

## RESEARCH

### Stakeholders' Perspectives on Quality Assurance of Pharmacy Education in the Eastern Mediterranean Region

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**Objective.** To explore pharmacy stakeholders' perspectives in the Eastern Mediterranean Region (EMR) on pharmacy education and quality assurance.

**Method.** Thirty-two interviews were conducted with professionals from 15 EMR countries, exploring pharmacy education in the region. Themes were mapped to the five pillars of the International Pharmaceutical Federation's Global Framework on Quality Assurance of Pharmacy Education.

**Results.** Nine challenges were identified across the framework on country-, institution-, and faculty-level. These challenges were political-socioeconomic instability; limited accreditation and quality assurance measures; insufficient engagement of professional organizations; disconnect between academia, practice and regulatory sectors; curricula shortcomings; skills-gaps; absence of competency frameworks; inconsistencies in pre-registration training; and professional development mechanisms.

**Conclusion.** Vast inter-/intra-regional variability in pharmacy education and quality assurance measures was revealed. The lack of pharmacy-specific national/regional competency frameworks and quality assurance systems has implications for stakeholders in the profession. Progress in this area is crucial for pharmacy education in the EMR.

**Keywords:** pharmacy education, quality assurance, competency-based education, Eastern Mediterranean region, Middle East

## INTRODUCTION

Today, transforming and upgrading health professional education remains a pressing issue in many countries, with the World Health Organization (WHO) calling for enhanced quantity, quality and relevance of health professional training to strengthen country health systems and improve health outcomes.<sup>1</sup> As the main role of pharmacists is centered on access to medicines, health care and medicine information, pharmacy education must prepare graduates with appropriate competencies (knowledge, skills, attitudes and values) to fulfill these responsibilities.<sup>2</sup> Academics, policy-makers and pharmacy profession representatives around the globe are frequently called upon to collectively improve competencies of pharmacists to meet increasing societal health care needs. For example, in 2004, the Joint Commission of Pharmacy Practitioners (JCPP) in the United States articulated a vision for pharmacy practice and stated that by 2015 "Pharmacy education will prepare pharmacists to provide patient-

centered and population-based care that optimizes medication therapy; to manage health care system resources to improve therapeutic outcomes; and to promote health improvement, wellness, and disease prevention."<sup>3</sup>

In recent years, the International Pharmaceutical Federation (FIP) initiated competency-based educational programs and frameworks to evaluate and enhance the quality of education, and to support countries in their mission to build a competent and capable practitioner workforce.<sup>4-9</sup> The FIP Global Competency Framework (GbCF) is one initiative envisioned as a self-assessment tool to be used on a national level or by individual institutions for quality assurance.<sup>5</sup> As many countries have not yet developed national frameworks, or might be in the process of doing so, FIP recommends these countries use this tool, in development of their frameworks.

The education of pharmacists should be viewed and treated as a continuum (ie, starting from undergraduate education to lifelong continuing professional development).<sup>8</sup> Ultimately, stakeholders of the profession who are working toward harmonization of practice-based expectations of practitioners should see the importance and applicability of competency-based frameworks.<sup>5</sup>

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In pharmacy education, optimal quality assurance measures require a vision for pharmacy practice and professional education, and an understanding of the philosophy and purpose of quality assurance in pharmacy education.<sup>7</sup> A recent model adopted by FIP's Global Framework for Quality Assurance of Pharmacy Education proposes five pillars (context, structure, process, outcomes and impact) and three foundations (science, practice and ethics) to quality in pharmacy education (Figure 1).<sup>7</sup> The model with its eight elements of quality can serve as a mapping tool to plan and develop improvements in areas with inadequate quality assessment processes.<sup>7</sup> It can be used as a framework to discuss key aspirations, challenges, and facilitators in specific countries that affect the advancement and quality assurance of pharmacy education.

Based on such developments, many countries have implemented major changes to university training of pharmacy students, however, there is vast inter and intra-country variability.<sup>4,8</sup> The Eastern Mediterranean Region (EMR), comprised of 22 countries, is one of the six regions grouped by the World Health Organization (WHO).<sup>10</sup> The EMR has hundreds of pharmacy schools, some of which have made impactful developments on practice through advancing pharmacy education and are major exporters of pharmacists to other countries.<sup>11,12</sup> In a 2013 Global Education Report from FIP, the EMR was represented by 11 countries, and yet, aggregated data indicated, as a region, the EMR had large educational capacity with high pharmacy-graduate production capacity

preceded only by the Western Pacific Region.<sup>4</sup> Data from the same report indicated Egypt and Jordan were two of the highest pharmacy-graduate producing countries in the world.<sup>4</sup> Pharmacy education in some countries in the EMR is undergoing steady changes to align with international teaching and practice models. Achievements in the region are vast but vary from one country to the next and range from an increase in the number of pharmacy schools, curricula re-evaluation and introduction of new courses and degrees, to rapid advancement in pharmacy education and instigation of professional competencies.<sup>13-17</sup> However, pharmacy education and practice in the EMR face dilemmas, especially in countries where progress from the business-oriented and profit-driven model to patient-oriented service-provider model is slow.<sup>18</sup> Poor public image and absence of physician support to perform pharmaceutical care or clinical services further complicates matters for many EMR countries that strive to improve the place of pharmacists in society.<sup>19,20</sup>

