matched regional priorities.
- Another study conducted by Law et al. (2011) describing systematic review production in 41 low- and middle-income countries, including 14 countries from the EMR, showed that out of the 2,063 reviews identified through Medline and Embase, only 48 addressed health system topics and only 3 of those reviews were produced by the region.
- According to El-Jardali et al. (2014), systematic reviews are mainly focused on the theme of HRH followed by health financing, access to medicine, and the role of the non-state sector. This is in line with the findings of the gaps in the primary studies identified in this study and with Law et al. (2011), where most systematic reviews addressed delivery arrangements and only a few addressed governance and financial arrangements.
- Authors from institutions from the region produced only three HPSR systematic reviews addressing regional priorities according to El-Jardali et al. (2014). The study by Law et al. (2011) also showed that authors based in the EMR collectively produced 195 systematic reviews from 2003 to 2008 while authors based in China alone produced 575. This might reflect the limited capacities, both technical and financial, in conducting systematic reviews



in the HPSR field. This may also be explained by the lack of interest and awareness of the importance of systematic reviews and HPSR.

- Furthermore, El-Jardali et al. found no systematic review focusing on the EMR while Law et al. found that the EMR has the lowest production of systematic reviews in comparison with the Americas, Asia, and Africa. Primary studies from the region made limited contributions to systematic reviews (El-Jardali et al. 2014). This could be explained by the low production of primary studies related to health systems and policy in the region, as shown in the above mapping exercise, in addition to the lack of capacities, interest, and awareness of systematic reviews among researchers in the EMR.

Recommendations

Researchers and knowledge translation platforms

- Build the capacity of researchers to conduct HPSR, including systematic reviews, at the individual, institutional, and system level.
- Produce HPSR addressing the health systems gaps identified in this mapping exercise.
- Improve the alignment of HPSR systematic reviews and primary studies with policy needs and priorities, taking into consideration the mismatch identified in this study. This can also be done through:
 - o Improving communication and exchange with policymakers to better understand their priorities, needs, and concerns. This can happen through policy dialogue meetings, joint workshops for policymakers and researchers, informal opportunities for interaction, and the establishment of forums for knowledge sharing.
 - o Promoting and engaging in knowledge translation in the EMR mainly through conducting priority-setting exercises to identify the priorities of policymakers and stakeholders to ensure that the production and translation of HPSR is better aligned with needs and priorities, thus increasing the uptake of evidence into policies.
- Raise the awareness of policymakers on the importance of HPSR (primary studies and systematic reviews) and evidence-informed policymaking to increase the demand and the funding for HPSR studies. This can be done through:
 - o Conducting sensitization and awareness workshops on evidence-informed policymaking.
 - o Improving contact and exchange between policymakers and researchers.
 - o Improving dissemination and translation of research.
- Conduct studies to evaluate the impact of published HPSR on policymaking. Demonstrating this impact would increase the demand and the funding for such studies and would encourage researchers to conduct this type of research.
- Build the capacity of researchers in knowledge translation activities, such as writing policy briefs and engaging policymakers in priority-setting exercises and policy dialogues.

- Examine the factors behind the low production of HPSR, both primary studies and systematic reviews, which would inform capacity building, knowledge translation and awareness raising activities, and funding agendas.
- Promote the establishment of HSPR journals at the country and regional levels.
- Incorporate HPSR in post-graduate courses and training curricula.
- Establish evidence-informed policy and practice centers/units in academic institutions.

Funders

- Support the production of HPSR primary studies and systematic reviews addressing the health systems gaps identified in this mapping exercise.
- Support the production of HPSR systematic reviews and primary studies that address policy needs and priorities in the EMR.
- Support knowledge translation work in the EMR that includes priority-setting exercises, policy briefs, and dialogues.
- Support the establishment/operation of evidence synthesis units in academic institutions, public institutions, and knowledge translation platforms and units.
- Support capacity building and training activities for researchers in HPSR and knowledge translation activities, especially priority-setting exercises in the EMR.

Policymakers and stakeholders

- Support the production of policy-relevant HPSR by increasing funding and improving research infrastructure.
- Identify and communicate with researchers the policy concerns, priorities, and needs for research evidence.
- Establish decision support units in Ministries of Health and other public institutions.
 - Institutionalize the practice of using evidence before making policies or decisions.

