



Pharmacy-related research for health in the Arab region: An analysis informed by WHO's global strategy on research for health



Dalia Bajis^{a,b,*}, Magda Daifi^c, Mohamed Ezzat Khamis Amin^{d,e}

^a International Pharmaceutical Federation, Andries Bickerweg 5, 2517 JP, The Hague, the Netherlands

^b The University of Sydney, School of Pharmacy, Faculty of Medicine and Health, Sydney, NSW 2006, Australia

^c Mohamed Al Mana College for Medical Sciences, Pharmacy Department, Dammam, Saudi Arabia

^d Beirut Arab University, Faculty of Pharmacy, P.O. Box: 11 5020, Beirut, Lebanon

^e AlAlamein International University Faculty of Pharmacy, AlAlamein City Main Road, Matrouh, Egypt

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ABSTRACT

In 2012, WHO (the World Health Organisation) published a strategy on research for health based on the premise that policies and practices in support of health worldwide should be grounded in the best scientific knowledge derived from high-quality research. This strategy focuses attention on five interrelated goals: organisation, capacity, priorities, standards, and translation.¹ Whilst knowledge production and publication in many Arab countries have been on the rise, the overall global share of the Arab region in health research publication is smaller than its global share of population or wealth.² Inspired by the five WHO goals on research for health, this commentary shares factors and recommendations for consideration to enhance pharmacy-related research in the Arab region. These recommendations include establishing strategies for pharmacy-related research to address the context and local needs of the host country, creating intranational and intraregional collaborative research avenues, investing in research capacity, and fostering a culture of research in the workplace.

1. Background

The World Health Organisation (WHO) endorses the importance of high-quality health and medical research in Article 2 of the Organisation's Constitution; which is "to promote and conduct research in the field of health".³ This is to achieve WHO's constitutional objective, namely "the attainment by all peoples of the highest possible level of health".³ In addition, the 2012 WHO Strategy on Research for Health represents international recognition that global improvements in research are dependent on quality research globally, regionally, and nationally.¹ The WHO Strategy on Research for Health has five interrelated goals:

1. Organisation: strengthening of the research culture in organisations;
2. Priorities: focusing research globally on priority health needs;
3. Capacity: helping to strengthen national systems for health research;
4. Standards: promoting good practice in research; and
5. Translation: strengthening links between health research, health policy and practice.

Knowledge production and publication in many Arab countries have been on the rise, but the overall global share of the Arab region in health research publication is smaller than its global share of population or wealth.² The Arab region consists of 22 Arabic-speaking countries of the

Arab League (Table 1), with a total population of approximately 420 million people inhabiting vast areas in Asia and Africa.⁴ Heterogeneity among Arab countries is considerable, and an array of factors related to geopolitical and economic stability, population health status, inequity, wars, and presence of refugees may interfere with the efficiency and responsiveness of their healthcare systems. However, despite these variations, there are inherent commonalities within these countries related to language, culture, religion and history.

Pharmacy-related research is generally classified into two broad categories: pharmacy practice and pharmaceutical science. Contemporary pharmacy practice research incorporates "clinical, behavioural, economic, and humanistic implications of the practice of pharmacy, as well as practice change and implementation of innovations such as health interventions and patient-care services in routine practice".⁵ Pharmaceutical science, on the other hand, involves a combination of disciplines that are critical to the discovery, delivery, and action of pharmaceutical products. In this commentary, "pharmacy-related research" will refer to research in both pharmacy practice and pharmaceutical science.

A recent report by Obaid et al. proposed recommendations to improve pharmacy practice research in 12 Arabic-speaking countries in the Middle East.⁶ According to Obaid et al., three key recommendations were made: i. identification of research priorities by health authorities in each country;

* Corresponding author at: International Pharmaceutical Federation, Andries Bickerweg 5, 2517 JP, The Hague, the Netherlands.

E-mail addresses: dalia@fip.org (D. Bajis), m.alhmari@machs.edu.sa (M. Daifi), m.amin@bau.edu.lb (M.E.K. Amin).

Table 1
Arab countries according to the League of Arab States.⁴

Algeria
Bahrain
Comoros
Djibouti
Egypt
Iraq
Jordan
Kuwait
Lebanon
Libya
Mauritania
Morocco
Oman
Palestine
Qatar
Saudi Arabia
Somalia
Sudan
Syria
Tunisia
United Arab Emirates
Yemen

ii. nurture and promote pharmacy practice research culture with academic researchers and practitioners, and iii. to shift pharmacy practice research toward applied, interventional, and implementation studies. The question is: how to address these recommendations? In this commentary, the authors expanded on what has been identified by Obaid et al. and apply the WHO Strategy on Research for Health to map out recommendations to guide pharmacy-related research in Arab countries utilising the abovementioned five key areas as a framework.