In light of global initiatives and developments, a recent literature review on the extent of competency-based pharmacy education in the EMR found a paucity of studies that specifically investigated aspects of competence in undergraduate education.<sup>21</sup> And while there is a need for more competency-based pharmacy education in the EMR, many unanswered questions to inform policy dialogue on the extent of country-specific aspirations and challenges facing the profession remain. Despite common language, shared culture and history for many EMR countries, economic, demographic and social diversities exist across the region, also heavily marked by political unrest.<sup>22</sup> The EMR also differs from other regions in terms of its socioeconomic development. One report stated "wealth disparities within the individual societies are relatively low; on the other hand, wealth disparities between the oil-rich Gulf monarchies and the populous resource-poor countries are tremendous."<sup>23</sup>

Due to the paucity of literature about quality assurance of pharmacy education in the EMR, the aim of this research was to explore country-specific factors that influence pharmacy education in the EMR and perceptions of how undergraduate pharmacy education can be advanced to produce competent graduate pharmacists on par with global standards.

## METHODS

This research was approved by the Human Research Ethics Committee at the University of Sydney. Recruitment of participants was via dissemination of written invitations to key stakeholders in all EMR countries<sup>10</sup> including educators, practitioners, employers, regulators, and policymakers. A purposeful, maximum variation sampling was used.<sup>24</sup> Key

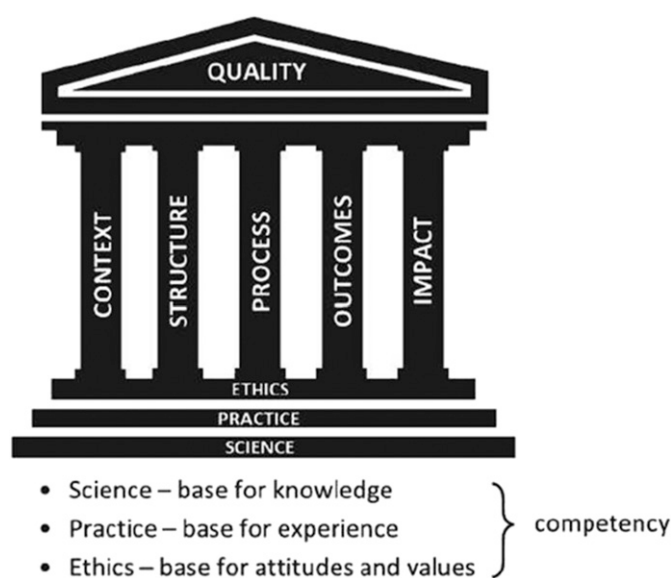


Figure 1. Pillars and Foundations of Educational Quality-FIP Global Framework for Quality Assurance of Pharmacy Education.<sup>7,8</sup>

stakeholders in academic and hospital pharmacy in the EMR through FIP's hospital and academic pharmacy sections were initially identified, and subsequent participants were recruited through passive snow-ball sampling.

Semi-structured interviews were conducted using an interview guide (Appendix 1) based on the available literature and objectives of the study.<sup>21</sup> Semi-structured interviews were chosen to allow the interviewer considerable latitude to adapt questions to the specific direction of responses allowing for more intuitive and natural conversations.<sup>25</sup> This type of interview is useful when exploring research areas that are complex or in which little is known. It allows exploration of individuals' perceptions from their own experiences, giving the researcher opportunities for further probing.<sup>26</sup> At the end of the discussion, participants were given the opportunity to make further contributions. All interviews were conducted in English, face to face or via video-conference, either with one participant or in a group, according to participants' convenience. Data saturation was established after approximately 25 interviews had been conducted, and transcripts did not identify new emergent concepts. However, to provide comprehensive insights, the interviews continued with a diverse range of pharmacy professionals to gather data from the majority of countries in the region. All interviews were transcribed verbatim and subsequently verified with participants by the primary investigator.

Qualitative analysis was supported by NVivo10 software (Melbourne, Australia). Data were thematically analyzed using the framework approach<sup>27</sup> and themes were mapped to the FIP Global Quality Assurance Framework.<sup>7</sup> Framework analysis is a qualitative method that is "aptly suited for applied policy research,"<sup>28</sup> requires specific information gathering and has the potential to create actionable outcomes.<sup>27</sup> Framework analysis may generate theories, but the main concern is to describe and interpret what is happening in a particular setting.<sup>27</sup> To ensure the quality of the analysis, team members independently reviewed transcripts and met regularly to discuss and resolve any discrepancies in interpreting themes. Steps taken in the framework approach were familiarization – involving immersion in data, listening to recordings, and rereading transcripts; identifying a thematic framework within which the material can be sorted (FIP Global Quality Assurance Framework<sup>7</sup>); indexing; charting; mapping; and interpreting data into emerging themes. Emergent concepts were categorized into country-specific, institution-specific or faculty-specific related factors affecting pharmacy education in the region.