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Appendices

Appendix 1: Health systems arrangements

Governance arrangements	
Policy authority	Centralization/decentralization of policy authority
	Accountability of the state sector's role in financing and delivery
	Stewardship of the non-state sector's role in financing and delivering
	Decision-making authority about who is covered and what can or must be provided to them
	Corruption protections
Organizational authority	Ownership
	Management approaches
	Accreditation
	Networks and multi-institutional arrangements
Professional authority	Training, licensing, and registration
	Scope of practice
	Setting of practice
	Quality and safety
	Continuing competence
	Professional liability
	Strike/job action
Commercial authority	Licensing and registration requirements
	Patents and profits
	Pricing and purchasing
	Marketing
	Sales and dispensing
	Commercial liability
Consumer and stakeholder involvement	Consumer participation in policy and organizational decisions
	Consumer participation in system monitoring
	Consumer participation in service delivery
	Consumer complaints management
	Stakeholder participation in policy and organizational decisions
Financial arrangements	
Financing	Taxation
	Social insurance
	Community-based insurance
	Community loan funds
	Health savings accounts
	Private insurance
	User fees
	Donor contribution
	Fundraising
Funding organizations	Fee-for-service
	Capitation
	Global budget
	Prospective payment (for a particular diagnosis, product, etc.)
	Indicative budgets
	Targeted payments and penalties
Remuneration	Fee-for-service
	Capitation
	Salary
	Prospective payment
	Indicative budgets
	Fundholding
	Targeted payments and penalties



Incentivizing consumers	Premium
	Cost sharing (copayment, user fee)
	Health saving accounts
	Targeted payments (e.g., conditional cash transfers) and penalties
Purchasing products and services	Scope and nature of insurance plans
	Lists of covered/reimbursed organizations, providers, services, and products (e.g., “positive” lists such as formularies and “negative” lists such as restrictions).
	Lists of substitutable products and services
	Restrictions in coverage/reimbursement rates for organizations, providers, services, and products
	Caps on coverage/reimbursement for organizations, providers, services, and products
Delivery arrangements	
How care is designed to meet consumers’ needs	Availability of care
	Timely access
	Culturally appropriate care
	Case management
	Package of care, care pathways, and disease management
	Group care
By whom care is provided	System: need, demand, and supply
	System: recruitment, retention, and transitions
	System: performance management
	Workplace conditions: provider satisfaction
	Workplace conditions: health and safety
	Skill mix: role performance
	Skill mix: role expansion or extension
	Skill mix: substitution
	Skill mix: multidisciplinary teams
	Skill mix: communication and case discussion between distant health professionals
	Staff: support
	Staff: training
	Staff: workload, workflow, and intensity
	Staff: continuity of care
Staff/self: shared decision-making	
Self: management	
Where care is provided	Site of service delivery
	Physical structure, facilities, and equipment
	Organizational scale
	Integration of services
	Continuity of care
	Outreach
With what support care is provided	Health records systems
	Electronic health record
	Other ICT that support individuals who provide care
	ICT that support individuals who receive care
	Quality monitoring and improvement systems
	Safety monitoring and improvement systems
Implementation strategies	
Consumer-targeted strategies	Information or education provision
	Behavior change support
	Skills and competencies development
	(Personal) support
	Communication and decision-making facilitation
	System participation
Provider-targeted strategies	Educational materials
	Educational meetings
	Educational outreach visits
	Local opinion leaders
	Audit and feedback



	Reminders and prompts
	Tailored interventions
	Multi-faceted interventions
	Local consensus processes
	Patient-mediated interventions
	Peer review
Organization-targeted strategies	



Appendix 2: Institutions with highest number of HPSR publications (2009–2013)

