Key priorities in education and training for pharmacy professionals across 21 countries

Report of the FIP Multinational Needs Assessment Programme (M-NAP)

2023

FIP Development Goals

International Pharmaceutical Federation

Colophon

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Executive summary

Shortages and imbalances in the distribution of the pharmaceutical workforce worldwide are significant challenges to achieving universal health coverage (UHC) and delivering high-quality healthcare services for 2030, as per the United Nations Sustainable Development Goals. Insufficient investment in education and training may aggravate these challenges, resulting in potentially limited access to pharmaceutical care in various regions. To address these challenges, the International Pharmaceutical Federation (FIP) conducted the Multinational Education and Training Needs Assessment project (part of a wider programme of member needs assessments). This project aims to identify key priorities and challenges in education and training systems for pharmacy professionals across 21 selected countries.

A mixed methods approach was undertaken, consisting of an online survey questionnaire followed by interviews with representatives of sampled nations. The online questionnaire consisted of a set of variables related to national pharmacy education, training, workforce development and priorities mapped to the FIP Development Goals (FIP DGs). A semi-structured topic guide was structured according to the FIP DGs priorities highlighted by surveyed respondents.

A total of 26 national professional organisations from 21 countries participated in the study. There is a variation across countries on the education, training and workforce development system and priorities mapped to FIP DGs.

Key findings:

- There is a wide variation in the density of pharmacists and pharmacy technicians per 10,000 population from the sampled countries, posing challenges in setting workforce targets using means or any benchmarking processes.
- Correlation between supply side and workforce across sampled countries indicates ongoing challenges encountered by specific regions in maintaining a sufficient and sustainable supply of skilled pharmacy professionals.
- There is variation of ongoing priorities and programmes across FIP member organisations with respect to the FIP DGs.
- The majority of ongoing priorities and programmes delivered by the organisations are related to people-centred care and patient safety, indicating a strong commitment to improving the quality of healthcare services.
- There is a perceived need for recognition of pharmacists by other healthcare professions. This is linked with interprofessional education and collaborative practice.
- In addition to the goals related to people-centred care and patient safety, three FIP DGs related to education and training — academic capacity, continuing professional development (CPD) strategies and competency development — were mapped by almost half of the organisations that participated in the survey. This highlights the importance of capacity building and competency development in improving the overall quality of healthcare services.
- Six themes emerged from the qualitative analysis of ongoing national programmes in the sampled countries:
    - Initiatives related to pharmacists' role in patient safety;
    - Communicable diseases and antimicrobial stewardship;
    - Pharmaceutical care and medicines access;
    - Strengthening research to improve pharmacists' impact and outcomes, and policy review and development;
    - Strengthening initial education and training; and
    - Competency and career development programmes.
- Competency-based education requires further development (including early career and advanced and specialist training), as scope of practice is not always defined. This highlights opportunities to provide early years foundation training focusing on people-centred care.
- There is variance in the strategy and delivery of CPD across the globe, including a plurality of CPD provision.
- Workplace training and the use of professional portfolios are not common. This suggests opportunities to develop programmes to support this direction.

- Advanced and specialist training is a clear need (gap) worldwide. This provides opportunities to develop specialised training such as in clinical topics or clinical leadership.
- Pharmacy technicians are a part of the workforce and equally require workforce development. There are significant training gaps in this provision market.

This study provided an evidence-based needs assessment in identifying pharmaceutical development priorities mapped to the FIP DGs across a cohort of nations. The next phase of this project will involve design and delivery of an education and training intervention, and its evaluation.

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1 Introduction

1.1 Background

The pharmaceutical workforce is central to achieving universal health coverage (UHC) and the provision of quality healthcare services. However, the shortage of and imbalances in the workforce across regions and countries pose significant challenges to achieving UHC by 2030, as stated in the United Nations Sustainable Development Goals.

The lack of investment in education and training is one of the primary factors hindering the development of the pharmaceutical workforce, mainly in low and middle-income countries (LMICs), where workforce capacity challenges are prevalent and access to essential medicines is limited. To address these challenges, the International Pharmaceutical Federation (FIP), a global professional leadership body, conducted a project under FIP Multinational Needs Assessment Programme (FIP M-NAP), focusing on education and training for pharmacy professionals, through the FIP Global Pharmaceutical Observatory. The project aimed to explore the priorities and challenges related to education and training systems for the pharmacy workforce across different nations, particularly in LMICs.

1.2 FIP Development Goals as a framework

This project used the FIP Development Goals (DGs) as a comprehensive framework to map the ongoing priorities related to education and training systems for the pharmacy workforce across nations. The DGs are a key resource for transforming the pharmacy profession over the next decade, with a global, regional and national focus. Aligned with FIP's mission, the "One FIP" DGs bring together science, practice, and workforce and education into a transformative framework to clearly set out the goals for development in the pharmacy profession. The use of the FIP DGs in this project allowed for the identification of commonalities and unique attributes in each area of the pharmacy profession, providing a systematic approach to address the workforce capacity, workforce development, needs-based education, quality assurance, and advocacy challenges in LMICs.

1.3 FIP needs-based model

Investing in the education, training and development of the pharmaceutical workforce is a priority for FIP, the World Health Organization (WHO) and member organisations, as workforce capacity, development, needs-based education, quality assurance and advocacy challenges are crucial areas of focus. To address these challenges, the FIP needs-based model emphasises the importance of developing a robust pharmaceutical workforce through high-quality education and training. In line with FIP's mission, pharmacy education should be locally determined, socially accountable, globally connected and quality assured to meet the healthcare needs of communities (Figure 1).

Figure 1. Needs-based education model

1.4 Aim and objectives

The aim of the project was to describe multinational needs-based education priorities for the pharmacy workforce in selected nations.

The objectives were:

1. To assess the current capacity and supply of pharmacy workforce across selected countries to identify capacity building challenges;
2. To map challenges, priorities, and national programmes related to education and training systems for the pharmacy workforce; and
3. To identify ongoing national initiatives and needs across the national sample base.

2 Project approach and framework

2.1 Methods overview

This project utilised the FIP DGs to assess and map multinational needs-based education programmes for the pharmacy workforce. The project involved a mixed methods approach, which included an online questionnaire followed by engagement interviews with member organisations from five of the six regions of the WHO. Case studies on a detailed description of priorities, policy gaps, challenges and ongoing initiatives in the sampled organisations were gathered during interviews. Data collection was between February and June 2021.

2.2 Sampling approach

A total of 35 organisations from a sample of 28 countries were approached to participate in this project. This sample was located in the regions of:

- Africa
- Eastern Mediterranean
- Americas
- South-East Asia
- Western Pacific

The countries and organisations approached are listed in Figure 2.

Sub Saharan Africa and North Africa region

- **Algeria** - Algerian Pharmaceutical Federation
- **Kenya -** Pharmaceutical Society of Kenya
- **Nigeria** - Pharmaceutical Society of Nigeria
- **South Africa** - Pharmaceutical Society of South Africa

Eastern Mediterranean region

- **Bahrain** - National Health Regulatory Authority
- **Jordan** - Jordan Pharmacists Association
- **Kuwait** - Kuwait Pharmaceutical Association
- **Lebanon** - Lebanese order of Pharmacists
- **Palestine** - Palestine Pharmacy Syndicate
- **Pakistan** - Pakistan Pharmacists Association
- **Qatar** - Qatar University
- **Qatar** - College of the North Atlantic
- **Qatar** - Primary Health Care Corporation
- **Saudi Arabia** – Saudi Pharmaceutical Society
- **United Arab Emirates** - Emirates Medical Association
- **United Arab Emirates** - Emirates Pharmacy Society

South East Asia region

- **India** - Indian Pharmaceutical Association
- **India** - Indian Association of Colleges of Pharmacy
- **Indonesia** - Indonesian Pharmacists Association

Americas region

- **Argentina** - Confederación Farmacéutica Argentina
- **Brazil** - Brazilian Federal Council of Pharmacy
- **Colombia** - Colegio Nacional de Químicos Farmacéuticos de Colombia
- **Chile** - Colegio de Químicos Farmacéuticos y Bioquímicos de Chile
- **Mexico** - Mexican Pharmaceutical Association
- **Mexico** - National Association of Biological Pharmaceutical Chemists
- **Peru** - Colegio Quimico Farmaceutico de Peru
- **Uruguay** - Uruguayan Association of Chemistry and Pharmacy

Western Pacific region

- **China** - Chinese Pharmaceutical Association
- **China Taiwan** - Pharmaceutical Society of Taiwan
- **China Taiwan** - Taiwan Society of Health System Pharmacists
- **Hong Kong SAR, China** - Pharmaceutical Society of Hong Kong
- **Japan** - Pharmaceutical Society of Japan
- **Japan** - Japan Pharmaceutical Association
- **South Korea** - Korean Pharmaceutical Association
- **Malaysia** - Malaysian Pharmacists Society

Figure 2. List of countries and organisations approached

2.3 Data collection methods

Figure 3 provides a summary of the data collection process.