## RESULTS

Thirty-one interviews were conducted from March to September 2014 and included 32 professionals from 15

EMR countries (Table 1). One participant opted not to have a recorded interview and provided written answers to interview questions. There were 19 face-to-face and 12 video-conference interviews conducted. Interviews lasted 10-50 minutes, with the majority running over 30 minutes. Participants were from various sectors of pharmacy practice in the region: academia (deans of pharmacy schools and senior lecturers), hospital pharmacy (directors of pharmacy and clinical pharmacists), community pharmacy, professional bodies (eg, pharmaceutical society), and governmental agencies (eg, Ministry of Health) (Table 2). All participants had post-graduate qualifications in pharmacy, 15 were males. Appendix 2 illustrates representative quotes for each of the themes and sub-themes reported.

Political struggles and socioeconomic circumstances were seen to be crippling issues preventing the advancement of pharmacy education in some EMR countries. The unique political situation in certain countries affected people throughout their training and subsequent careers. Further, senior academics expressed that political instability and subsequent lack of monitoring from governing bodies had often interfered with processes occurring in academic institutions, such as pharmacy school entry requirements, students' performance and opportunities to pursue post-graduate education.

Moreover, in some countries, participants expressed their frustration and reported shortages of local expertise and specialized pharmacists to teach in universities. They attributed this to political and social struggles. Few participants explained that shortages in local expertise were due to several factors which included: lack of local (from

Table1. Country Distribution of Study Participants

Country	Abbreviation	Number of Participants
Afghanistan	AFG	1
Egypt	EGY	3
Iran	IRN	2
Jordan	JOR	2
Kuwait	KUW	1
Lebanon	LEB	2
Libya	LIB	1
Oman	OMN	1
Pakistan	PAK	2
Palestine	PAL	2
Qatar	QAT	2
Saudi Arabia	KSA	8
Sudan	SUD	2
Syria	SYR	1
United Arab Emirates	UAE	2
Total		32

Table 2. Sector Distribution of Study Participants

Sector	Number of Participants
Academia	12
Hospital	10
Community	3
Professional bodies	2
Governmental and regulatory agencies	3
Research	2

their own country) pharmacists with postgraduate qualifications and migration of pharmacists to neighboring or Western countries for better working opportunities.

Lack of quality assurance standards have affected the advancement of pharmacy programs in the EMR. It was suggested that professional accrediting bodies should create national committees composed of representatives from pharmacy education, practice, and regulation for quality assurance in pharmacy education. Some participants reported that accreditation acquired from Western organizations provided credibility to pharmacy programs in the EMR. Variability in regulatory procedures and accreditation standards in some countries were reported to cause disparity in the quality of education provided by different schools of pharmacy within the same country, leading to disparity in the overall competence of graduate pharmacists. Where accreditation standards for pharmacy schools are available, these standards were reported by some participants to guide educational institutions.

Participants explained that the presence of national representative organizations in each country were important to represent the profession and advocate for the needs of pharmacists, including education. Furthermore, professional organizations were considered by some to be vital to formulate and implement competency standards and principles of codes of conduct. Currently such organizations were seen by many participants as lacking or ineffective.

Participants from all sectors were often concerned about the lack of inter-country/national collaboration between academic, regulatory and practice sectors. One participant expressed that segregation of hospital pharmacy from community pharmacy and the pharmaceutical industry posed challenges, particularly on a national level. Participants proposed more collaboration is needed between the various sectors in pharmacy.

Participants drew attention to barriers and facilitators to implementing a competency framework at a country-specific level. One barrier identified was a disconnect between key stakeholders in pharmacy which was attributed to lack of cohesion and shared vision. Inter-collaboration

between academic, practice and regulatory sectors was reportedly needed to design and implement a competency framework. External collaboration was identified as beneficial in some EMR countries.

Contextual issues that emerged at the country level were recurring issues affecting the university context. Variations between pharmacy schools on student admission criteria was mentioned as a problem. It was attributed to the increased numbers of pharmacy schools in the region. This was perceived by the majority of participants to reflect a “quantity vs quality” issue. Public universities tended to accept more students who had achieved high scores in the last year of high school or equivalent. Private universities tended to accept large numbers of students with a wider range of scores. Although large student numbers increased revenue, it also created burden on under-resourced systems.

Contextual related issues that resonated to faculty level are the same as those presented previously under country-level. Two main themes emerged from discussing curriculum: modernization and refinement of curricula were needed, and curricula content and educational outcomes needed to be aligned with country-specific needs. For the majority of participants, pharmacy schools in the EMR provided strong foundations in pharmaceutical sciences and theory-based knowledge throughout the duration of undergraduate training. Despite this, participants expressed that repetition of courses and knowledge-overload were undesirable. But, all participants reported a desire to modernize curricula and saw a need to better align curricular content with desired educational outcomes to better prepare graduates meet the needs of society. Most participants also acknowledged that curriculum revision required input from academic staff and professionals in practice.