Country	Institution	# of Publications
Bahrain	Ministry of Health	5
	Arabian Gulf University	2
	Salmaniya Medical Complex	2
Lebanon	American University of Beirut	28
	Saint Joseph University	8
	Lebanese University	5
Syria	Damascus University	3
	University of Kalamoon	2
Yemen	Sana'a University	4
	Hadramout University for Science and Technology	4
Oman	Sultan Qaboos University	6
	Ministry of Health	5
	Royal Hospital	3
Tunisia	CHU Farhat Hached	3
	Université de Sfax	2
	University Hospital of Monastir	2
Egypt	Ain Shams University	17
	Cairo University	14
	Suez Canal University	6
Palestine	al-Quds University	6
	An-Najah National University	2
Jordan	Jordan University of Science and Technology	25
	Al al-Bayt University	9
	King Hussein Cancer Center	4
Sudan	University of Khartoum	7
	University of Gezira	5
	Ministry of Health	3
	Kassala University	3
Morocco	Fez University	9
	Hassan II University	5
	Ministry of Health	3
Libya	University of Turku	3
	University of Tripoli	2
KSA	King Saud University	42
	King Saud bin Abdulaziz University for Health Sciences	23
	King Faisal Specialist Hospital and Research Center	19
	Ministry of Health	18
Kuwait	Kuwait University	21
	Public Authority for Applied Education and Training	3
Qatar	Hamad Medical Corporation	8
	Qatar University	3
	Weill Cornell Medical College	2

Appendix 3: HPSR articles matched with regional and global priorities

	Bahrain	Egypt	Jordan	KSA	Kuwait	Lebanon	Libya	Morocco	Oman	Palestine	Qatar	Sudan	Syria	Tunisia	Yemen	Total
1. Human resources for health	60.9%	30.3%	40.8%	7.6%	14.8%	23.4%	8.5%	27.0%	28.4%	31.3%	9.4%	19.7%	13.2%	38.6%	28.4%	25.4%
1.1 Means to develop HRH information systems	1.1%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
1.2 Gaps in existing education and training programs	20.7%	8.8%	13.8%	4.8%	3.4%	2.3%	5.7%	4.6%	5.5%	9.8%	9.4%	5.2%	7.5%	8.8%	12.8%	7.7%
1.3 Information on patient satisfaction	1.1%	2.5%	1.9%	2.5%	5.7%	0.4%	0.0%	4.0%	0.9%	2.7%	0.0%	0.9%	0.0%	2.9%	3.7%	2.0%
1.4 Accurate estimates and needs in numbers and specialties (mapping)	2.2%	0.0%	0.6%	0.0%	3.4%	0.8%	0.0%	1.1%	1.8%	2.7%	0.0%	0.0%	0.0%	1.2%	0.0%	0.7%
1.5 Ways to enable education and training to meet population health needs	3.3%	8.1%	6.0%	0.0%	0.0%	6.4%	0.9%	8.6%	4.6%	6.3%	0.0%	10.0%	2.8%	7.6%	4.6%	5.2%
1.6 Methods to measure HRH performance and productivity	25.0%	5.6%	6.3%	0.0%	0.0%	4.5%	0.9%	5.2%	7.3%	6.3%	0.0%	3.1%	2.8%	7.0%	4.6%	4.8%
1.7 Develop simulation models for HRH planning	0.0%	0.0%	0.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.9%	2.7%	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%
1.8 Elements of performance evaluation	4.3%	1.1%	1.6%	0.0%	0.0%	1.9%	0.0%	1.1%	3.7%	0.0%	0.0%	0.4%	0.0%	6.4%	0.9%	1.4%
1.9 Develop incentive mechanisms to better manage	0.0%	1.8%	5.0%	0.0%	0.0%	2.6%	0.9%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	1.2%
1.10 Ways to improve staff satisfaction	2.2%	2.5%	3.8%	0.0%	2.3%	1.9%	0.0%	1.7%	1.8%	0.9%	0.0%	0.0%	0.0%	2.9%	0.9%	1.5%
1.11 Retention of health care providers	1.1%	0.0%	1.6%	0.3%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.5%
1.12 Migration of health care providers	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
2. Health financing	7.6%	5.6%	11.3%	0.3%	0.0%	2.6%	11.3%	9.2%	4.6%	16.1%	0.0%	7.9%	7.5%	11.7%	13.8%	6.9%