2. Factors and recommendations

Prominent factors reported in the literature that may influence pharmacy-related research in Arab countries have been highlighted under organisation, priorities, capacity, standards, and translation. A summary of factors and recommendations is presented in Table 2.

3. Organisation- “strengthening of pharmacy research culture in Arab countries”

3.1. Research organisations and programmes

Regionally, organisations promoting scientific research are being established across the Arab region. Two main bodies set to tackle and support research are the Arab Science and Technology Foundation,⁷ which was founded by scientists at the Arab World Symposium in 2000, and The Association of Arab Universities.⁸ Nationally, there are also organisations being developed to address and promote scientific research including pharmacy-related research. Examples include The Higher Council for Science and Technology in Jordan,⁹ and the Science, Technology & Innovation Funding Authority in Egypt.¹⁰ The Qatar Foundation is also a not-for-profit organisation that promotes regional innovation and entrepreneurship across science, research, and education in multiple fields.¹¹ Other successful education and research models in Arab countries include the King Faisal Specialist Hospital and Research Centre in Saudi Arabia,¹² Kuwait Foundation for the Advancement of Sciences,¹³ and Zewail City of Science and Technology in Egypt.^{14,15} Organisations such as these have the potential to fund pharmacy-related research.

Many of these well-established research-driven centres anchor success on collaborative research with some of the best institutes internationally, regionally, and nationally.¹² Collectively in the region, pioneering centres for research and innovation are at the forefront of investing in “home-grown” researchers and span a wide range of health industries, including pharmacy. Such advanced centres change the culture of research to allow investigators to easily collaborate and benefit from the existing and

Table 2
Factors and recommendations on pharmacy-related research in the Arab region linked to the WHO Strategy in Research for Health.

WHO goal	Factors	Recommendations
1. Organisation Research organisations and programmes	Collaborative research	<ul style="list-style-type: none"> <input type="checkbox"/> To develop intranational and intraregional collaborative research strategies and organisations <input type="checkbox"/> To foster a culture of collaborative multi and interdisciplinary research nationally and regionally
2. Priorities Addressing local, regional and global pharmacy-related and health needs	Addressing local contexts and needs by pharmacy-related research	<ul style="list-style-type: none"> <input type="checkbox"/> To support the alignment of research aims with national and regional health needs for impact by the development of priorities-driven health research roadmaps and agendas
3. Capacity Capacity building and development	Prioritising research in practice and workplace	<ul style="list-style-type: none"> <input type="checkbox"/> To support and empower pharmacy research within the workplace and practice settings
	Incentive funding and access to reliable data	<ul style="list-style-type: none"> <input type="checkbox"/> To incentivise funding and sustained political investment in translational pharmacy-related research <input type="checkbox"/> To track publications and citation analysis through promoting bibliometric analysis/studies at national and regional levels
4. Standards Promoting good practices	Capacity building and development	<ul style="list-style-type: none"> <input type="checkbox"/> To leverage the skill set and expertise of researchers in pharmacy in local institutions, collaborative research with other institutions and countries in the region <input type="checkbox"/> To embed research opportunities in undergraduate pharmacy curricula
	Ethics and ethical conduct in pharmacy research	<ul style="list-style-type: none"> <input type="checkbox"/> To educate researchers on the ethics of publications and responsible authorship. For example, avoidance of predatory journals <input type="checkbox"/> To consider contextual factors as well as ethical standards in research
5. Translation	The extent of translational research in pharmacy	<ul style="list-style-type: none"> <input type="checkbox"/> To commit to translation research and impact

developing infrastructures. However, to further their success, and to disseminate successful experiences is to create models of collaborations, not only internationally and regionally, but also within the same country. An example of this would be a recent agreement between the American University of Cairo and some of the new university programs within public universities. Hence, models of collaboration’ within each country are needed and active scientific organisations are required to strengthen pharmacy and pharmaceutical science research culture, and to lead by example within their communities.¹⁶

4. Priorities- “focusing pharmacy research locally and regionally on priority health needs”

4.1. Addressing local and regional health needs

An important issue for descriptive and intervention-based pharmacy studies is to address and examine local health contexts. While there's no one-size-fits-all approach to prioritising which research initiatives are most impactful on population health, establishing local priorities for a

health research agenda involving various stakeholders will guide knowledge and evidence generation and maximise the impact of investments, which is especially relevant in resource-limited areas.¹⁷