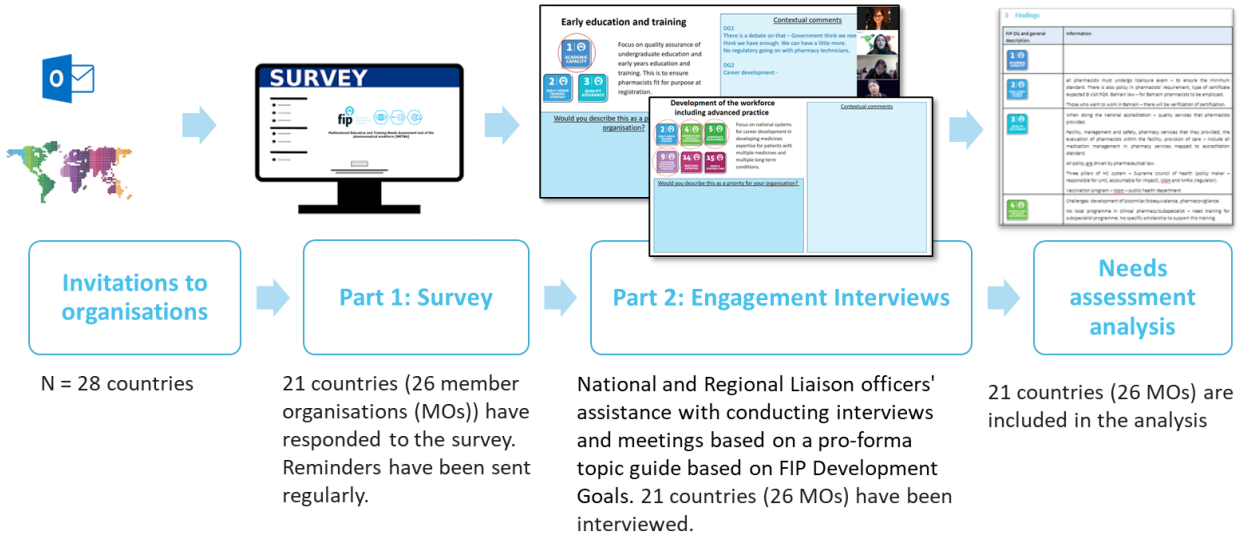


Figure 3. Summary of data collection

The first stage included sending invitation emails to the leadership bodies of the selected countries (including both FIP member organisations and non-member organisations). The email outlined the project aim, benefit, and process, and requested confirmation of the representatives' contact details. All communication emails, documents and tools used to engage with the professional leadership bodies were translated into Arabic, Chinese, French, Japanese, Portuguese and Spanish.

Following confirmation from the organisations in the selected countries, an online questionnaire was sent to the nominated representative(s) of leadership bodies with a two-week response deadline. An offline version of the questionnaire was also shared to facilitate data collection. The questionnaire was available in Arabic, Chinese, French, Japanese, Portuguese, and Spanish.

In the second stage of the project, representatives from the leadership bodies who completed stage 1 (the survey) were invited to participate in a 30-minute semi-structured online interview based on a standardised topic guide — shared with the representative(s) before the interview. Repeat follow-up emails were sent to non-responders at each stage.

The interview sought to capture insights into specific needs related to changes in education, practice and capacity-building challenges for the pharmaceutical workforce and to exchange views on the practical challenges faced by the country. The interview was used to verify the data collected in the first stage and probe further into issues raised in the survey, enabling us to explain the development goals components, discuss the country-level policy progress and provide language clarifications if needed.

Interviews were conducted in the preferred language chosen by the national or regional representative(s) (Arabic, English, Japanese, and Spanish) and then translated into English for analysis. Regional and national liaisons were recruited to assist in conducting interviews in the country's language, clarifying translated communications, and avoiding cross-cultural and language misunderstandings.

2.4 Data collection tools development

The online questionnaire was designed from previous questionnaires in the FIP GPO database for collating data on workforce capacity and education and training. The questionnaire was divided into three main sections:

1. A background briefing on the aim and objectives of the study;
2. Contact details and relevant documents; and
3. A set of 35 categorical questions that sought data relating to the national pharmacy workforce capacity and trends, national pharmacy education/training and workforce development for pharmacists and pharmacy technicians and pharmacy support staff.

Initial priorities and ongoing programmes delivered by the professional leadership bodies mapped to the 21 FIP DGs were also requested. The questionnaire can be viewed in Appendix 1.

Interview questions and a topic guide were prepared and adapted based on survey responses and the FIP DGs. Each interview started with a brief review of the survey responses to verify and validate any gaps or missing points in the first stage of the study. Then, the interviewer utilised the FIP DGs as the framing device to guide the interview flow. The FIP DGs framework was sectioned into seven clusters to fit the purpose of this study. These clusters helped the leadership body representative(s) focus and highlight the specific needs related to the changes, challenges and policy gaps in education and practice at the country level. The topic guide can be viewed in Appendix 2.

2.5 Data management and analysis

All collected data were coded and exported into SPSS Statistics version 27 for analysis. The data were analysed and summarised using descriptive analysis.

Thematic content analysis was used to analyse the interview data collected from stage 2. All recorded interviews were translated into English (if needed), transcribed and validated by the relevant interviewees. Interview data were coded and analysed using the NVivo v12 Software. All interview recordings were deleted seven days after the interview.

3 Findings

3.1 Sample demographics

A total of 26 member organisations from 21 countries responded to our questionnaire and participated in our interviews. Table 1 lists organisations and countries that participated in this project. The participants were drawn from the Eastern Mediterranean (six countries; 28%), followed by the Western Pacific and South America (each with five countries; 24%). Three countries were from Africa (14%), and two from the South-East Asia region (10%). These countries covered a total of 2.3 million pharmacists globally. The interviews lasted between 30 and 90 minutes.

Table 1. Organisations and countries that participated in this project

WHO region	Participating countries (n: 21)	Participating organisations (n: 26)
Africa	Algeria Nigeria South Africa	Algerian Pharmaceutical Federation Pharmaceutical Society of Nigeria Pharmaceutical Society of South Africa
Americas	Argentina Brazil Colombia Chile Mexico	Confederación Farmacéutica Argentina Universidade Federal de Santa Catarina Colegio Nacional de Químicos Farmacéuticos de Colombia Colegio de Químicos Farmacéuticos y Bioquímicos de Chile Mexican Pharmaceutical Association
Eastern Mediterranean	Bahrain Jordan Kuwait Lebanon Pakistan Qatar Qatar Qatar	National Health Regulatory Authority Jordan Pharmacists Association Kuwait Pharmaceutical Association Lebanese order of Pharmacists Pakistan Pharmacists Association Qatar University College of the North Atlantic* Primary Health Care Corporation
South East Asia	India India Indonesia	Indian Pharmaceutical Association Indian Association of Colleges of Pharmacy Indonesian Pharmacists Association
Western Pacific	China Taiwan China Taiwan Hong Kong SAR, China Japan Japan Korea (Rep. of) Malaysia	Pharmaceutical Society of Taiwan Taiwan Society of Health System Pharmacists Pharmaceutical Society of Hong Kong Japan Pharmaceutical Association Pharmaceutical Society of Japan Korean Pharmaceutical Association Malaysian Pharmacists Society

**Data specific for pharmacy technicians*

3.2 National pharmacy workforce capacity and supply

3.2.1 Pharmacy workforce capacity across sampled countries

Figure 4 illustrates the density of pharmacists per 10,000 population across the sampled countries. There is a wide variation in density, posing challenges in setting workforce benchmarking processes. Across sampled countries, the majority of countries from the Eastern Mediterranean were above the sample mean, with the exception of Pakistan. Within the Western Pacific region, Japan and China Taiwan demonstrated densities above the sample mean, while countries such as South Korea and Malaysia were in close proximity to the mean. Among the five countries in the Americas region, only Brazil had a density ratio above the sample mean. Among the countries in South-East Asian region (India and Indonesia) and African region (South Africa and Nigeria) that shared data, the density of pharmacists per 10,000 population in these countries was lower than the mean of the sample countries.

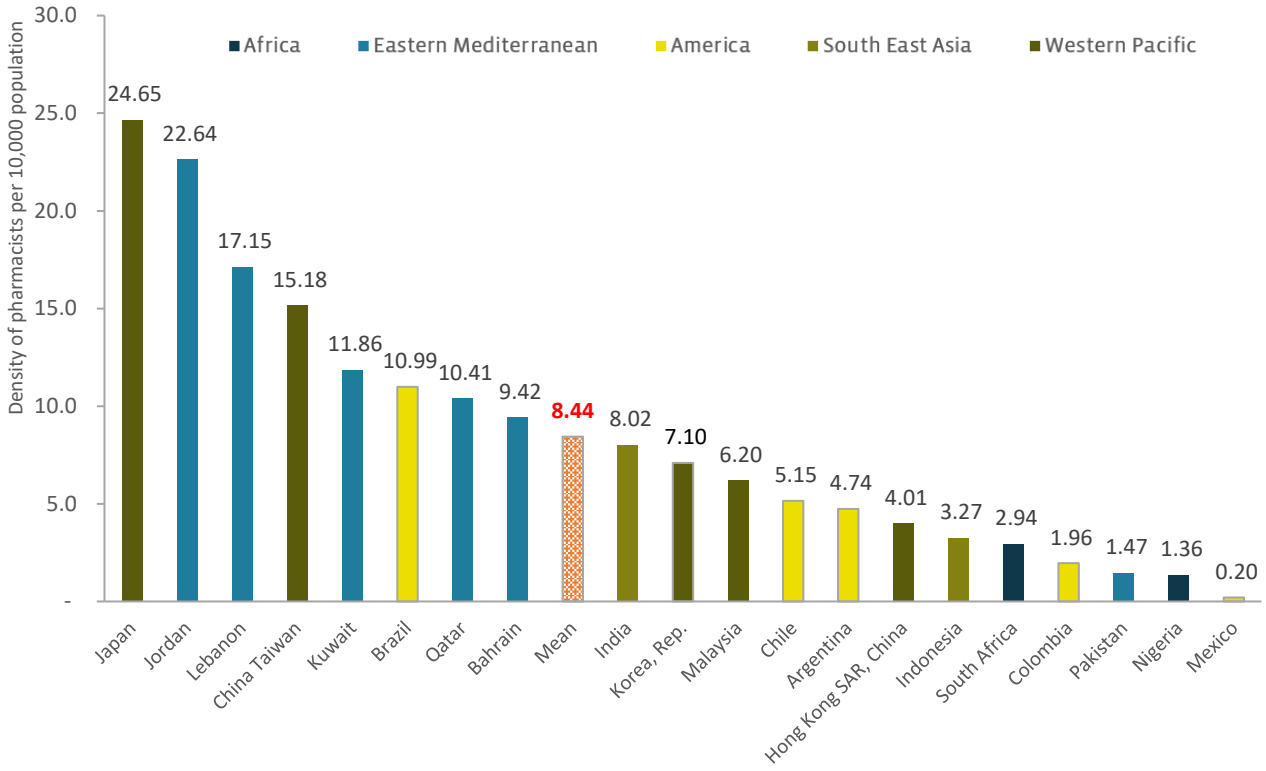


Figure 4. Density of pharmacists per 10,000 population across sampled countries

The density of pharmacy technicians per 10,000 population is depicted in Figure 5. While Figure 4 revealed that Argentina had a pharmacist density lower than the sample mean, it is the only country with a density of pharmacy technicians exceeding the sample mean (26.45). South Africa reported a density of pharmacy technicians greater than that of pharmacists, at 4.12 and 2.94, respectively. The other four countries reported their pharmacy technicians to be between 0.42 and 1.96, which were below their pharmacists' density per 10,000 population.