	Bahrain	Egypt	Jordan	KSA	Kuwait	Lebanon	Libya	Morocco	Oman	Palestine	Qatar	Sudan	Syria	Tunisia	Yemen	Total
2.1 Elements of equitable health financing	0.0%	1.4%	0.9%	0.0%	0.0%	1.1%	0.0%	1.1%	0.0%	2.7%	0.0%	1.3%	0.9%	2.3%	2.8%	1.0%
2.2 Household ability to pay for health care	0.0%	1.4%	2.5%	0.0%	0.0%	1.1%	0.0%	0.6%	0.0%	2.7%	0.0%	1.7%	1.9%	1.8%	3.7%	1.2%
2.3 Linking population health needs to health spending	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.9%	0.0%	1.8%	1.8%	0.0%	0.0%	0.0%	0.6%	0.0%	0.3%
2.4 Role of the social health insurance system in guaranteeing equity	0.0%	1.1%	0.3%	0.0%	0.0%	0.4%	0.9%	2.3%	0.0%	0.9%	0.0%	0.0%	0.0%	2.3%	0.0%	0.6%
2.5 Identifying best practices to develop and implement a national social health insurance system	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.9%	0.9%	0.0%	0.0%	0.9%	0.6%	0.9%	0.4%
2.6 Clarifying functions and coordination processes between ministries (for example, the Ministries of Health and of Finance) to improve health system financing and quality of services	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
2.7 Means to track financial resources invested in health care to ensure value for money	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.8 Accurate estimation of health expenditure from the public and private sectors including out-of-pocket expenditure	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.9 Population health status and needs	6.5%	1.4%	7.2%	0.0%	0.0%	1.9%	9.4%	2.9%	0.0%	7.1%	0.0%	4.8%	3.8%	4.7%	6.4%	3.5%
3. Role of the non-state sector	7.6%	4.2%	2.8%	0.5%	0.0%	8.3%	0.0%	6.3%	0.9%	4.5%	0.0%	2.2%	6.6%	4.7%	5.5%	3.7%
3.1 Ways to regulate and monitor the quality of care in the private sector	1.1%	1.1%	0.6%	0.0%	0.0%	1.9%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.9%	0.6%	0.0%	0.5%
3.2 Ways to optimize the use of existing resources of the non-state sector to meet health system needs	1.1%	0.7%	0.3%	0.0%	0.0%	0.8%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.9%	0.6%	1.8%	0.5%



	Bahrain	Egypt	Jordan	KSA	Kuwait	Lebanon	Libya	Morocco	Oman	Palestine	Qatar	Sudan	Syria	Tunisia	Yemen	Total
3.3 Ways for the public and private sectors to complement their service delivery	1.1%	0.4%	0.3%	0.0%	0.0%	1.1%	0.0%	0.6%	0.9%	0.0%	0.0%	0.4%	0.9%	1.2%	0.0%	0.5%
3.4 Areas where the state and civil society groups can complement each other	0.0%	0.4%	0.0%	0.0%	0.0%	0.4%	0.0%	1.1%	0.0%	2.7%	0.0%	0.0%	0.0%	0.0%	1.8%	0.3%
3.5 National database on the non-state sector	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.6 Foundation/elements for building strong public-private partnerships	1.1%	0.4%	0.3%	0.0%	0.0%	0.8%	0.0%	0.6%	0.0%	0.0%	0.0%	0.4%	0.9%	0.6%	0.0%	0.3%
3.7 Accreditation standards for private sector	0.0%	0.0%	0.0%	0.5%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
3.8 Ways to develop effective contracting mechanisms with the private and other non-state sectors	1.1%	0.4%	0.3%	0.0%	0.0%	0.8%	0.0%	0.6%	0.0%	0.0%	0.0%	0.4%	0.9%	0.6%	0.0%	0.3%
3.9 National plan for the contribution of the non-state sector	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.10 Measuring client satisfaction	0.0%	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
3.11 Defining the role and responsibility of the non-state sector	1.1%	0.4%	0.3%	0.0%	0.0%	0.8%	0.0%	0.6%	0.0%	0.9%	0.0%	0.4%	0.9%	0.6%	0.0%	0.4%
3.12 Scope, resources, and kind of services provided by the non-state sector	1.1%	0.4%	0.3%	0.0%	0.0%	0.4%	0.0%	1.1%	0.0%	0.9%	0.0%	0.4%	0.9%	0.6%	1.8%	0.5%
3.13 Community participation in planning and monitoring health services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4. Access to medicine	10.9%	2.5%	3.4%	0.5%	1.1%	1.9%	0.0%	0.0%	0.0%	0.9%	0.0%	2.6%	0.0%	0.0%	3.7%	1.8%