Whilst exploring the extent of health research agenda implementation in the region is beyond the scope of this commentary, it is worth noting a growing number of studies have been successful in addressing matters and priorities impacting pharmacists' roles and contributions to health in the region. Examples include the role of pharmacists in humanitarian crisis and delivery of medication-related services,¹⁸ female pharmacists' career perceptions,¹⁹ diabetes patient management by pharmacists during Ramadan,²⁰ barriers to medication adherence among patients with uncontrolled diabetes,²¹ attitude and perception of physicians and nurses toward the role of clinical pharmacists,^{22,23} and more recently issues related to the pharmacists' role during COVID-19 pandemic,²⁴ and pharmacists' aspirations and readiness to implement pharmacist prescribing.²⁵ Despite noting that the Arab region is a disparate group of nations with very different health, public health, and health systems challenges, needs and priorities,²¹ research in areas and topics as shown in the previous examples provide deeper insight and understanding of pharmacists' roles and professional positions in the region in addressing nations' health needs and priorities. Therefore, researchers need to reflect on their local context and how pharmacists, pharmaceutical scientists, and pharmacy educators can address medication-related patient and societal needs – related to social, psychosocial, economic, and organizational aspects of medicines.

4.2. Prioritising research in the workplace

Pharmacists in many Arab countries face challenges in conducting research relevant to their field of practice or interest. Some may feel overworked and underutilised according to their skillsets when it comes to progressing with research ideas. This may be complicated by insufficient funding and other priorities of the institution they work for. Sheblaq and Al Najjar reported in a 2015 study with 76 pharmacists from different Arab countries (spread across the Gulf region, North Africa, and Levant region) that the most common barriers to conducting clinical trials in the region included: inadequate training in clinical research implementation, the complexity of approval process by site's Institutional Review Board, lack of financial/grant support, lack of incentive/credit for research work and insufficient time to conduct research and generate ideas.²⁶ Additional factors that affect pharmacy research culture and capacity were noted in the literature and revolve around lack of time, limited research skills, and other work roles taking priority.²⁷

In academia, for example, one approach that can help to ensure that faculty members have adequate time to contribute to their research plans is to monitor faculty workloads using measurable criteria adequately and fairly that consider teaching load, research capacity, and community service responsibilities.²⁸

5. Capacity- “helping to strengthen national systems for pharmacy research”

5.1. Incentives, funding, and access to reliable data

A 2013 review by Ismail et al. provided an overview of health research across the Eastern Mediterranean Region (majority Arab countries) based on publicly available literature and data sources.²⁹ The authors reported that – “while there have been important improvements in productivity in the region since the early 1990s – overall research performance is poor, with critical deficits in system stewardship, research training and human resource development, and basic data surveillance”.²⁹ However, more up-to-date information is needed to better understand the extent of research and scholarly production in pharmacy in Arab countries as this information is lacking or outdated. To date, there are limited studies that assess scholarly production in pharmacy-related research.^{30,31}

There seem to be very few pharmacy-research-specific bibliometric and scientometric studies in the Arab region (i.e., studies to showcase different

facets of pharmacy-related research on health research growth, productivity, regional/global publication and rank, international collaboration, and institutional and authorship productivity profiles).³² In one scientometric analysis during 2001–2010 conducted by Alhaider et al., the Saudi Arabian contribution to pharmaceutical research during those years was analysed exploring this contribution considering the productivity profile of the world's top 15 most productive countries.³² It was revealed that the research output of Saudi Arabia in pharmaceutical science has almost doubled from the previous few years' collective count, meaning a growth rate of 44%.³² However, the global share of Saudi Arabia's publication output was only 0.5%, lagging most productive countries such as the United States (US) (24%), the United Kingdom (UK) (6.5%), and Brazil (1%).³² Published studies as previously described are lacking in other Arab countries. Similar studies facilitate monitoring and tracking scholarly and scientific publications to inform policies by objectively mapping progress in pharmacy-related research as a scientific and health knowledge area.

5.2. Capacity building and development

A key challenge in producing high-quality pharmacy practice research in the Arab region is the availability of researchers with comprehensive training in pharmaceutical health service (pharmacy practice) research methods.²⁶ Inadequate training in clinical research implementation and the lack of designed system operating procedures for the research process is another barrier that should be addressed to facilitate clinical research in the region.²⁶ Recommended strategies to enhance research culture and capacity among allied health researchers and academics are to develop their skills in research, increase job satisfaction and career advancement, foster collaborations with external partners, and develop research leadership positions aimed at addressing barriers and enablers.³³ Research positions embedded within healthcare settings can also positively influence individual and team-based skills, and research participation of pharmacists along with other allied health professionals.³⁴ Moreover, the collaboration between science and practice will strengthen national systems, having pharmacist practitioners, for example, working with university faculty members will promote a transfer of skill sets and capacity building in research.