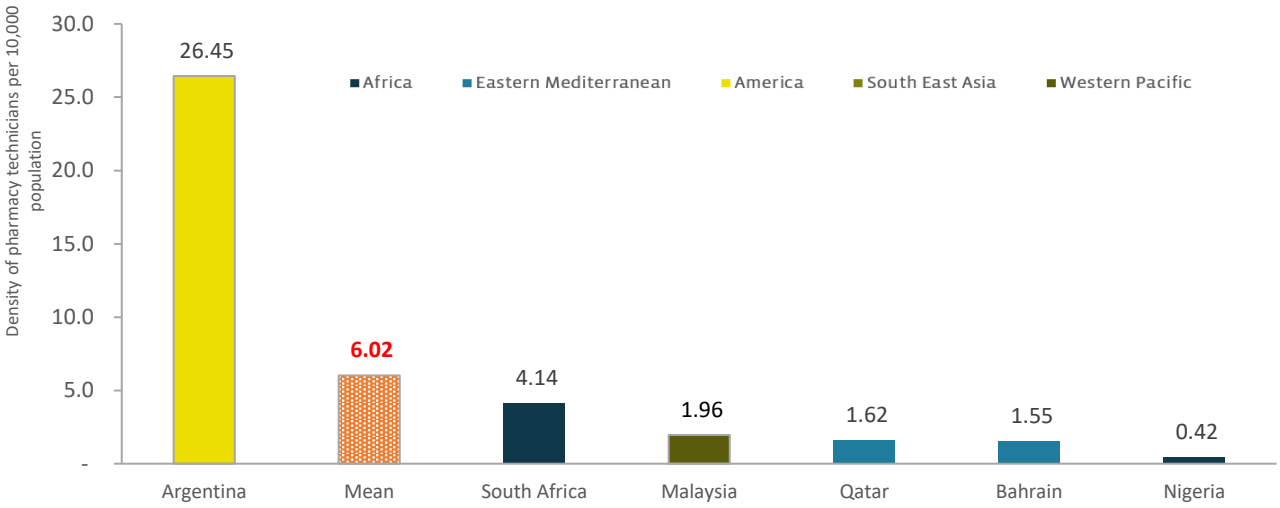


Figure 5. Density of pharmacy technicians per 10,000 population across sampled countries

3.2.2 Pharmacist supply across the sample

Figure 6 shows the correlation between supply side (density of new registrants per 10,000 population) and workforce (density of pharmacists per 10,000 population) across sampled countries. Consistent with the findings presented in

Figure 4, the majority of the sampled countries exhibiting lower densities of both pharmacists and new registrants were primarily located in the African and South American regions, in addition to Indonesia (South-East Asian region), Pakistan (Eastern Mediterranean region) and Hong Kong SAR, China (Western Pacific region). These results suggest ongoing challenges encountered by specific regions in maintaining a sufficient and sustainable supply of skilled pharmacy professionals.

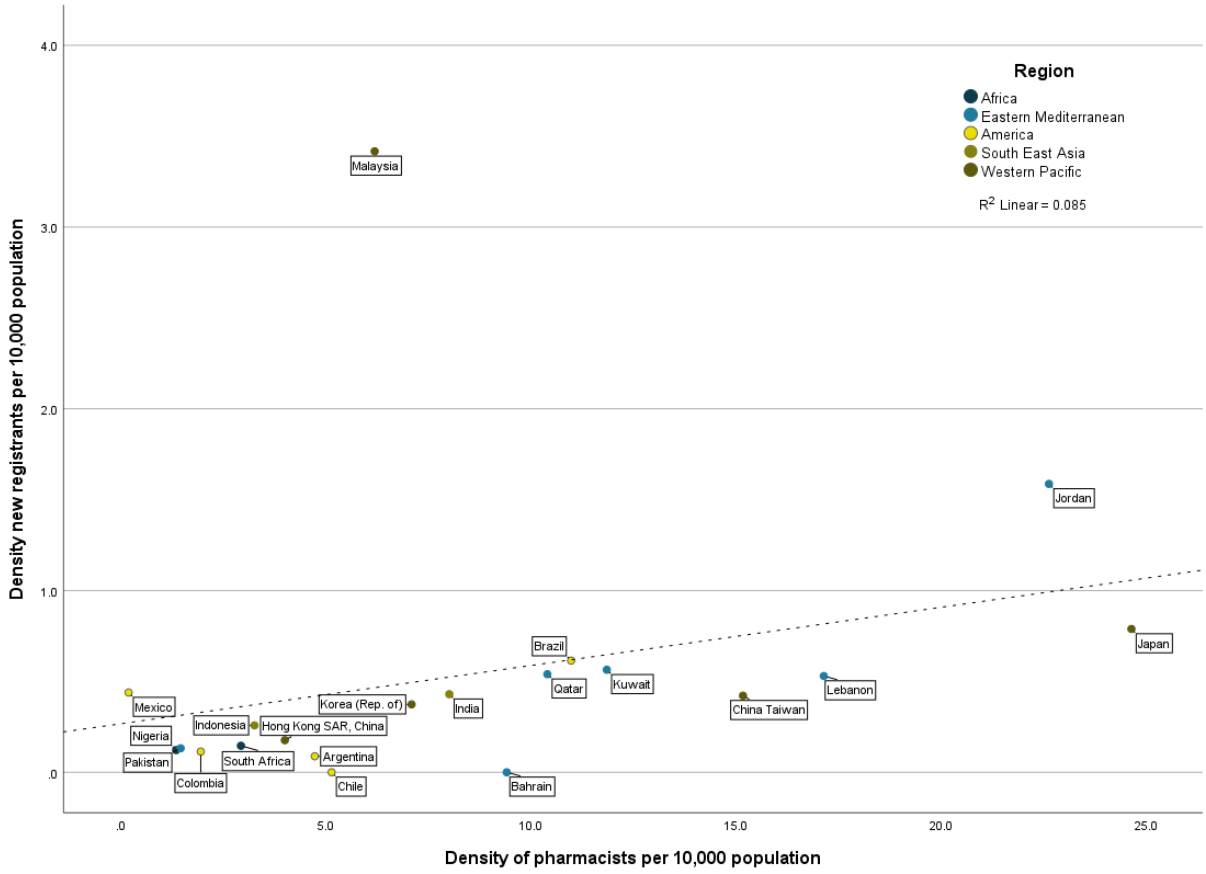
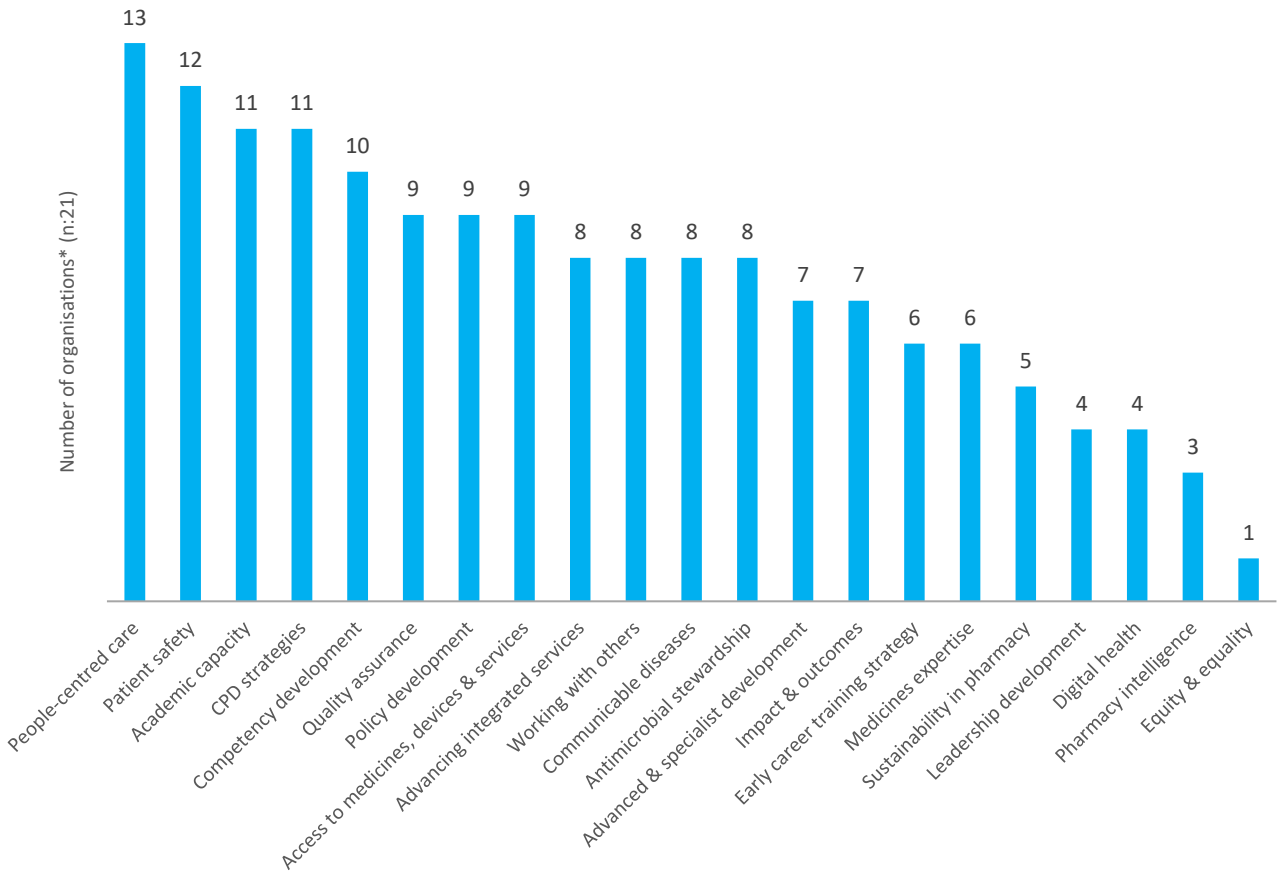


Figure 6. New registrants and registered pharmacists across sampled nations

3.3 FIP Development Goals: mapping and priorities

Figure 7 illustrates how the FIP Development Goals (DGs) align with ongoing national policies and projects implemented by organisations in the selected nations. The mapping reveals that there is considerable variation in the ongoing policies and programmes across the various DGs and organisations. The majority of ongoing priorities and programmes delivered by the organisations are related to people-centred care and patient safety, indicating a strong commitment to improving the quality of healthcare services. In addition, three DGs related to education and training — "academic capacity", "CPD strategies" and "competency development" — were mapped by almost half of the organisations that participated in the survey. This highlights the importance of capacity building and competency development in improving the overall quality of healthcare services.

