

Title: The FIP Nanjing Statements: shaping global pharmacy and pharmaceutical sciences education

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Abstract: The quality assurance of pharmacy education is a global goal and indicator of transformative pharmacy workforce development. FIP has published a number of tools, guidelines and resources to support individuals, institutions, nations and regions advance pharmacy education - especially as the state of pharmacy education varies widely in countries around the world. The Nanjing Statements offer a potential additional tool aimed primarily at institutions to evaluate, monitor and advance their educational standards. The upcoming assessment tool being developed by FIP in partnership with Howard University will facilitate its utilization by educators and institutions worldwide and provides a global, practical mechanism of advancing the education of the pharmacy workforce worldwide.

Keywords: Pharmacy education, Nanjing Statements, Pharmacists, Student pharmacists

The Current State of Global Pharmacy Education

Context and drivers

Over past decades, pharmacy education has been evolving with the changing roles of pharmacists in every corner of the world.¹ Multiple degrees are available, ranging from a four-year bachelors of pharmaceutical science to a six-year doctor of pharmacy (PharmD), with varying systems, lengths and pre-registration requirements - highlighting a global variance in academic capacity. In 2013, the International Pharmaceutical Federation (FIP) - the world's largest pharmacy leadership body representing more than four million pharmacists through its members - has published a landmark report on pharmacy education. The FIP Global Education Report includes the results of the largest global survey conducted to understand pharmacy education systems around the world.² Survey results from 109 countries across all world regions point toward a clear conclusion: that pharmacy education, in both capacity and infrastructure, varies considerably between countries and territories and WHO regions, generally correlating with country level economic development indicators. The report also reiterated FIP's conceptual framework of 'needs-based education' which stipulates that education and workforce development of pharmacy in any country should be directly linked to its health needs and services.

Depending on the country of study, a student interested in becoming a pharmacist could either be on the track to receive a diploma, bachelors, masters, or doctorate in pharmacy, requiring between two to eight years to complete. In some countries, the evolution has brought about a choice of different degrees, allowing prospective students to choose which level of education they would like to obtain, sometimes with multiple degrees offered from one institution.³⁻⁵ The most common entry-level pharmacy degree is the Bachelor, reported to be in 30 out of 74 countries surveyed according to the FIP report, followed by the Master degree (17 countries)

and then the PharmD (9 countries). As patient-centred care becomes a growing emphasis for practicing pharmacists, the development and provision of the PharmD degree has been of interest in many countries around the world, including, but not limited to Pakistan, Iran, Jordan, Nepal, and Saudi Arabia.⁵⁻⁷ In some cases, the adoption of the PharmD without due consideration of the local needs has resulted in a reported mismatch between job expectations and fulfillment for Pharm.D. graduates,⁸ emphasizing the critical importance of the careful needs-based adoption of education models.

Curricular developments & Accreditation standards

With the varying pharmacy degrees available throughout the world, curricular content for each degree inevitably varies. Within the United States, students often begin with pharmaceutical science courses in their first year and move onto clinical pharmacy courses in their second and third years, completing their degrees with a final year of full-time advanced pharmacy practice rotations. In the United Kingdom, the Masters of Pharmacy (MPharm) degree curriculum is based on the European required syllabus and students receive a curriculum that focuses 70% on actions and uses of medications as well as preparing and analyzing research experiments and there is no formal requirement for experiential education or clinical placements.⁹ The MPharm degree is also different from other European countries' pharmacy education programs which may concentrate purely on the pharmaceutical sciences and allow students to learn clinical components after graduation.⁹ Of the 64 countries and territories who supplied data to the FIP 2013 report, 28% of countries described their early year curriculum as most oriented towards general science, with small to moderate pharmacy practice components, 17% report having very little pharmacy components in their early year curricula and the remaining 18% describe their curricula as a mix of general science and pharmacy practice.

As the evolution of education continues and new degree programs are developed, an evaluation of curricular content is necessary to ensure all degrees meet educational standards. The content and composition of curricula are often shaped by national accreditation standards set by the government's education agencies, national pharmacy professional associations or regulators, or both. In addition to adhering to national standards, curricular development in some schools is also influenced by international accreditation standards sought by the schools themselves. For example, the Accreditation Council for Pharmacy Education provides accreditation for PharmD granting programs in the US and also provides PharmD certification of overseas PharmD programs. Advancements made in offering PharmD programs in different countries should include processes to ensure the quality of the education provided, as well as its fulfillment of local health and service needs. Individual countries may also have their own accreditation process for their varying pharmacy degree programs. For example, Australian pharmacy education programs are accredited by the Australian Pharmacy Council and Canadian pharmacy education programs are accredited by the Canadian Council for Accreditation of Pharmacy Programs.^{10,11} An updated understanding of global quality assurance systems of pharmacy education is needed to identify emerging trends in countries around the world.