There also needs to be a “nurturing” research environment in schools of pharmacy where research projects are featured in undergraduate programs and are routinely referred to in teaching various courses (e.g., in disciplines including social pharmacy and pharmacotherapy). This can be supported by vibrant research departments that offer creative and innovative projects to undergraduate and postgraduate pharmacy students in the Arab world.

6. Standards: “promoting good practice in pharmacy research: norms & standards”

6.1. Ethics and ethical conduct in pharmacy research

The ethical conduct of research specific to Arab countries has been the subject of recent discussions. Nakkash et al. conducted in-depth interviews with 52 researchers in Lebanon and Qatar about challenges in the research reported the importance of Institutional Review Board (IRB) functions.³⁵ This study highlighted that the presence of regulatory systems and guidelines for informed consent does not necessarily ensure that research is conducted ethically. Recommendations of specific relevance to pharmacy and pharmaceutical science researchers included a need for context and cultural considerations, timely responses to ethics applications, resources and effective operations at IRBs, outreach, and effective communication with researchers.³⁵

With a nearly non-existent peer review process, some journals and conferences often publish manuscripts containing low-quality or fraudulent science. This has serious implications for pharmacists and pharmaceutical scientists, as it could negatively impact the evidence base used to drive therapeutic and other science-related decisions.³⁶ Efforts should be made to educate pharmacy researchers on the issue of publishing their work in such

journals, which appear to target researchers in developing countries including many in the Arab region. One successful example of a program educating researchers on research ethics in relation to research was implemented by the Bibliotheca Alexandrina (Library of Alexandria) in Egypt, in collaboration with a US National Academy of Sciences (NAS) Grant. Through active learning pedagogies, this project aimed to educate young researchers on the ethics of publication and responsible authorship and provide them with the skills needed to meet international standards of publication. The program hosted multiple speakers and module planners from pharmacy schools in the Arab region.

7. Translation: “strengthening links between pharmacy research and health policy and practice”

7.1. Commitment to translational research and impact

“Translation is the process of turning observations in the laboratory, clinic and community into interventions that improve the health of individuals and the public — from diagnostics and therapeutics to medical procedures and behavioural changes”.³⁷ Simply, translational research is the new clinical research paradigm for transferring knowledge across the research and practice continuum.

In pharmacy, the focus of translational research spans discovery, development, regulation and use of pharmacologic agents to improve clinical outcomes, inform safety signals and optimal use of therapeutics in patients, and how the response to a therapeutic intervention in a particular disease may translate to a response in another disease.³⁸ Core disciplines, including clinical pharmacology, pharmacogenomics, systems pharmacology, and precision medicine play a key role in enabling translational research.³⁸

In addition, translation of research into policy and practice requires institutional and financial incentives. These matters are problematic and maybe attributable primarily to chronic under-investment – both financial and political – in Research and Development (R&D) systems in Arab countries particularly with low and middle incomes. The low fraction of patients participating in clinical research in Arab countries²⁶ further exacerbates the problem of obtaining reliable data from the region which often is context- and culture-sensitive. Another central finding that has been reported is the poverty of publicly available data on research systems which makes meaningful cross-comparisons of performance within the Arab region difficult. It is, therefore, noted that on top of increased funding, research capacity-building, reform of governance arrangements, and sustained political investment in research support are needed. A commitment to translating research into practice by piloting solutions to real and relevant health issues in the community is important for the benefit of Arab countries where such research is conducted.

7.2. Recognising the pharmaceutical industry, clinical research, & translational research as interwoven disciplines

Translational research provides a two-way street bridging basic science and clinical therapeutics, leading to the discovery of new drug delivery systems and new indications for drugs. It provides a continuous and open dialogue between scientists, healthcare providers, and indirectly the end-user (patient) which leads to more discoveries being developed for healthcare systems, industries, and society.^{39,40} By introducing and implementing translational research between scientists, faculty members and health care providers, translational research is more likely to be developed, supported, and sustained. This may be established by collaborative links and sponsorship between faculty, staff, and R&D in pharmaceutical industries as well as community and hospital settings

8. Summary

See Table 2.

9. Conclusion

Transformation begins with an analysis of the situation to provide an opportunity to gather, analyse, and report data on all aspects related to research and learning, and economy and community needs.⁴¹ Research in the Arab world has evolved, but steps can be taken to further advance quality research in pharmacy across all sectors in practice, science, and academia in the Arab region. In this commentary, the authors have provided perspectives from available published information and professional expertise on pharmacy research in Arab countries, successful examples, and recommendations. The authors recommend that while gathering, analysing, and reporting on data are important steps in transforming pharmacy research in Arab countries, these must be strengthened by nurturing organizational research culture, capacity building, setting of national and regional priorities, identifying standards and ensuring principles of translational research are applied in practice.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

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