One organisation indicated "equity and equality" as a priority DG to be mapped to ongoing policies and programmes; this was the least frequently chosen goal. This could be due to the majority of organisations perceiving that equity and equality is an overarching goal which is already incorporated into general national strategy. Similarly, "pharmacy intelligence" was only selected by three organisations, suggesting a significant untapped potential in utilising data and technology to enhance the quality of healthcare services.



*Number of organisations that responded to the DG mapping and priorities questions.

Figure 7. Mapping of FIP DGs towards ongoing policies and projects

In addition to mapping ongoing policies and programmes related to the FIP DGs, the survey also asked organisations to prioritise their top five DGs in relation to their mission and activities. Figure 8 shows the average rank order of each DG of the sampled organisations. The top six priorities include “academic capacity building”, “access to medicines, devices and services”, “CPD strategies”, “competency development”, “patient safety” and “people-centred care”. These results emphasise the crucial role of education, training and patient-centred approaches as part of the missions and activities of the sample. In contrast, DGs such as “impact and outcomes”, “communicable diseases”, “antimicrobial stewardship”, and “equity and equality” were lower down the priority list. This may be because these goals are typically included in national healthcare strategies, or they may be too specific to be included as part of an organisation’s mission and activities, for example, “communicable diseases” and “antimicrobial stewardship”. Notably, there is a significant overlap between the DGs that are prioritised by organisations and those that are mapped to ongoing policies and projects, highlighting the alignment between ongoing national policies and projects and organisations’ priorities.

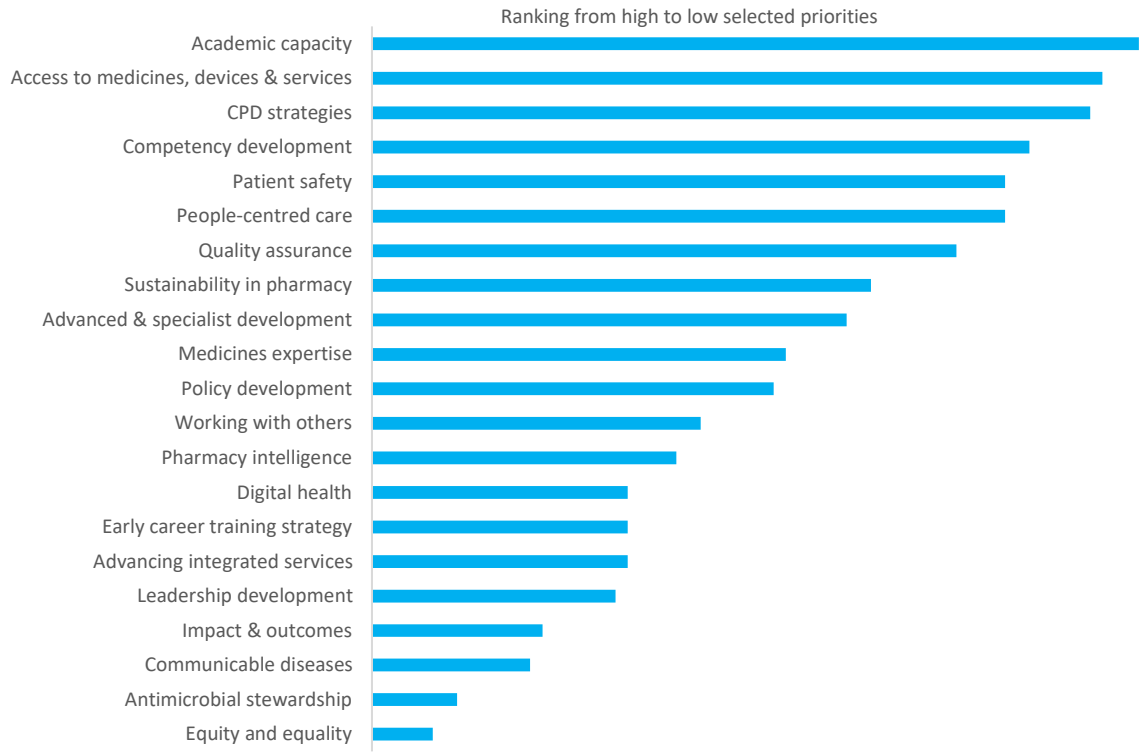


Figure 8. Priorities of FIP DGs towards ongoing policies and projects

3.4 National initiatives, programmes and needs

The sampled organisations highlighted current national initiatives and programmes, categorised into six themes:

1. Initiatives related to pharmacists' role in patient safety, communicable diseases, and antimicrobial stewardship;
2. Improving pharmaceutical care and medicines access and ensuring equity and equality;
3. Policy review and development;
4. Strengthening research to improve pharmacists' impact and outcomes;
5. Strengthening initial education and training; and
6. Competency and career development programmes.

The sub-themes of the initiatives of organisations can be seen in Table 2. Under each theme, the needs across the sampled organisations are presented.

Table 2. Themes and subthemes of ongoing programme initiatives across organisations.

Themes	Sub-themes
Initiatives related to pharmacists' role in patient safety, communicable diseases and antimicrobial stewardship	• Inclusion of patient safety in pharmacy education and training, such as train the trainers programmes and training in patient safety, harm reduction and pharmacovigilance. • Collaboration with, or involvement of, organisations and individual pharmacists in the national committee for patient safety. Some examples of advanced services and programmes by pharmacists such as medicines reconciliation, adherence clinics, and medication therapeutic management services. • National policies and programmes related to patient safety, such as the implementation of national pharmacovigilance and

Themes	Sub-themes
	technovigilance policy; national regulation for verification of medicines prior to entering the market; regulation related to recall and counterfeit medicines and medical devices, and campaigns to advocate the role of pharmacists in patient safety. • National programmes related to communicable diseases, such as vaccination training for pharmacists, pharmacists' involvement in tuberculosis management and the national malaria programme and AIDS control. • National programmes related to antimicrobial stewardship (AMS), such as the availability of national guidelines and involvement of pharmacists in the national committee for AMS.
Improving pharmaceutical care and medicines access and ensuring equity and equality	• Advocacy and programmes to increase pharmaceutical care and medicines access, such as strengthening the presence of pharmacists and increasing pharmacy capacity in the country and expanding pharmacists' authority, including the generic substitution policy by pharmacists. • National policies related to health system insurance and medicines distribution, such as national insurance policies to support vulnerable groups to cover all citizens; availability of an essential drugs list in the country, and a centralised system procurement to support medicines access. • Promoting equity and equality nationally, including equal opportunities in employment and leadership positions.
Policy review and development	• Engagement and involvement of pharmacists and institutions in policy, strategies and guideline development. • Ongoing policy review in the country and ongoing advocacy for the scope of practice and remuneration of pharmacists. • Campaign to increase branding and acceptability of pharmacists.
Strengthening research to improve pharmacists' impact and outcomes	• Ongoing project to build a community pharmacy system to evaluate pharmaceutical care to patients and measure pharmacists' economic outcomes. • Encouragement to their members to disseminate pharmacists' impact projects or findings in a journal or report.
Strengthening initial education and training	• Benchmarking curriculum towards a global framework and pharmacy curriculum review involving all pharmacy school deans. • National programmes supporting experiential training for pharmacy students to observe real-life practice and preceptor programmes development. • An accreditation system to ensure sufficient academic capacity.
Competency and career development programmes	• Delivery of conventions, seminars, webinars and workshops across topic areas of practice by organisations to support the education and training of pharmacists and their members. • Developing competency frameworks for early career and advanced practitioners to support the career stages for pharmacists. • Ongoing programmes on pharmacy specialisation and advancement in the country and ongoing pathway development for pharmacy workforce advancement. • Specialist recognition available for pharmacy prescribers, vaccinators and other specialisations. • A foundation training for early careers pharmacists and those who had career breaks, and a mentorship programme for early career pharmacists and early career support through young pharmacist group networks.

3.4.1 Initiatives related to pharmacists' role in patient safety, communicable diseases and antimicrobial stewardship

Patient safety was highlighted as a priority across all sampled organisations, emphasising the role of pharmacists in this area. Organisations further described their ongoing policies and programmes related to the inclusion of patient safety in pharmacy education and training, collaboration with or involvement of organisations and individual pharmacists in the national committee for patient safety, and national policies and programmes related to patient safety (Table 2). While there have been many ongoing initiatives, some organisations also highlighted needs and gaps to further strengthen pharmacists' role in this area. For instance, the pharmacy organisation in Jordan stated that there were no specific programmes for patient safety, so the inclusion of this topic in the training and academic lectures was recommended. Also, the pharmacy organisation in Algeria mentioned a need to introduce training, awareness and programmes that highlight the fact that pharmacists deliver potentially hazardous medicines and enhance the role of pharmacists in this area.