Advancements in Global Pharmacy Education Assessment & Quality Assurance

FIP resources & guidelines on quality assurance

FIP recognises the importance of advancing pharmacy and pharmaceutical sciences education, and has developed tools and resources to support educators and education policy makers. In 2000, FIP adopted the Statement of Policy on Good Pharmacy Education Practice which provides a conceptual framework for the design, implementation, and assessment of contemporary educational programmes.¹² To further support the implementation of these

recommendations, the need for a global framework on quality assurance was recognised resulting in the first edition of the Global Framework for Quality Assurance of Pharmacy Education launched in 20018.¹³ In September 2009, FIP consequently adopted its Statement of Policy on Quality Assurance of Pharmacy Education.¹⁴ The first edition of the Global Framework served as the resource document for the statement, and the statement includes a number of recommendations - based on the principles contained in the Framework – that are directed at national governments, regulatory and quality assurance organizations, FIP member organizations, universities, colleges and schools of pharmacy. The second edition of the Framework was published in 2014.¹⁵ The Framework is offered primarily as a tool aimed at facilitating the establishment of systems of quality assurance in countries where no such formal systems exist or to improve existing systems. The Framework is intended as a foundation and starting point that can be adapted and built upon to suit national needs, systems, and conditions and can be used at an individual, institutional, national and/or regional level. It has already been used by a number of countries including Chile, India, Jordan, New Zealand, Serbia, Spain and Thailand and continues to be utilised around the world.¹⁶

Competency Frameworks & FIP Global Education

Countries which do not have formal accreditation institutions or processes may rely on institutional quality assurance mechanisms, educational research, competency frameworks, and global pharmacy education organizations to evaluate their curricular content. In Egypt, a study evaluating student perspectives on the pharmacy curriculum showed a desire for increased use of technology for teaching and more relevant clinical pharmacy practice courses, revealing to school administration what curricular changes may be needed.¹⁷ Global pharmacy education competency frameworks put forth by the World Health Organization in 1997 and more recently by the International Pharmaceutical Federation (FIP) in 2016 can aid in curricular advancement by informing schools on globally supported pharmacy education expectations.^{18,19} Institutions

like FIP offer opportunities like the Academic Institutional Membership, where faculties and schools of pharmacy and pharmaceutical science can connect to a global platform and discuss shared visions for leadership, challenges in pharmacy education, and successes. Utilization of these many resources and opportunities can allow all schools, regardless of degree program, to strive towards educational advancement.

Global goals on quality assurance

FIP has developed a transformative workforce roadmap adopted at the Global Conference on Pharmacy and Pharmaceutical Sciences Education held in Nanjing, China, on November 7 and 8, 2016. The workforce roadmap sets out the desired milestones for education and workforce development of pharmacists and pharmaceutical scientists, clearly linked with a Global Vision for Education and Workforce. The issue of quality assurance remains a global priority and has become one of the FIP's 13 global Pharmaceutical Workforce Development Goals (PWDGs) adopted in Nanjing in 2016 as one of FIP's 'Nanjing Outcomes'. PWDG3 is on Quality Assurance and the Goal describes how countries and territories around the world should have *transparent, contemporary and innovative processes for the quality assurance of needs-based education and training systems*. Progressing the achievement of PWDG3 can be monitored by some of the following indicators and drivers:

- Ensure the quality of the workforce by quality assuring the continuous development and the delivery of adequate and appropriate education and training; quality assurance needs to address academic and institutional infrastructure in order to deliver the required needs and competency-based education and training.
- Establish standards-based global guidance for quality assurance of pharmacy and pharmaceutical science education in the context of local needs and practice.

- Implement fair, effective and transparent policies and procedures for quality assurance of pharmacy and pharmaceutical science education and training.
- Define critical stakeholder input on development of adequate education and training and fair and effective policies, including necessary student input.