Recruitment and retention of academic staff was expressed as challenging by some participants because of shortage of local expertise and low retention rates of staff. Participants discussed reasons deterring pharmacists from joining the academic workforce and issues highlighted by participants included low wages and limited postgraduate research positions. Low wages offered to fill academic positions particularly in low socioeconomic countries were described as discouraging for pharmacists to join and remain in academia. Academic participants indicated that there was also a need for employing pharmacy academics who are specialists in teaching pharmacy-specific subjects.

Participants reported issues with experiential training programs. These included limited placements in training sites, limited number of clinical preceptors and the need for stringent monitoring of training programs. It is



noteworthy that where clinical pharmacy services are still developing, clinical training was reportedly challenging.

Participants from low socio-economic countries reported that insufficient funding to universities and faculties contributed to deficiencies in pharmacy teaching resources, such as drug information books and databases.

Participants spoke about the importance of modern teaching, learning methods, and diversification in students' assessment approaches to ensure that students are being assessed on their level of competency to apply acquired knowledge at work after graduation. A more contemporary pharmacy curriculum with alignment of courses to competency standards was lacking in most institutions.

Responses varied among different countries on the general level of competence of graduate pharmacists and their preparedness to practice at an appropriate level. Few perceived that the training provided to students was sufficient. In contrast, other schools had undergone major curriculum reform and felt their training was of high quality. However, more participants described a notion of the skills-gap between theory-based learning and knowledge application in practice. The skills-gap reportedly was due to limited skills in providing pharmaceutical care services, deficiencies in communication skills especially for patient counselling. Although, others reported that the gap was in the opposite direction. In contrast to students not being equipped with competencies ready for work due to a science-dominated curricula, in some countries, PharmD graduates were considered overqualified for the workplace and some participants explained this was further complicated due to lack of official job description for PharmD graduates. The prevalent switch to the PharmD degree was perceived by some participants as important to stay current with global changes in pharmacy education. Still, others agreed that it was useful to equip pharmacy students with PharmD skills as the profession evolves. Some participants acknowledged that the PharmD degree provided students with opportunities through which they are able to develop a comprehensive professional demeanor.

To formulate and implement a national competency framework is an acceptable strategy to reinforce quality assurance of pharmacy education in the EMR for all participants. Participants expressed that competency standards would provide guidance for academics to ensure that curricula content is well aligned with desired competencies across pharmacy schools in each country. Academic participants from three pharmacy schools highlighted that the pharmacy programs offered at their universities conform to competency standards based on an international accreditation. These academics voiced

confidence in the quality of these programs and the high standard of pharmacy graduates. High level of training and practice-based teaching in these institutions was distinguished.

Hospital directors highlighted that graduate pharmacists receive competency-based training and assessment upon joining hospital pharmacy. This was particularly emphasized in hospitals that have Western-based accreditation or affiliation where training and assessment processes of pharmacists are mandated by the department. However, participants expressed a national competency framework would allow for consistency across pharmacy schools in sharing commonly desired educational outcomes.

As part of accomplishing long-term objectives of educational programs for graduate pharmacists, it is imperative to accept the lifelong obligation to maintain and enhance professional knowledge and competence. Participants also highlighted the need for competency-based training and assessment and their importance in initial registration of graduate pharmacists.

It was unclear to some participants whether graduate pharmacists go on in their professional lives as recognizable health care professionals to represent the profession maintaining competence, upholding ethics and advocating the development of the profession. There was also shared apprehension toward the future of pharmacists and the profession among the majority of participants. Participants reported the changing face of the profession warranted revision of competencies required for the future roles of pharmacists in the EMR to reflect a transformation to more professional, specialized and cognitive services needed by society and patients.

In summary, findings of this study have highlighted nine major challenges facing pharmacy education in the region: political and socioeconomic instability in the region leading to instability in the functioning of pharmacy schools, limited pharmacy-program specific accreditation and quality assurance measures; insufficient support and engagement from organizational representation of the pharmacy profession; disconnect between academic, practice and regulatory sectors; curriculum design and student training, including experiential education, infrequently reflect a needs-based approach to pharmacy education, addressing individual and societal health needs; perceived skills-gap between theory and practice for entry-level pharmacists; absence of clear national (country-specific) competency frameworks to guide curricula development at pharmacy schools and practice; inconsistencies of pre-registration training and licensure requirements; and inconsistencies in provision and audit of professional development.

## DISCUSSION

To the authors' knowledge, this was the first study to explore challenges and aspirations of pharmacy professionals in relation to pharmacy undergraduate education in the Eastern Mediterranean region. Findings of this study came from professionals with different perspectives and varying backgrounds. Despite it being a region fraught with difficulties and complexities, the EMR has witnessed achievements and evolution in pharmacy education over the years. The findings highlighted interrelated factors that render quality assurance of pharmacy education in the region challenging. Thematic analysis of interview data and mapping to the Quality Assurance of Pharmacy Education Framework<sup>7</sup> identified nine challenges crossing all five elements (context, structure, process, outcomes, impact) of quality assurance. Challenges facing pharmacy education in the EMR varied between countries and within countries. As concepts emerged from the data, it was apparent that participants perceived challenges from three different lenses: country-level, institution-level and faculty-level.