Related to pharmacists' roles in communicable diseases, the sampled organisations focused on vaccination authority and administration. Thirteen organisations said that pharmacists were not allowed to administer vaccines, and the involvement of pharmacists as vaccinators was not a priority. While there have been many vaccination training programmes developed in some countries (Table 2), there was no training development framework in others and pharmacists had not been trained to administer vaccines. There were also variations in pharmacist roles in vaccination across national centres; for example, in one organisational centre, pharmacists were initial assessors for patients' eligibility while, in another centre, they were involved in vaccine reconstitution. Pharmacy infrastructure was another reason for the variation of vaccination authority. Some organisations reported that pharmacists could have played a much more active and supportive role in a national emergency, particularly involvement in immunisation and vaccine pharmacovigilance processes.

While there was an ongoing campaign and awareness of the proper use of antibiotics highlighted by some organisations (Table 2), there was, however, poor implementation of the regulation on dispensing antibiotics without prescription and prescribing practice.

3.4.2 Improving pharmaceutical care and medicines access and ensuring equity and equality

Access to medicines, devices and services was among the most frequent priorities selected by organisations across regions. However, fewer countries mapped their ongoing programmes in these areas (Table 2). Many pharmacy organisations indicated this area as one of their priorities because they believed in the importance of access to pharmaceutical care services for the population. Equity and equality were selected as a low priority by organisations, with only one organisation mapping this goal to the strategic programme. Many organisations highlighted that there might be some initiatives nationally in this area, but the initiatives were not specific to pharmacists.

3.4.3 Policy review and development

Although there were ongoing policy reviews and development on many topics (Table 2), these were highlighted as a need by eight sampled organisations. Gaps in regulation related to policy transparency and implementation, in particular on good pharmacy practice application, were shared by organisations. Some organisations highlighted a need for the regulation of telepharmacy and the use of digital health for patient services. Moreover, a need for policy to separate dispensing and prescribing was emphasised by several organisations. Sixteen organisations stressed a need to advocate the scope of practice for pharmacists and pharmacy technicians in the health system. Some described variations in the scope of practice and recognition of pharmacists within countries.

3.4.4 Strengthening research to improve pharmacists' impact and outcomes

While some organisations described their national programmes on impact and outcomes as research or surveys to evaluate pharmacists' impact on the population (Table 2), many pharmacy organisations still highlighted that no

indicators were available to measure pharmacists' impact and performance in their countries. This indicator was needed to support their advocacy of pharmacists' role in the economic outcomes.

3.4.5 Strengthening initial education and training

Several organisations highlighted their national initiatives and programmes in strengthening initial education and training (Table 2). Many pharmacy organisations prioritised academic capacity because they perceived a need for curriculum reform to adapt to national needs. A need for more academicians and researchers in science and clinical settings was highlighted by some pharmacy organisations. Some factors related to the academic shortage included lack of remuneration, increasingly unfavourable working environments and employment expectations, and qualifications to become academic pharmacists. Some member organisations highlighted a need to facilitate collaboration with other healthcare professionals from initial education and training, which highlighted a need for guidance and a system for interprofessional education.

3.4.6 Competency and career development programmes

3.4.6.1 CPD strategies and delivery for pharmacists

National initiatives and programmes related to competency and career development can be seen in Table 2. Most ongoing national programmes in CPD were related to the delivery of conventions, seminars, webinars and workshops across topic areas of practice. Collaboration with other organisations and healthcare providers in delivering the programmes was highlighted by some organisations.

CPD strategies was among the top three most frequent area selected by sampled organisations across regions for national programmes implementation (see Figure 7). While more than half of sampled countries (n: 12; 57.1%) had national accreditation bodies to monitor the quality of CPD, the majority of sampled countries did not have a CPD system in place (Table 3). In the interviews, many organisations highlighted a need to have a mandatory CPD, linking CPD with annual license and promotion, and linking CPD with annual portfolio type submission and recertification system.

There was a variation in CPD policy and regulations in all except the Americas region. All sampled countries in Americas region did not have a CPD system in place, where the CPD was not mandatory, not linked with annual license, and not linked with annual portfolio type submission. The renewal of pharmacists licensing was not based on gaining CPD credits in sampled countries in the Americas region. Nevertheless, two countries in South America stated that a national accreditation body monitoring the quality of CPD provision was available.

Table 3. Overview of CPD strategies for pharmacists across sampled countries

Country	Organisations	CPD is mandatory	CPD is linked with licence	Renewal of licence based on gaining CPD "credits"	CPD linked with annual portfolio-type submission	National accreditation body is available to monitor CPD quality
Africa						
Algeria	Algerian Pharmaceutical Federation	No	No	No	No	No
Nigeria	Pharmaceutical Society of Nigeria	Yes	Yes	Yes, wholly	No	Yes
South Africa	Pharmaceutical Society of South Africa	Yes	No	Yes, partly	Yes, wholly	Yes
Eastern Mediterranean						
Bahrain	National Health Regulatory Authority	Yes	Yes	Yes, wholly	Yes, wholly	Yes
Jordan	Jordan Pharmacists Association	Yes	Yes	Yes, wholly	No	No
Kuwait	Kuwait Pharmaceutical Association	No	No	No	No	No
Lebanon	Ordre des Pharmaciens du Liban	Yes	No	Yes, wholly	Yes, wholly	Yes
Pakistan	Hamdard Institute of Pharmaceutical Sciences	No	No	No	No	Yes
Qatar	Primary Health Care Corporation; Qatar University	Yes	Yes	Yes, wholly	No	Yes
Americas						
Argentina	Confederación Farmacéutica Argentina	No	No	No	No	Yes
Brazil	Universidade Federal de Santa Catarina	No	No	No	No	No
Chile	Colegio de Químicos Farmacéuticos y Bioquímicos de Chile	No	No	No	No	No
Colombia	Colegio Nacional de Químicos Farmacéuticos de Colombia	No	No	No	No	No
Mexico	Colegio Nacional de Químicos Farmacéuticos Biólogos México	No	No	No	No	Yes
South-East Asian						
India	Indian Association of Colleges of Pharmacy, Indian Pharmacists Association	Yes	Yes	Yes, partly	No	Yes
Indonesia	Indonesian Pharmacists Association	Yes	No	Yes, wholly	Yes, partly	No
Western Pacific						
China Taiwan	Phamaceutical Society of Taiwan	Yes	Yes	Yes, wholly	No	No
Hong Kong SAR, China	The Pharmaceutical Society of Hong Kong	No	No	No	No	Yes
Japan	Japan Pharmaceutical Association; The Pharmaceutical Society of Japan	No	No	No	Yes, partly	Yes
Korea (Rep. of)	Korean Pharmaceutical Association	Yes	Yes	Yes, wholly	No	No
Malaysia	Malaysian Pharmacists Society	No	Yes	Yes, partly	Yes, partly	Yes
Total		**Yes : 10 No: 11**	**Yes: 8 No: 13**	**Yes, wholly: 8 Yes, partly: 3 No: 10**	**Yes, wholly: 3 Yes, partly: 3 No: 15**	**Yes: 12 No: 9**

Table 4 illustrates CPD principal providers across sampled countries. The higher education sector was the most common provider of CPD, followed by the private sector and the professional leadership body. The least common principal providers of CPD were regulators and ministries. There was a variance in principal providers delivering CPD across regions. Private sectors were the most common principal providers in the Eastern Mediterranean region, pharmacy unions were the most common principal providers in the Western Pacific, and the professional leadership body and universities were the most common principal providers in the Americas region.

Table 4. CPD principal providers for pharmacists across sampled countries

Country	Professional leadership body	Regulator or pharmacy council	Universities	Private sectors	Ministry or government	Pharmacy union	Hospital
Africa							
Algeria			✓				
Nigeria		✓					
South Africa	✓			✓			
Eastern Mediterranean							
Bahrain				✓	✓	✓	
Jordan				✓	✓	✓	
Kuwait	✓		✓	✓			
Lebanon		✓				✓	
Pakistan			✓	✓			
Qatar	✓		✓	✓	✓		✓
Americas							
Argentina	✓	✓	✓				
Brazil		✓		✓			
Chile	✓		✓		✓	✓	
Colombia	✓		✓	✓			
Mexico	✓	✓	✓	✓	✓		
South-East Asia							
India	✓	✓	✓			✓	
Indonesia			✓		✓	✓	
Western Pacific							
China Taiwan	✓	✓	✓		✓	✓	
Hong Kong SAR, China			✓			✓	
Japan	✓		✓	✓		✓	
Korea (Rep. of)						✓	
Malaysia	✓	✓		✓	✓		
Total	**11**	**8**	**13**	**11**	**8**	**10**	**1**

(✓) selected by sampled countries.

The majority of CPD delivery modes across sampled organisations were class-based provisions with or without CPD credits (Table 5). Workplace education models and professional portfolios were not common in the sampled countries. Workplace education was only highlighted in six countries in the Eastern Mediterranean, Americas and Western Pacific regions. The professional portfolio was only highlighted in four countries in Africa, Eastern Mediterranean and Western Pacific regions. In the interview, many organisations highlighted a need to have a mandatory CPD, linking CPD with the pharmacist's annual licence and promotion, and linking CPD with annual portfolio type submissions and recertification systems.

Table 5. Ways of CPD delivery for pharmacists across regions

Country	Class-based without credits	Class-based with credits	Workplace education models	Professional portfolio
Africa				
Algeria				
Nigeria		✓		
South Africa	✓			✓
Eastern Mediterranean				
Bahrain	✓	✓	✓	
Jordan	✓	✓	✓	
Kuwait	✓			
Lebanon		✓		
Pakistan		✓	✓	✓
Qatar	✓	✓	✓	✓
Americas				
Argentina	✓	✓		
Brazil	✓		✓	
Chile	✓			
Colombia	✓			
Mexico	✓	✓		
South-East Asia				
India	✓	✓		
Indonesia		✓		
Western Pacific				
China Taiwan	✓	✓		
Hong Kong SAR, China	✓			
Japan	✓	✓	✓	✓
Korea (Rep. of)		✓		
Malaysia	✓	✓		
Total	**15**	**14**	**6**	**4**

(✓) selected by sampled countries.