The Impetus for Global Statements on Pharmacy Education

To support education providers and institutions in monitoring and improving pharmacy education, the FIP Statements on Pharmacy and Pharmaceutical Sciences Education ("the Nanjing Statements") have also launched in 2017 in conjunction with the PWDGs and the Global Vision, following adoption in Nanjing in 2016. The three documents collectively form the 'Nanjing Outcomes' and represent FIP's global workforce development roadmap.²⁰ The Nanjing Statements describe an envisioned future for progressive professional education, to enable the further enhancement of pharmaceutical education worldwide.

Purpose and Utility of the Nanjing Statements

The Nanjing Statements serve as a benchmark for pharmacy education globally. Utilized by academic administrators and leaders, it aids in identifying where advancements can be made in pharmacy education institutions. This set of global statements pushes the practice of pharmacy forward by unifying pharmacy education and therefore, standardizing the skill set of all graduating pharmacists regardless of location or practice setting. As pharmacy practice continues to advance around the world, pharmacists can be educated to meet practice expectations and improve health outcomes in any part of the world.

The 67 Nanjing Statements were formally published in 2017.¹⁹ The statements contain eight clusters and statements within each cluster address multiple educational concepts. Utilizing the Nanjing Statements to achieve the highest benefit requires assessment tools and feedback based on these statements. Since its publication, pharmacy researchers have worked towards developing tools and methods to make the use of these statements easier for academic institutions. One of these tools is the Nanjing Statement self-assessment tool being developed and validated by FIP in collaboration with Howard University College of Pharmacy and other stakeholders. Currently in development and validation phases, the tool provides an easily accessible way to evaluate an academic institution's pharmacy education program against the Nanjing Statements. The self-assessment, once completed by a school faculty member or administrator, will provide the current state of that school in achieving each of the Nanjing Statements. Such results reveal areas of potential advancement for each institution as well as areas that are being achieved well.

Stakeholders: key to successful implementation

As the number of tools and methods for use of the Nanjing statements grows, relevant stakeholders should look into rising opportunities for their use. Global efforts to advance pharmacy education can be highly beneficial for the advancement of the role of pharmacists and this change should begin with improving pharmacy education. Implementation by all stakeholders, coupled with multi-stakeholder collaboration is key to the successful utilization of the upcoming Nanjing Statements assessment tool.

National and Local Pharmacy organizations

National and local pharmacy organizations can recognize the value of the Nanjing Statements and utilize them to their highest potential. Many national pharmacy organizations have the ability to set national standards for pharmacy education. As these national standards are developed or revised, ideals agreed upon in the Nanjing Statements can be utilized to shape national and local pharmacy education expectations. In this way, national standards can work in parallel with global benchmarks to advance pharmacy education and practice.

Leaders and Administrators in academic institutions

Education can change the world. With equitable and quality education, the results can be transformational for an individual, a community and society at large. Academic pharmacy leaders are charged with a major responsibility at their institutions - building up a curricula and delivering it with high-quality to produce a competent, adaptable, and flexible pharmaceutical workforce that meets the healthcare needs of the population. Changing the world for better healthcare outcomes, requires academic leaders to think globally and act locally at their institutions. Nanjing Statements give the most comprehensive global perspective on educational standards to the academic leaders - as the statements were adopted by consensus of the world's best and mostly recognized educators, scientists and practitioners. By assessing their institutions standards against Nanjing Statements, academic leaders can obtain an overview of the needs and priorities of their institutions. Academic leaders have the decision making power to influence educational policies and Nanjing Statements can act as a prominent tool for them to support evidence-based policy changes, for their institution, for their country, and internationally.

Young pharmacists and student pharmacists

Young pharmacists and student pharmacists are the future of pharmacy. They need to receive equitable and quality education to gain necessary skills and competencies, acquire a global vision to improve health outcomes for patients, and gain a culture of continuous quality improvement to keep up with the fast-changing healthcare needs and priorities of the world. Professional development starts from day one at the school and continues life-long. It is instrumental to engage and empower students and early career pharmacists in the implementation of Nanjing Statements. The envisioned future of pharmacy education described in the Nanjing Statements can only be realized by the ownership and action of students and early career pharmacists. Nanjing Statements can be a support tool for them to conduct a self-assessment of their educational needs in achieving their aspired career. They can shape their professional path by advocating for these needs to their schools or professional bodies.