	Bahrain	Egypt	Jordan	KSA	Kuwait	Lebanon	Libya	Morocco	Oman	Palestine	Qatar	Sudan	Syria	Tunisia	Yemen	Total
4.1 Evaluation of the role of pharmaceutical companies in prescription and drug use patterns	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	1.8%	0.2%
4.2 Identifying effective continuous education methods for physicians to improve drug use patterns and access to medicines	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.9%	0.2%
4.3 What happens at the dispensary? Dispensing medicines or delivering primary health care?	6.5%	0.0%	0.6%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
4.4 Identifying effective methods on improving public knowledge and awareness about drug use	1.1%	0.7%	0.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
4.5 Consumer demand, health-seeking preferences, willingness to pay, and enhancing the patient's role in accountability	1.1%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
4.6 Assessing the procedures and regulations for adding medicines to the national drug list (formulary) and identifying improvement models	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
4.7 Adherence to generics in primary health care and dispensaries	1.1%	0.0%	0.0%	0.3%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.9%	0.2%
4.8 Attitudes of physicians and of the public towards generic substitution and opportunities for implementing relevant policies	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



	Bahrain	Egypt	Jordan	KSA	Kuwait	Lebanon	Libya	Morocco	Oman	Palestine	Qatar	Sudan	Syria	Tunisia	Yemen	Total
4.9 Pricing policies to improve access to essential generics and contain prices of excessively priced originator brands	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%
4.10 Evaluation of the effect of the 'single item importing' policy on final cost of medicines, quality and access, and health system expenditure	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4.11 Evaluation of the process of adding medicines to insurance organizations' list of medicines covered	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4.12 Alternative financing mechanisms to supplement public-sector provision	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4.13 Optimal mix of pricing regulations to reduce expenditure burden on households	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4.14 Assessment of quality of medicines on the market and role of counterfeit medicines and black market	1.1%	0.4%	0.6%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.2%
4.15 Improving logistics and human resource management in the public sector for improved drug access	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.1%
4.16 Evaluation of the role of civil society organizations and non-governmental organizations in improving access to medicines especially for the poor, vulnerable groups, and hard-to-reach populations	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4.17 Mapping and assessment of private sector including of qualified providers, informal providers, shadow pharmacies, and traditional healers	0.0%	0.0%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
5. Non-communicable diseases	19.6%	5.6%	13.8%	2.5%	2.3%	9.8%	0.0%	19.5%	4.6%	0.9%	9.4%	1.3%	4.7%	5.8%	0.9%	6.9%



	Bahrain	Egypt	Jordan	KSA	Kuwait	Lebanon	Libya	Morocco	Oman	Palestine	Qatar	Sudan	Syria	Tunisia	Yemen	Total
5.1 Prevention	3.3%	0.7%	4.7%	0.3%	0.0%	3.4%	0.0%	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	1.5%
5.2 Control and management	16.3%	4.9%	9.1%	2.3%	2.3%	6.4%	0.0%	14.9%	4.6%	0.9%	9.4%	1.3%	4.7%	5.3%	0.9%	5.4%
6. Primary health care	10.9%	2.1%	2.8%	7.1%	6.8%	1.5%	0.0%	1.7%	1.8%	2.7%	6.3%	0.4%	1.9%	2.9%	0.9%	3.2%
7. Achieving Universal health care coverage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.4%	0.9%	0.6%	0.9%	0.2%
8. Emergency preparedness and response	1.1%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.6%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.3%
9. Use of health technologies	1.1%	0.0%	3.1%	2.8%	1.1%	2.3%	0.0%	1.7%	1.8%	1.8%	0.0%	0.0%	0.0%	0.6%	0.0%	1.4%
10. National health information systems	0.0%	1.8%	1.9%	0.3%	0.0%	0.4%	0.0%	2.3%	0.0%	0.0%	0.0%	0.4%	0.0%	1.2%	0.0%	0.8%
11. Evidence-informed health policies and programs	3.3%	2.5%	2.5%	0.3%	4.5%	4.2%	0.9%	0.6%	0.9%	2.7%	0.0%	0.9%	0.9%	0.0%	0.9%	1.7%
Do not fit any priority	31.5%	65.5%	48.0%	83.3%	78.4%	65%	84%	55.7%	73.4%	68.8%	81.3%	74.2%	79.2%	64.3%	63.3%	67.3%