3.4.6.2 Competency development policy and systems for pharmacists

While 15 countries have the scope of practice defined, many did not have competency development frameworks in place (Table 6). Seven countries had a competency framework for early career pharmacists. Of these, the majority of countries in the Eastern Mediterranean and Americas regions did not have a competency framework for early career pharmacists. Advanced and specialist development in the sampled countries shows a clear need and gap. Moreover, four countries have an advanced competency development framework in place. Many organisations indicated that their current national programmes in early career training and advanced and specialist practice development were to develop competency frameworks to support the career stages for pharmacists. Looking at the system to support advanced and specialist practice development, only eight countries have established professional recognition systems, and no system was available in South-East Asian countries. In the interviews, some pharmacy organisations indicated a need to support pharmacists' advocacy and recognition system, including the remuneration system. Likewise, some pharmacy organisations highlighted that there was ongoing advocacy in recognising pharmacy specialisation and advancement in the country.

Table 6. Competency development policy and regulation for pharmacists across sampled countries

Country	Scope of practice	Competency framework	Advanced competency framework	Professional recognition system	Membership body supporting specialisation	University based formal education for specialisation
Africa						
Algeria	No	No	No	No	Yes	Yes
Nigeria	Yes	Yes	Yes	Yes	Yes	Yes
South Africa	Yes	Yes	Yes	Yes	Yes	Yes
Eastern Mediterranean						
Bahrain	Yes	No	No	Yes	Yes	No
Jordan	Yes	No	No	No	Yes	Yes
Kuwait	Yes	Yes	No	No	No	No
Lebanon	Yes	No	No	Yes	Yes	Yes
Pakistan	No	No	No	No	Yes	Yes
Qatar	Yes	No	No	No	No	Yes
Americas						
Argentina	Yes	No	Yes	Yes	Yes	Yes
Brazil	Yes	No	No	No	Yes	No
Chile	Yes	No	No	No	Yes	Yes
Colombia	Yes	Yes	No	No	Yes	Yes
Mexico	Yes	No	No	Yes	Yes	Yes
South-East Asia						
India	Yes	No	No	No	Yes	Yes
Indonesia	Yes	Yes	No	No	Yes	Yes
Western Pacific						
China Taiwan	Yes	Yes	No	No	No	Yes
Hong Kong SAR, China				No	No	Yes
Japan	No	No	No	Yes	Yes	Yes
Korea (Rep. of)	No	No	No	No	Yes	Yes
Malaysia	No	Yes	Yes	Yes	Yes	Yes
Total	**Yes: 15 No: 5**	**Yes: 7 No: 13**	**Yes: 4 No: 16**	**Yes: 8 No: 13**	**Yes: 17 No: 4**	**Yes: 18 No: 3**

A common view among organisations on the reason for prioritising competency development was a need to advance the pharmacy workforce to deliver quality pharmaceutical services to their societies. Many pharmacy organisations highlighted a need for generalised advanced clinical training to develop an adaptable pharmacy workforce facing healthcare challenges, such as the ageing population and complex comorbidities. Pharmacy organisations highlighted concerns about local cultures where pharmacists focus on profits rather than providing high-quality pharmaceutical care. This was sometimes described as a culture where pharmacists focus on minimum standards rather than advancing their practice.

A majority of countries have a national body supporting specialisation (n: 17; 81%) and have university-based formal education for specialisation (n: 18; 85.7%) in place (Table 6). While many organisations shared their initiatives and programmes on specialisation (Table 2), pharmacy organisations highlighted a need for specialist programmes development to meet national needs, such as in biosimilars, critical care and poisoning prevention programmes. Examples of initiatives and programmes for specialisation include organisations which have recently formed a group and committee to support workforce development, including specialisation. Many pharmacy organisations shared specialist training programmes conducted in their countries, for instance vaccination training, medication therapy management and therapeutical drug monitoring. Specialist recognition was also available in some countries such as for pharmacy prescribers and vaccinators, for specific subject matter experts and cancer drug therapy.

Another reason for prioritising competency development, particularly for competency framework development, was to guide career progression from entry-level towards advancement. Specific to the early career training strategy, some organisations highlighted a clear need for structured training for early career practitioners. In contrast, there was a foundation training in place for early careers, and those who had career break in Kuwait. On-the-job training was also highlighted by a few pharmacy organisations. Moreover, a mentorship programme for early career pharmacists was available in a few countries. There was also early career support through young pharmacists group networks in a few countries.

3.4.6.3 CPD strategies and delivery for pharmacy technicians

Table 7 shows an overview of CPD strategies for pharmacy technicians across sampled countries. From 20 countries that provided information about pharmacy technicians, half reported that they recognised pharmacy technicians. Most countries in the Eastern Mediterranean have recognised pharmacy technicians and there is a good collaboration between pharmacists and pharmacy technicians, which is confirmed by qualitative findings. A CPD system for pharmacy technicians was available in Bahrain, Jordan, Qatar and Indonesia. There are opportunities to develop CPD for pharmacy technicians to support pharmacists in the system. This quantitative result has also been confirmed by qualitative findings where the organisations stated that there is no structure in place and pharmacy technicians are not fully recognised and incorporated into health system.

Table 7. Overview of CPD strategies for pharmacy technicians across sampled countries

Country	Recognition is available	CPD is mandatory/ voluntary	CPD linked with annual licence	Renewal of licensing based on CPD "credits"	CPD linked with annual portfolio-type submission	National accreditation body is available to monitor CPD quality
Africa						
Algeria	No	No	No	No	No	No
Nigeria	Yes	Yes, CPD is mandatory	No	No	No	Yes
South Africa	No	No	No	No	No	Yes
Eastern Mediterranean						
Bahrain	Yes	Yes, CPD is mandatory	Yes	Yes, wholly	Yes, wholly	Yes
Jordan	Yes	Yes, CPD is mandatory	Yes	Yes, wholly	Yes, wholly	No
Kuwait	Yes	No	No	No	No	No
Lebanon	No					
Pakistan	Yes	No	No	No	No	No
Qatar	Yes	Yes, CPD is mandatory	Yes	Yes, wholly	Yes, wholly	Yes
Americas						
Argentina	No	No	No			No
Brazil	No	No	No	No	No	No
Chile	Yes	No				
Colombia	Yes	No	No	No	No	No
Mexico	No	No	No	Yes, partly	No	No
South-East Asia						
India	No	No	No	No	No	No
Indonesia	Yes	Yes, CPD is mandatory	Yes	Yes, partly	Yes, partly	No
Western Pacific						
China Taiwan						
Hong Kong SAR, China	No					
Japan	No	No	No	No	No	No
Korea (Rep. of)	No	No	No	No	No	No
Malaysia	Yes	Yes, CPD is voluntary	No	No	No	No
Total	**Yes: 10 No: 10**	**Yes, mandatory: 5 Yes, voluntary: 1 No: 12**	**Yes: 4 No: 13**	**Yes, wholly: 3 Yes, partly: 2 No: 11**	**Yes, wholly: 3 Yes, partly: 1 No: 12**	**Yes: 4 No: 13**

Table 8 illustrates principal CPD providers for pharmacy technicians across sampled countries. Compared with the main providers of CPD for pharmacists (Table 4), the majority of principal providers for pharmacy technicians are ministry or government agencies. There are some countries that did not recognise pharmacy technicians, but still reported some providers who offered CPD to pharmacy technicians, such as South Africa, Argentina and Mexico.

Table 8. Principal providers of CPD for pharmacy technicians across sampled countries

Country	Recognition is available	Professional leadership body	Regulator or pharmacy council	Universities	Private sectors	Ministry or government	Pharmacy union	Hospital
Africa								
Algeria	No							
Nigeria	Yes		✓		✓			
South Africa	No	✓						
Eastern Mediterranean								
Bahrain	Yes				✓	✓		
Jordan	Yes				✓	✓	✓	
Kuwait	Yes							
Lebanon	No							
Pakistan	Yes							
Qatar	Yes			✓				✓
Americas								
Argentina	No					✓		
Brazil	No							
Chile	Yes							
Colombia	Yes			✓				
Mexico	No			✓		✓	✓	
South-East Asia								
India	No							
Indonesia	Yes					✓	✓	
Western Pacific								
China Taiwan								
Hong Kong SAR, China	No							
Japan	No							
Korea (Rep. of)	No							
Malaysia	Yes				✓	✓		
Total		**1**	**1**	**3**	**4**	**6**	**3**	**1**

3.4.6.4 Competency development policy and systems for pharmacy technicians

Table 9 describes competency development policy and regulation for pharmacy technicians across sampled countries. For example, in Colombia there is a recognition and infrastructure available for competency development for pharmacy technicians, such as a scope of practice and competency framework and a leadership body to provide national support for pharmacy technicians. There are opportunities to develop scope of practice and competency frameworks across the sampled countries considering the scope of practice and competency frameworks were only reported in five and two countries, respectively.

Table 9. Competency development policy and regulation for pharmacy technicians across sampled countries

Country	Scope of practice	Competency framework	University based formal education for CPD	Higher education courses before qualified as diploma	Membership body providing national support
Africa					
Algeria	No	No	No	No	No
Nigeria	Yes	No	No	Yes	Yes
South Africa	Yes	No	No	Yes	Yes
Eastern Mediterranean					
Bahrain	No	No	No	Yes	Yes
Jordan	No	No	No	No	Yes
Kuwait	No	No	No	No	No
Lebanon					
Pakistan	No	No	No	No	No
Qatar	Yes	No	Yes	Yes	No
Americas					
Argentina		No	No	Yes	Yes
Brazil	No	No	No	No	No
Chile				Yes	
Colombia	Yes	Yes	Yes	Yes	Yes
Mexico	No	No	No	No	No
South-East Asia					
India	No	No	No	No	No
Indonesia	Yes	Yes	No	Yes	No
Western Pacific					
China Taiwan					
Hong Kong SAR, China					
Japan	No	No	No	No	No
Korea (Rep. of)	No	No	No	No	No
Malaysia	No	No	No	Yes	Yes
Total	**Yes: 5 No: 11**	**Yes: 2 No: 15**	**Yes: 2 No: 15**	**Yes: 9 No: 9**	**Yes: 7 No: 10**

4 Conclusions and recommendations

Shortages and imbalances in the pharmacy workforce across countries present significant challenges to achieving UHC by 2030. This project was conducted to explore the priorities and challenges related to education and training systems for the pharmacy workforce across different nations. This project utilised the FIP DGs as a comprehensive framework to map the challenges and ongoing priorities related to education and training systems for the pharmacy workforce across the countries that participated in this project.