Political, social and economic issues, unique to the region, were dominant perplexing factors to pharmacy education. For the majority of countries, resonating effects of contextual issues seem to produce a ripple effect on the operations of faculties. For many participants, political instability and varied socio-economic levels were seen as major barriers to advancing quality in pharmacy education. One of the many challenges but most central to many governments across the EMR is addressing the socioeconomic and governance issues which generates discord and displacement of nationals to countries all around the world.<sup>29</sup> However, variability among EMR countries makes generalizability impossible in this context, as Blair and colleagues also describe: "the Arab World, however defined, is too heterogeneous to allow meaningful communal debate of their problems and solutions." But an overall impression of contextual problems faced by EMR countries were identified and shared by the majority of participants in this study. Political unrest in other parts of the world has similarly often led to loss of infrastructure, personnel, reduced expenditure on education and diminished student enrolment in educational institutions.<sup>30,31</sup> In this study, participants expressed a sense of frustration. Living in countries that have endured social or political unrest, it is not surprising, especially when higher education qualifications in the EMR do not guarantee employment, that there are high levels of emigration in search of better work opportunities and living conditions.<sup>32</sup> Participants described that shortages in academic expertise were too often a result of emigration of expertise. The effects of political, social or economic turbulence is not

exclusive to the EMR. Recent financial crises in Europe, for example, affected educational funding and caused academic similar expertise migration.<sup>33</sup> In other countries, political and social unrest were also associated with student unrest in higher education due to lack of stability.<sup>34</sup>

Participants reported variance and inconsistencies in accreditation and quality assurance measures in pharmacy schools across the region, as one of the major challenges. Student admission pre-requisites, for example, were considered particularly inconsistent especially with the rise in number of pharmacy schools in many EMR countries. Regulatory mechanisms that are uniform across all pharmacy schools in one country were considered lacking to monitor this expansion. Reportedly, oversupply of pharmacists especially in countries with surplus of pharmacists and limited job opportunities is problematic in some EMR countries.<sup>6</sup> The issue of oversupply of pharmacists from pharmacy schools is reported in the literature elsewhere in the world. In France, for example, one way the number of pharmacists was controlled is by a quota, which was achieved by controlling the number of students permitted to access second year to only those who attained a high score rank in a competitive examination at the end of the first year.<sup>35</sup>

A mismatch between the supply of pharmacists and what countries need is reflected in the overall lack of a needs-based approach to pharmacy education in the region. One such manifestation of this was perceived to be an out-of-place PharmD degree in the EMR, leaving graduates with PharmD qualifications uncertain of their future career options due to limited clinical services and absence of job descriptions for PharmD graduates in their home country.<sup>36-39</sup> It has been advocated that a needs-based approach to pharmacy education and better collaborative efforts with developed countries would be more beneficial than for developing countries such as some of those in the EMR to merely export models of education from developed countries in absence of identifying local needs.<sup>40</sup> While modelling pharmacy programs against Western standards may benefit non-Western countries, it is not without its own set of challenges – inadequacies within curricula, limited practice-based facilities and inexperienced preceptors are common issues faced by pharmacy schools in the region.<sup>39</sup> Needs-based educational approach is tied closely with competency-based education. It is accepted that a "competency-based approach is a disciplined approach to specify the health problems to be addressed, identify the requisite competencies required of graduates for health system performance, tailor the curriculum to achieve competencies, and assess achievements and shortfalls."<sup>41</sup> Participants agreed that more emphasis on competency-based education is

required in the region to allow for a highly effective learning process rather than the traditional, one-size-fits-all curriculum.

Countries in the EMR have yet to adopt a competency framework on a national level to inform and guide educational institutions and regulatory bodies on practitioner competency needs. Yet despite limited published evidence of competency-based education in the region, efforts to advance education in many EMR countries is evident and impressive.<sup>11,21</sup> There is a need for national competency-based frameworks specific to countries in the region to guide academia and fulfil the needs of practice but as participants indicated, this will become an achievable goal only when key members of the profession from various sectors and governmental officials sit at the same table. In this study, disconnect between academic, practice and regulatory sectors in the EMR was considered an obstacle in the way to strengthen pharmacy education and quality assurance. This finding resonates with issues raised by a recent study on the challenges facing pharmacy education in Jordan.<sup>42</sup> Bader and colleagues illustrated that challenges facing pharmacy education in Jordan are multifaceted and could be traced to one or more disconnections between practice, education and regulation and highlights the importance of multi-sector engagement and collaboration.<sup>42</sup> Outside the EMR, successful adaptation and modification of the FIP's GbCF as a model has been cited in the literature where it required the support and collaboration of governments and pharmacy organizations.<sup>43,44</sup>