Conclusion

The quality assurance of pharmacy education is a global goal and indicator of workforce development. FIP has published a number of tools, guidelines and resources to support individuals, institutions, nations and regions advance pharmacy education. The Nanjing Statements offer a potential additional tool aimed primarily at institutions to evaluate, monitor and advance their educational standards. The upcoming assessment tool being developed by FIP in partnership with Howard University College of Pharmacy will facilitate its utilization by educators and institutions worldwide and provides a global, practical mechanism of advancing the education of the pharmacy workforce worldwide.

References:

1. Toklu HZ, Hussain A. The changing face of pharmacy practice and the need for a new model of pharmacy education. *J Young Pharm.* 2013;5(2):38-40.

2. International Pharmaceutical Federation. FIPed Global Education Report.
https://fip.org/files/fip/FIPed_Global_Education_Report_2013.pdf. Published 2013.
Accessed March 17, 2019.
3. Basak SC, Sathyanarayana D. Pharmacy education in India. *Am J Pharm Educ*. 2010;74(4):68.
4. Shen L-J, Wu F-LL, Ho Y-F, Liu KCSC. Evolution of Pharmacy Education in Taiwan. 2008.
5. Bhuvan KC, Subish P, Mohamed Izham MI. PharmD Education in Nepal: The Challenges Ahead. *American Journal of Pharmaceutical Education*. 2011;75(2):38c.
6. Al-Wazaify M, Matowe L, Albsoul-Younes A, Al-Omran OA. Pharmacy education in Jordan, Saudi Arabia, and Kuwait. *Am J Pharm Educ*. 2006;70(1):18.
7. Jamshed S, Babar ZU, Masood I. The PharmD degree in developing countries. *Am J Pharm Educ*. 2007;71(6):125.
8. Bader LR, McGrath S, Rouse MJ, Anderson C. A conceptual framework toward identifying and analyzing challenges to the advancement of pharmacy. *Res Social Adm Pharm*. 2017;13(2):321-331.
9. Sosabowski MH, Gard PR. Pharmacy education in the United Kingdom. *Am J Pharm Educ*. 2008;72(6):130.
10. Marriott JL, Nation RL, Roller L, et al. Pharmacy education in the context of Australian practice. *Am J Pharm Educ*. 2008;72(6):131.
11. Austin Z, Ensom MH. Education of pharmacists in Canada. *Am J Pharm Educ*. 2008;72(6):128.
12. International Pharmaceutical Federation. FIP Statement of Policy on Good Pharmacy Education Practice.
https://www.fip.org/www/uploads/database_file.php?id=188&table_id=. Published 2000.
Accessed March 17, 2019.

13. International Pharmaceutical Federation. A Global Framework for Quality Assurance of Pharmacy Education. <https://www.fip.org/files/fip/PharmacyEducation/Global Framework Final Draft.pdf>. Published 2008. Accessed March 17, 2019.
14. International Pharmaceutical Federation. FIP Statement of Policy Quality Assurance of Pharmacy Education. https://www.fip.org/www/uploads/database_file.php?id=302andtable_id=. Published 2009. Accessed March 17, 2019.
15. International Pharmaceutical Federation. Quality Assurance of Pharmacy Education: the FIP Global Framework. <https://www.fip.org/files/fip/PharmacyEducation/Quality Assurance/QA Framework 2nd Edition online version.pdf>. Published 2014. Accessed March 17, 2019.
16. International Pharmaceutical Federation. Transforming our Workforce. https://www.fip.org/files/fip/PharmacyEducation/2016_report/FIPEd Transform 2016 online version.pdf. Published 2016. Accessed March 17, 2019.
17. El-Awady el SE, Moss S, Mottram D, O'Donnell J. Student perspectives on pharmacy curriculum and instruction in Egyptian schools. *Am J Pharm Educ*. 2006;70(1):9.
18. World Health Organization. The Role of the Pharmacist in the Health Care System. <http://apps.who.int/medicinedocs/pdf/s2214e/s2214e.pdf>. Published 1997. Accessed March 17, 2019.
19. International Pharmaceutical Federation. Nanjing Statements. https://www.fip.org/files/fip/PharmacyEducation/Global_Conference_docs/Nanjing State ments.pdf. Published 2017. Accessed March 17, 2019.
20. Bader LR, Bates I, P. S, Charman WN. Transforming Pharmacy and Pharmaceutical Science Education in the Context of Workforce Development. 2017.