This report highlights a diversity in the ongoing policies and initiatives mapped to the FIP DGs. While there was variability in progress, as well as the identified needs to enable progress, against these development goals, the FIP DGs have been shown to be adaptable to national needs and support countries as they work towards implementing these goals. This project has raised awareness that prioritisation of goals is important to help countries to be more effective and efficient in transforming their pharmaceutical services, practice and workforce.

Patient safety, people-centred care, academic capacity, CPD strategies and competency development are the main areas of activity for our member organisations, but these areas remain under-developed. This project stresses the importance of collaboration with other healthcare professionals and the role of pharmacists in patient safety and people-centred care. Competency-based education needs further development, specifically from early career towards advanced and specialist practice. There is an opportunity to develop programmes to support professional development across all stages, for example: early years foundation training focusing on people-centred care and patient safety; generalised advanced clinical training in the community; training in developing entrepreneurial skills and more advanced and specialist programmes such as biosimilars and pharmacovigilance programmes; clinical pharmacist programmes; pharmaceutical supply chain specialist programmes; poisoning prevention programmes, etc. Organisations also highlighted a need for development of leadership programmes (including for educators and trainers) and for these to be linked with advancement.

This project highlighted the importance of self-directed learning to support the pharmacy workforce and recommends the delivery of online continuing education and training courses and certification, e.g., individual or short series of webinars. Since 2022, FIP has delivered FIP “CPD Bites”, which offer concise and evidence-driven professional development opportunities using a variety of learning activities, including information sharing and knowledge- and skills-based activities. The CPD Bites are designed to be short and to prompt access to further CPD. Participation in CPD Bites may contribute to individuals’ CPD portfolios as they acquire knowledge and skills to improve their performance and impact their practice. CPD Bites may take different formats, including videos, interviews, infographics, podcasts, etc.

Apart from education and training gaps, organisations also highlighted some support that they need from FIP, including:

- Advocacy to governments, particularly related to the expansion of pharmacists’ scope of practice and remuneration system;
- Support in developing competency development programmes, which include training and specialist programmes development and training for trainers;
- Assistance and support in conducting evidenced-based research, such as support in providing resources, tools and expertise in evidenced-based research for policy development; and
- Engagement with students and early career pharmacists.

The FIP-GPO is committed to building intelligence in the development of the pharmaceutical workforce across multiple countries. This will be achieved through ongoing multinational needs assessment programmes to identify gaps and needs. The programme will support the development of data-driven plans to address priority areas and design resources and activities to meet needs for each country. This will help our member organisations identify their needs, understand their situation in comparison with that in other countries, and align national interventions to address identified gaps.

Appendix 1: Survey questionnaire (English version)

FIP Multinational Needs Assessment Programme (FIP M-NAP) project on education and training needs assessment tool of the pharmaceutical workforce

This project aims to compare and contrast the continuing education, training and workforce development priorities across WHO Regions for the explicit purpose of prioritising the global pharmacy agenda to support a wide range of countries and constituencies. Engagement with this tool will enable the development of concerted multinational actions focused on actual education and training needs and priorities and the creation of regional shared action plans to enhance the global profession.

You will have already received information from FIP about the broader aims of this global project and how the information will be used for the greater benefit of the pharmacy global professional community.

This project is authorised and supported by the FIP. All retrieved data is stored securely in line with our FIP Data policy protocol. Identifiable information will be utilised only to make organisational contact with you and is maintained confidential within FIP.

If you have any questions regarding this survey, please contact Mr Christopher John (observatory@fip.org).

Thank you very much for your time and consideration.

Contact details and information about your organisation

1. Country: Click or tap here to enter text.

2. Please provide us with your contact details and information about your organisation. *(this is to ensure correct identification of the case data and will only be used for communication purposes)*

   a. Name of organisation : Click or tap here to enter text.
   b. Your position in your organisation : Click or tap here to enter text.
   c. Your organisational email address : Click or tap here to enter text.

3. If permissible, please provide us with any currently available strategic policies on education and training for your workforce. For example, your national vision, your CPD policy, your development plan or your organisational mission in education and training. *(please provide your document links; any language).*

   a. Document 1 : Click or tap here to enter text.
   b. Document 2 : Click or tap here to enter text.
   c. Document 3 : Click or tap here to enter text.

National pharmacy workforce capacity, trends and intelligence

In this section, we will be focusing on national pharmacy workforce capacity and trends.

4. Please complete the table below based on the current data that you have or have access to *(we will assume a blank, or no entry, is equivalent to "not known").*

	Number	Year of data (if not 2020)
Number of licensed/registered pharmacists		
Number of actively practising licensed/registered pharmacists		
Number of female pharmacists licensed/registered		
Number of actively practising female pharmacists licensed/registered		
Number of pharmacy graduates in the past year nationally		
Number of new registrants in the past year nationally		
Number of practising pharmacists with a foreign diploma/qualification (if known)		
Number of actively practising pharmacists under 35 years old (if known)		
Number of actively practising pharmacists over 60 years old (if known)		
Number of pharmacy technicians/support workforce		

5. Please complete the table below based on the current data that you have or have access to *(we will assume a blank, or no entry, is equivalent to "not known").*

	Number	Year of data (if not 2020)
Number of pharmacists working in community settings (include both private and government)		
Number of pharmacists working in hospital settings (include both private and government)		
Number of pharmacists working in industry or commercial settings		

	Number	Year of data (if not 2020)
Number of pharmacists working in pharmaceutical wholesaling activities		
Number of pharmacists working in academic settings		
Number of pharmacists working in the regulatory sector		
Number of pharmacists working in clinical biology laboratories		

Education and training development of pharmacists and pharmacy support staffs

In this section, we will be focusing on the national education and training environments and workforce development of pharmacists.

6. Please complete the table below based on the current data that you have or you have access to *(we will assume a blank, or no entry, is equivalent to "not known").*

	Number	Year of data (if not 2020)
Number of schools of pharmacy/faculties of pharmacy		
Number of accredited schools of pharmacy/faculties of pharmacy		

7. What is the minimum period of full time undergraduate (university) education for pharmacists? (do NOT include internship/practice training/pre-registration training)? _____ years

8. What is the minimum period of experiential/practical learning required for licensing/registration as a pharmacist? (for example: any internship/practice training/pre-registration training IN ADDITION to the university undergraduate period) _____ months

Continuing professional development (CPD) for pharmacists

"CPD" is defined as "the responsibility of individual pharmacists for maintenance, development and broadening of knowledge, skills and attitudes, to ensure continuing competence as a professional, throughout their careers."

9. Is continuing professional development (CPD) a mandatory requirement for all registered/licensed pharmacists? Choose an item.

10. Is CPD linked with an annual license/registration renewal fee? Choose an item.

11. Is renewal of pharmacist licensing or registration based on gaining CPD 'credits' or 'points' or similar credentials? Choose an item.

12. Is CPD linked with an annual portfolio-type submission (for example, reflective diary entries, or reflective cases)? Choose an item.

13. Who are the principal providers of general CPD (education and training) to pharmacists? *(Tick any that may apply to principal providers)*

- ☐ The professional leadership body
- ☐ The regulator or pharmacy council
- ☐ Universities
- ☐ Commercial or private sector providers of education
- ☐ Ministry or government related providers of education
- ☐ Pharmacy union or other types of professional organisations
- ☐ Others Click or tap here to enter text.

14. Is there a national accreditation body/agency that monitors the quality of CPD provision? Choose an item.

15. Is there a national Professional Recognition system (or Credentialing system) in operation and available to pharmacists? *(for example, to credential professional 'advanced practice' or specialisation)* Choose an item.

16. Are there national membership bodies/societies/associations that support specialisation in pharmacy? *(for example; specialist subjects like a 'pharmacy oncology society', or similar, etc.)* Choose an item.

17. Are there available university-based, formal, education programmes for specialisation? *(for example; specialist subjects like a 'postgraduate Masters/Diploma in pharmacy oncology', or 'postgraduate Masters/Diploma in Clinical Pharmacy', etc.)* Choose an item.

18. How would you classify your general, or usual, CPD education provision characteristics? *(Tick any principal ways of provision)*

- ☐ Class-based (including online classroom provision), for example lectures, updates or workshops in medicines or therapeutic updates or other pharmacy topics
- ☐ Class-based (including online classroom provision), for example lectures, updates or workshops in medicines or disease therapeutics or other pharmacy topics that provides credits or points for continued registration (or mandated CPD)
- ☐ Workplace education models (structured learning at work) that are a regular feature of national CPD provision
- ☐ Maintaining a personal professional portfolio as part of national CPD provision

19. What type of professional bodies or agencies normally provide 'mandatory CPD' in your country? *(Tick any that may apply to principal providers)*

- ☐ The professional leadership body
- ☐ The regulator or pharmacy council
- ☐ Universities
- ☐ Commercial or private sector companies
- ☐ Ministry or government related providers
- ☐ Pharmacy union or other types of professional organisations
- ☐ Others Click or tap here to enter text.

20. Do you have a formal national document that describes the fundamental "scope of practice" for any registered pharmacist? *("Scope of practice" means a defined list of functional tasks, with a description, that a registered pharmacist is expected to be able to conduct – often more directed towards early career or newly registered pharmacists).* Choose an item.
    a. If yes, what is the name of this document? Click or tap here to enter text.