The notion of a "skills-gap" or disparity in graduate performance was perceived by participants. The dissociation between knowledge acquisition and graduates' inability to apply this knowledge into practice was reported particularly when dealing with patients. Two facets to the disparity were perceived: unpreparedness of graduate pharmacists (due to academic reasons/lack of training) and restrictive practice settings. This has been reported elsewhere in the literature. In a study by Bader and colleagues, 53 cross-sector professionals in Jordan identified performance gaps in graduates across the four domains of the GbCF; pharmaceutical care, professional, managerial and public health related skills.<sup>45</sup> Similarly, a 2014 survey in Thailand revealed pharmacy graduates of Bachelor of Pharmacy degree were considered inadequately trained and not prepared for post-graduation practice.<sup>46</sup> Notwithstanding, many in the region attribute pharmacists' narrow scopes of practice, particularly in community pharmacies, to the somewhat "traditional" models of practice in the region, poor public understanding of the pharmacist's role in medication management,<sup>47</sup> and physicians' trepidation toward the evolving roles of pharmacists, particularly in

providing patient-oriented roles.<sup>20,48,49</sup> Pharmacists are expected to use their expert knowledge and skills in practice to provide higher-level patient-oriented pharmacy services to counter negative connotations associated with their role in society.<sup>48</sup>

Similar issues to our findings have been raised over the years in the medical literature highlighting the disparity between theory and practice in other health professions' education.<sup>41,50</sup> The literature presents illustrations of initiatives to address the skills-gap in health professions' education. For example, curricula design and content;<sup>51</sup> move toward lecturer-practitioner model (hybrid role) in training,<sup>52</sup> innovations in teaching and learning methods<sup>53</sup> are exemplary areas addressed to advance education and training in nursing. In pharmacy education, outcomes-based approach to curriculum development was reported to improve graduate students' performance for a range of competencies.<sup>54</sup> Various initiatives have taken place in the EMR academic and practice settings to advance skills of pharmacy students in communication, clinical skills, drug information and interprofessional collaboration.<sup>55-59</sup> In addition, efforts to promote pharmacists lifelong learning and professional development in the region are emerging, but robust mechanisms of enforcing such programs are needed.<sup>60-63</sup>

The challenges reported in this study, in isolation of political or socioeconomic issues, draw attention to eight pressing issues/areas that can be addressed by stakeholders and governmental agencies on country-bases. The authors recommend that stakeholders investigate each of the challenges identified in this study in the context of their countries' needs and endeavour to address them in consultation with the various concerned sectors in pharmacy.

This study attempted to find examples of where perceptions and views intercepted in the examined countries, and how these perceptions can be interpreted in the context of competency framework development and implementation. It provided insights into the way participants feel about pharmacy education and aimed to understand the struggles and achievements in this region. However, not all countries and schools in the EMR were involved in this research and due to the qualitative nature of this study, the authors do not seek to generalize findings to the rest of the EMR as countries differ on cultural, socioeconomic and political standings.

## CONCLUSION

EMR countries are not homogeneous and national differences in political stability, social and economic structures require consideration when addressing challenges and achievements of pharmacy education. Extent



of needs-based approach to education, program accreditation standards and competencies reportedly varied across the region. Although in many EMR countries context-specific priorities take precedence, the region offers exciting opportunities for advancing pharmacy education. Standards and frameworks available to us through FIP and other avenues, are tools on the journey to developing a competent workforce in the region bearing in mind that “no one size fits all.” Lastly and by far most importantly, professionals, stakeholders, and students must sit at the same table; utilize research-based recommendations to construct positive interventions that are context-specific and needs-based.

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Appendix 1. Participant Interview Sample Questions

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Can you describe your current role in your institution?

What are your views on the caliber of academic staff in your department?

Do you face any issues recruiting staff in academia? If yes, in what areas?

Can you describe the undergraduate pharmacy student training program provided by the institution?

What challenges are there in graduating good quality pharmacy students?

What is the gap between pharmacy education system and practice in reality in (name country)?

What are the barriers and facilitators to implementing competency-based pharmacy practice on a national level?

How does your department (non-academic sector) contribute to the education and training of undergraduate pharmacy students?

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Appendix 2. Stakeholder Comments on Pharmacy Education in the EMR

Factor Category Pillar of Quality	Concept	Quotations
Country-level Factors Context	Political and socioeconomic instability	[KSA7-Academia] “The government allows opening of new schools of pharmacy without setting standards, that’s why there is a discrepancy between programs and graduates from different schools.” [AFG-Academia] “During the war, the faculty building was destroyed. Many professors and experts in our field left the country and didn’t come back for economic and security reasons.” [LIB-Academia] “It’s not necessary to be a good capable student, to be offered a scholarship for post-graduate studies. . .political beliefs are much more important.” [PAL2-Academia] “My country is under occupation. . .I cannot point to any association or ministry or the universities and talk about their plans, in isolation of the political situation. The student who is going to his university can get held up by a military check point, forced to go back home, and might spend half a semester away from the university.”
	Accreditation	[PAK1-Regulatory] “We have over 50 institutions [schools of pharmacy]. There could differences between the schools but they all have to meet the minimal accrediting standards. . .we [regulatory body] make a point that they fulfil the minimum which we set.”
	Representative organizations	[UAE1-Hospital] “We lack a professional pharmacy body because of political and governmental issues. . .there is a need for a pharmacy body where pharmacists can express their views and concerns. . .it needs to be a body in the real sense rather than just a name.”
	Lack of collaboration and shared vision	[OMN-Academia] “Unfortunately, we are in silos. . .we have fragmented responsibilities. . .shared vision will never happen before sitting together and to see where we are and what we are aiming for.” [PAK2-Hospital] “There is significant compartmentalisation in the pharmacy profession in my country. . .we have a challenge in the sense that the pharmacy profession at large is not very organized.”
	Increased number of pharmacy schools and students	[AFG-Academia] “The big problem in private universities is that they work for profit; not really for the pharmacy profession. . .some students enrol at the start of the semester, and they come back at the end of the semester only to pass exams. . .it’s not competency-based learning. But in our faculty of pharmacy because it’s a government faculty, we try to keep our standards high.” [EGY1-Academia] “There is great variability in educational backgrounds of students. . .We have students coming from government schools; and then we have students with British, German, American, or Canadian certificates. We have so many different high school certificates giving different backgrounds and abilities to students that makes the first year of pharmacy very difficult for the professors to harmonize the study between the different students.”
Institution-level Factors		

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Appendix 2. (Continued)

Factor Category Pillar of Quality	Concept	Quotations
<b>Faculty-level Factors</b> Structure	Curriculum revision and refinement	[EGY2-Research] "We have more than 1,000 students in first year pharmacy alone. Practical work [experimental-based] divided over ten sections. That's one hundred students per section for each practical session. Sometimes they are further divided into 2 subsections, that's 50 students per section . . . if they are going to work on a rat, are they going to provide us with 50 rats? No, it's going to be one rat for the 50 students; so they might as well just watch the demonstrator perform the experiment."
		[IRN1-Community] "Entering pharmacy is as difficult to get into as medicine . . . students have to get high marks in final year of high school and take a national entrance exam . . . you have to be in the top 1000 people in the whole country to be able to study pharmacy."
		[EGY3-Academia] "Our dean wants to get Canadian accreditation and is doing all this nice work. . . I feel the reason he was successful is that they [pharmacy school administration] had the motive to change and created a hybrid-like program. A bachelor of pharmaceutical science, but it's not as traditional bachelor degree, it looks more like a PharmD . . . the dean wanted to modernize and help graduates work with their gained skills."
		[KSA1-Academia] "I think the undergraduate pharmacy-training program in our institute is probably of a high calibre but the question really is 'is it fulfilling the needs of the country? Will it produce graduates who will be able to take their place in society and work as professional pharmacists?' That is yet to be determined."
		[KSA3-Hospital] "Need for more emphasis on clinical practice within undergraduate curricula to better prepare graduates for internship programs, especially in hospital pharmacy . . . when pharmacy graduates join our hospital we find there is a need to give them condensed training to fill any skill-gaps."
		[KSA7-Academia] "When we designed the curriculum at our university, we looked at all stakeholders including pharmacists from practice as they are the people who are going to train graduate pharmacists and employ graduate pharmacists . . . that's why I believe we succeeded . . . I believe that other colleges did not do that."
		[PAL1-Academia] "we face resistance from some academics who often don't see the value in incorporating more pharmacology and clinical courses to the curriculum . . . the pharmacy profession has shifted . . . chemistry is no longer the most important thing in pharmacy-for example-so curricular plans are just not reality-based and it's the need to move from this chemistry-mentality to the clinical-mentality, it's not easy."

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Appendix 2. (Continued)

Factor Category Pillar of Quality	Concept	Quotations
Recruitment and retention of academic staff		[AFG-Academia] “Another problem is that we have no experts to teach new subjects. We have the curriculum, the content, but no professionals. For example, for biostatistics, our lecturers come from faculty of economics. But their statistic courses are completely different from our statistics (in pharmacy). They for example, teach about bank, money, or economic issues, but not biostatistics.”
		[LEB1-Academia] “We have administrative difficulties recruiting and retaining staff members, because this process depends on political stability.”
		[SUD1- Government] “Recently due to political issues and migration of most of our [academic] manpower -our PhD holders and professors- it is very difficult to supervise research students. Supervisors supervise more than seven or ten researchers at one time so the follow-up is limited. Academics staff teach in many faculties so the time factor decreases the quality of education in our faculties.”
		[SUD2-Government] “Most of our staff need to have two jobs. I’m working two jobs. The salary for pharmacists in academia is really low compared with other areas of pharmacy.”
		[JOR2-Research] “In the last year of training there is a practical training course in community pharmacy for about three months. This is maybe the only course in the University that describes the practice in community pharmacy but this is only three out of 165 total credit hours for the entire degree.”
Experiential training issues		[LEB2-Academia] “Clinical pharmacy is a very recent area of practice here. We do not have government regulations or policies for hospitals to recruit clinical pharmacists. Hospitals don’t see the value of having clinical pharmacists; that is one of the challenges we face...And you hear our students when they graduate from our PharmD program asking: ‘what are we going to do? What are the opportunities that we have as clinicians?’ ...There is a major gap between pharmacy education and clinical pharmacy.”
		[LJB-Academia] “Students receive limited training in pharmacy practice, except during summertime. Sometimes students go to community pharmacy to do some training, but without proper supervision...It’s like they can take it or leave it. It’s not compulsory.”
		[SYR-Community] “We [students] didn’t have resources. . . we didn’t have reference books. We didn’t have internet access to different websites. If I wanted to look up drug information I would go to Google which is not ideal. . .the only way to pass is to study from lecture notes. That’s the only thing we had. The library we had was poor. Not having resources was the worst thing.”
Physical facilities and resources		