21. Is there a national competency (development) framework for newly registered or early career pharmacists? *(similar to a "Scope of Practice" but with an emphasis (or direct purpose) on developing and supporting competencies for career progression in newly registered or early career pharmacists).* Choose an item.
    a. If yes, what is the name of this document? Click or tap here to enter text.

22. Is there a national competency (development) framework for advanced or advancement of pharmacists? *(similar to a "Scope of Practice" but with an emphasis (or direct purpose) on developing and supporting competencies for advancing, or advanced, career progression beyond early careers).* Choose an item.
    a. If yes, what is the name of this document? Click or tap here to enter text.

23. Is there an identifiable national committee (or similar) that meets regularly to develop workforce strategy and policy? Choose an item.
    a. If yes, please describe Click or tap here to enter text.

In this section, we will be focusing on the national education and training environments and workforce development of pharmacy technicians and pharmacy support staff.

24. Please complete the table below based on the current data that you have or you have access to *(we will assume a blank, or no entry, is equivalent to "not known").*

	Number	**Year of data (if not 2020)**
Number of schools of pharmacy/faculties of pharmacy		
Number of accredited schools of pharmacy/faculties of pharmacy		

Continuing professional development (CPD) for pharmacy technicians and pharmacy support staff

25. Are pharmacy technicians a formally recognised section of the pharmacy workforce in your country? Choose an item.

26. Is continuing professional development (CPD) a mandatory requirement for pharmacy technicians (or pharmacy support staff)? Choose an item.

27. Is CPD linked with any annual relicense/registration for pharmacy technicians (or pharmacy support staff)? Choose an item.

28. Is renewal of pharmacy technicians (or pharmacy support staff) based on gaining CPD 'credits' or 'points'? Choose an item.

29. Is CPD linked with an annual portfolio-type submission (for example, reflective diary entries, or reflective cases)? Choose an item.

30. Who are the principal providers of CPD to for pharmacy technicians and pharmacy support staff? *(Tick any that may apply to principal providers)*

- ☐ The professional leadership body
- ☐ The regulator or pharmacy council
- ☐ Universities
- ☐ Commercial or private sector providers of education
- ☐ Ministry or government related providers of education
- ☐ Pharmacy union or other types of professional organisations
- ☐ Others Click or tap here to enter text.

31. Is there a national accreditation body/agency that monitors the quality of CPD provision for pharmacy technicians and pharmacy support staff? Choose an item.

32. Is there a specific membership body or society/association that provides national support for pharmacy technicians and pharmacy support staff? Choose an item.

33. Do pharmacy technicians have to attend further education (post-high schools) or higher education courses/diplomas before they become qualified as a "pharmacy technician"? (or equivalent). Choose an item.

34. Are there available university-based, formal, education programmes for CPD for pharmacy technicians and pharmacy support staff? Choose an item.

35. Is there a national document that describes a fundamental "scope of practice" for pharmacy technicians (or pharmacy support staff)? *("Scope of practice" means a defined list of functional tasks, with a description, that a*

pharmacy technician (or equivalent) is expected to be able to conduct – often more directed towards early career or qualified technicians). Choose an item.

a. If yes, what is the name of this document? Click or tap here to enter text.

36. Is there a national competency (development) framework for pharmacy technicians (or pharmacy support staff)? *(similar to a "Scope of Practice" but with an emphasis (or direct purpose) on developing and supporting competencies for career progression in newly registered or early career pharmacy technicians).* Choose an item.

a. If yes, what is the name of this document? Click or tap here to enter text.

FIP Development Goals priorities

In this section, we will be focusing on the national workforce and pharmacy service provision policies.
We will use the FIP Development Goals (FIP DGs) to help frame the questions.

37. In which of these general, broad areas do you have active, ongoing national policies or projects (or national implementation projects) mapped to the FIP Global Development Goals as described below?

☐ Academic capacity	☐ Working with others	☐ People-centred care
☐ Early career training strategy	☐ Continuing professional development strategies	☐ Communicable diseases
☐ Quality assurance	☐ Equity and equality	☐ Antimicrobial stewardship
☐ Advanced and specialist development	☐ Impact & outcomes	☐ Access to medicines, devices & services
☐ Competency development	☐ Pharmacy intelligence	☐ Patient safety
☐ Leadership development	☐ Policy development	☐ Digital health
☐ Advancing integrated services	☐ Medicines expertise	☐ Sustainability in pharmacy

38. In relation to your organisation's mission/activities, what are your top 5 priorities? (fill with number 1 to 5 with 1 is the most priorities)?

Academic capacity	Working with others	People-centred care
Early career training strategy	Continuing professional development strategies	Communicable diseases
Quality assurance	Equity and equality	Antimicrobial stewardship
Advanced and specialist development	Impact & outcomes	Access to medicines, devices & services
Competency development	Pharmacy intelligence	Patient safety
Leadership development	Policy development	Digital health
Advancing integrated services	Medicines expertise	Sustainability in pharmacy

Appendix 2: Topic guide (English version)

FIP M-NAP project on education and training needs assessment tool - Part 2

Topic guide

Advance information

Our interview with you aims to capture further in-depth insights into your organisation's opinions and views for current and future needs for pharmacy workforce education and training development.

Here are some points that we would like to discuss:

- A brief review of our online questionnaire
- A discussion of the FIP Development Goals (FIP DGs) in relation to your organisational mission:
  - We will divide our discussion on the FIP DGs into 7 clusters (see next slide).
  - For each cluster, we will ask about the DGs in relation to your organisational mission objectives.

The next few slides are a summary of the general FIP Development Goals for your information and understanding.

Early education and training

- This cluster will focus on quality assurance of undergraduate education and any following internship.
- This is to ensure that pharmacists are fit for purpose at registration.
- We will explore mechanisms and/or systems for quality assuring education and training so graduate pharmacists are ready for practice.
- This may include the appropriate academic and practice-based tutors workforce for delivering the education and training.

Development of the workforce including advanced practice

- This cluster will focus on national systems for career development in developing medicines expertise accessed by patients with multiple medicines and multiple long-term conditions.
- We will explore approaches to developing the workforce (including pharmacy technicians) with more specialist skills and knowledge and practicing at a higher level than early careers.
- This cluster also include training and development that supports moving up or sideways (from secondary care to primary care) in career structures depending on where the workforce is needed.
- We will also explore national systems and structures for credentialing and professional recognition.

Capability of the workforce

- This cluster will focus on the system of quality assurance for the registered workforce (pharmacists and pharmacy technicians) and delivery of CPD/training. This is to ensure the workforce is safe and effective.
- We will explore your national CPD and training systems and how you monitor the delivery of CPD in your country.

Impact and planning of workforce

- This cluster will focus on equity and equality in accessing the workforce and measure the impact of workforce, including pharmacy technicians.
- This includes national workforce and skill mix planning and outcomes of pharmacy services.

Pharmacy and healthcare system

- This cluster will focus on how pharmacy sits in the healthcare system.
- We will explore how much pharmacy is integrated and in which parts of the system they are located, e.g. community pharmacies, other primary care locations, hospital pharmacies etc and the services they provide.
- We will also explore systems for developing leaders and multidisciplinary working in the healthcare team.
- This also includes the development of services according to healthcare needs and the associated workforce (including pharmacy technicians).

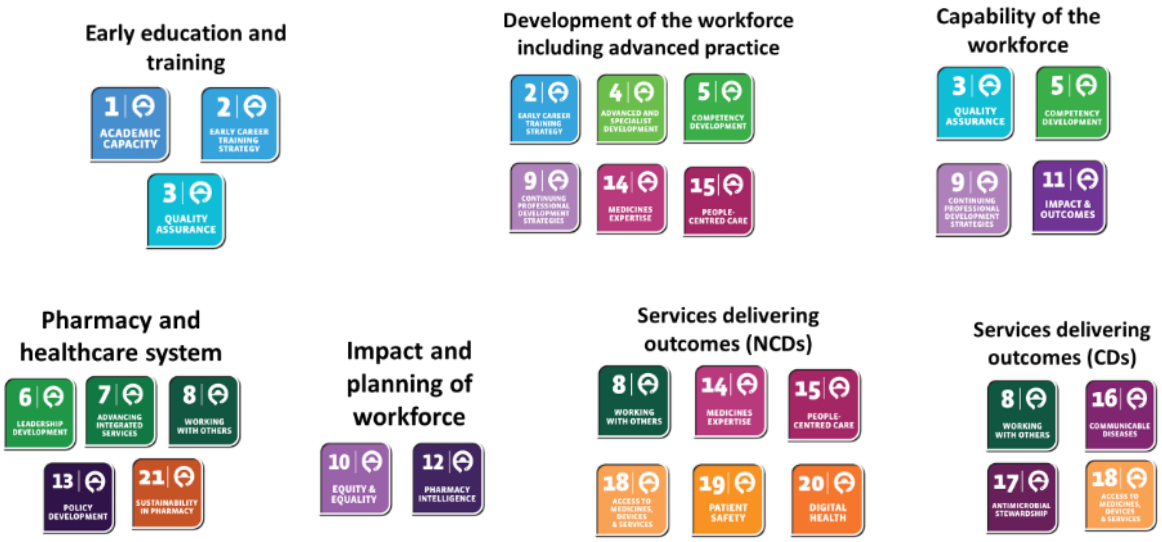
Services delivering outcomes (NCDs)

- This cluster will focus on services to deliver non-communicable diseases,i.e. role of pharmacy in managing long term conditions.
- We will explore advancement in context of new services such as digital health and access to current pharmacy services in your country.
- We will also explore about any strategies in place related to workforce advancement linked to service advancement especially in community pharmacy and primary care setting.

Services delivering outcomes (CDs)

- This cluster will focus on services to deliver communicable diseases, related to the advancement in context of new services and access to current services.
- We will explore aboutvaccination services and how pharmacy can be a health hub for primary health care.
- We will also explore about managing AMR through the generalist and specialist workforce and anynational policies on AMR in your country.

FIP Development Goals



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