(Continued)

Appendix 2. (Continued)

Factor Category Pillar of Quality	Concept	Quotations
Process	Teaching, learning and assessment methodologies	[LEB1-Academia] "Teaching students self-learning rather than spoon-feeding them the information would be the best tool." [UAE1-Hospital] "Pharmacists are not trained to deal with ambiguities and if something is not written in textbooks or clinical guidelines, they feel confused and unlike doctors on the other hand who are better-trained to treat each case as an individual case...we must teach pharmacy students in undergraduate years critical thinking and problem solving skills."
Outcomes	Skills-gap between theory and practice	[JOR1-Hospital] "Students have strong theoretical background...but none of them [students] actually can use it in practice...the main duty for pharmacists remains to be only dispensing." [KSA3-Hospital] "Students' understanding is tested by an exam...they study therapeutics for example and later have a written exam...that I consider is a good assessment of knowledge...but this is theoretical...when it comes to practice...it is a problem." [KSA7-Academia] "For the time being we need both degrees...because we feel that the shortage is high...industry needs the BSc, not PharmD pharmacists ... but hospitals need PharmD pharmacists...so we need to fill the shortage." [LEB1-Academia] "We have a 6-year PharmD program (mainly clinical pharmacy applied within the hospital or the community)...I am convinced that PharmD students have higher level of maturity and self-confidence; however, this degree is not required for practicing pharmacy." [PAK2-Hospital] "PharmD was more in fashion because globally, everybody was going for a 5-year curriculum and most people were following the United States." [PAL1-Academia] "I think that we're giving them a lot of science...but I don't think we're giving them enough skills, to ask open-ended questions, to try to find a way to initiate small talk with patients...to move to the next level [in conversation] of asking them about their medications. We're not training them to ask questions that would not be answered with just yes or no." [QAT1-Hospital] "There is variation between students but in general our students are excellent...they are competent." [EGY3-Academia] "If education reform succeeds in Egypt, I feel it's going to have a strong influence on the rest of the Arab world." [KSA1-Academia] "A national framework of competencies allows us to standardise pharmacy education throughout the country...because at the end of the day, these pharmacists will be taking their place in society...and I need to be able to go from one pharmacy to the next in community or in hospital and know that the pharmacist that's going to see me has had similar training as other pharmacists." [KSA6-Hospital] "We established training courses to improve the level of [practice] of pharmacists working in IV [intravenous and chemotherapy preparation] section of pharmacy everywhere in the country...the feedback and the response was amazing...but it was hard because it was a nationwide initiative to standardize practice."

(Continued)

Appendix 2. (Continued)

Factor Category Pillar of Quality	Concept	Quotations
		<p>[SUDI-Government] "With a framework of competencies we can improve our practice. . .that is what we need in this country because we are limited in number and we have to move up with our maximum capacity."</p> <p>[UAE2-Government] "We have national and governmental initiatives to unify the licensing process across the country."</p>
	Barriers and facilitators to establish national competency framework	<p>[LEB1-Academia] "Leadership has to be taken by an official authority to install it, which is not currently a priority...faculties of pharmacy in the country have to abide by it, which is not always the case...this way of thinking needs time and effort. . .It also needs human resources and engagement of authorities and other stakeholders...the Ministry of Health, the Order of Pharmacists, or an NGO are responsible for implementation of a national competency framework"</p> <p>[UAE2-Government] "Pharmacists come to work from all around the world with different backgrounds, different cultures, different education and different training. . .it's a challenge. . .however the government sets a framework to ensure the minimum requirements for those pharmacists are within this framework."</p>
	Pre-registration training	<p>[EGY1-Academia] "Most of the quality standards are inserted in the curriculum, but unfortunately not in pharmacy graduates themselves. We have national standards for pharmacy education, but we do not have national standards graduate pharmacists. For example, there is no obligatory pre-registration training that is implemented. . .whenever you graduate from pharmacy school, you will become a pharmacist for the rest of your life."</p> <p>[UAE2-Government] "There are national and governmental initiatives to unify the licensing process across the country."</p>
Impact	Commitment to professional practice and advancement	<p>[KUW-Academia] "There are bureaucratic obstacles. . .I really do hope our students could graduate to be competent pharmacists. . .but it's a shame because even though we do teach them well, I just know that if the pre-registration training is not re-evaluated with defined goals, then it's disappointing, because once they exit schools of pharmacy they will fall into routine work to just dispense medications."</p> <p>[OMN-Academia] "The competencies of the future pharmacists are totally changing now. . .imagine within a few years when there will be fully-automated dispensing systems, so a major part of the pharmacy job description now will be out. . .pharmacy assistants can do that [dispensing...but what about community pharmacy, counselling...when we look at our curricula and all the schools of pharmacy in this region, have we really addressed the competencies we need for the future pharmacy profession?!"</p> <p>[QAT1-Hospital] "We have big support from the government and our national research fund. . .it's the time for more research in important areas in education and practice."</p>