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Developing a FIP handbook for implementing competency-based education in pharmacy education

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Abstract

Competency-based education (CBE) is a viable educational approach to close a training gap between ever-changing health challenges and pharmacy and pharmaceutical education curricula. However, the implementation of CBE into initial professional education and training (IPET) for pharmacists is slow. Thus, the development of a handbook to guide academics, educators, and practitioners in implementing CBE would be beneficial. This paper describes the process of developing a handbook to support educators in implementing CBE principles in IPET for pharmacists and pharmaceutical scientists. The project involves three phases: (1) a systematic review, (2) a global survey, and (3) the development of a handbook. The handbook provides guidance and a stepwise approach to implementing CBE in pharmacy curricula, which is particularly useful in resource-limited settings where curriculum overhaul using CBE principles might be challenging.

Introduction

Health is a fundamental human right. Attainment of health is dependent on the resilience and advancement of national and local health systems. To strengthen and sustain health systems as directed by the United Nations (UN) Sustainable Development Goal (SDG) 3 (Langins & Borgermans, 2015) on good health and well-being (United Nations, 2015), an adequate, well-distributed, competent health workforce is required to respond to local health needs and meet their system demands. The UN urges investment in health professionals, particularly in low and lower-middle-income countries, to reduce a projected shortage of 18 million health workers to achieve and sustain SDGs in those countries (High-Level Commission on Health Employment and Economic Growth, 2016). Scaling up transformative and quality education based on the health needs of populations and health system demands is one of the key recommendations to transform the health workforce (World Health Organization, 2016).

Medicines are the most common intervention in health care; rational and effective use of medicines is essential for the sustainable use of available resources. As medicines experts, pharmacists are key contributors to healthcare delivery. The establishment of needs-based initial professional education and training (IPET) for pharmacists is especially important to meet local health needs, given the different health systems with varying regulations and laws related to medicines and professional practice. Fit-for-purpose IPET in pharmacy contributes to achieving the UN's SDG 4 on quality education (United Nations, 2015). In this context, IPET refers to "a pre-service professional higher education programme that leads a graduate to a formal registration as a pharmacist with a statutory board of

each country where the education is offered" (Arakawa *et al.,* 2020). However, health professional education has not kept up with ever-changing challenges, including new infectious, environmental, and behavioural risks during rapid demographic and epidemiological changes (Frenk et al., 2010).

The International Pharmaceutical Federation (FIP) has developed and advocated the Needs-Based Education Model for better provision of pharmaceutical care in any given country to tackle these challenges in IPET for pharmacists globally (International Pharmaceutical Federation, 2017). The FIP model embodies a cycle design of the developmental process of pharmacy education based on local, regional, and global needs. It illustrates the importance of Competency-Based Education (CBE) for pharmacists. Following the FIP model, FIP launched the first Global Competency Framework (GbCF) in 2012 (International Pharmaceutical Federation, 2012), with a recent update in 2021 (International Pharmaceutical Federation, 2020). Efforts were made to adapt and adopt the GbCF by stakeholders in the profession in various settings and across nations (Udoh *et al.,* 2021). A 2010 Lancet article called for the adoption of a CBE approach as a pedagogical design for health professional education in the twenty-first century (Frenk *et al.,* 2010). The CBE approach has been endorsed by the World Health Organisation (WHO) in a recently published Global Competency Framework related to Universal Health Coverage (World Health Organisation, 2022). The WHO defined CBE as "an approach to preparing [health workers] for practice that is fundamentally oriented to outcome abilities and organised according to competencies (World Health Organization, 2022). It de-emphasises time-based training and facilitates greater accountability, flexibility, and leaner-centredness" (Frank *et al*., 2010).

However, the implementation of CBE principles into IPET for pharmacists is slow for several reasons. These include varying settings, difficulties in defining, developing, implementing, and assessing competencies, students' motivation (Katoue & Schwinghammer, 2020), resources for change (financing and workforce), limited flexibility of a time-bounded higher education setting, and community building of learners (Gruppen *et al.,* 2016; Katoue & Schwinghammer, 2020).

Considering the importance of IPET for pharmacists and the challenges of implementing radical changes in a regulation-bound higher education setting, a handbook was deemed an essential guide for academics, educators and practitioners in the implementation of CBE. It may also help consider practical steps for curriculum design, course implementation, and programme maintenance.

Thus, the programme design and assessment working group of the FIP Academic Pharmacy Section and FIP Education planned to develop a FIP-wide project for the development of a handbook to support educators in implementing the CBE in IPET for pharmacists. This paper provides an overview of the project and the launch of the developed handbook.

Description of the project

The project was initiated in January 2020, aiming to develop a handbook for supporting pharmacy educators and practitioners to implement the CBE approach in their pharmacy education and training. The handbook from the project was successfully launched in November 2022 and is available on the FIP website (International Pharmaceutical Federation, 2022). Project members were assembled based on their expertise and expressions of interest in the project. To create an evidence-based and meaningful resource for global pharmacy readers, the development of the handbook embraces three phases; (1) a systematic review of features and underlying aspects of the CBE applied in pharmacy education and training, (2) a global survey to investigate the drivers and challenges for the CBE implementation and the current use of CBE approach in IPET for pharmacists and pharmaceutical scientists, and finally (3) the development of a handbook based on the outcomes of phases 1 and 2. Figure 1 illustrates the relationship between the three phases of the project.

The handbook covers a glossary of terms related to CBE and how CBE links with many other aspects of IPET for pharmacists. A brief overview of the systematic review and results of the global survey conducted before its development is also featured in the handbook (International Pharmaceutical Federation, 2022). Step-by-step instructions and the necessary considerations in the process of CBE implementation in a pharmacy education curriculum are provided. Other considerations required for successful CBE implementation are described, including evaluation of the CBE implementation and academic capacity/faculty development aspect of the CBE implementation. The handbook will assist countries and schools of pharmacy in implementing a CBE approach to support preparing pharmacy graduates who are better equipped to serve their local populations and eventually improve national and global health through better workforce development.

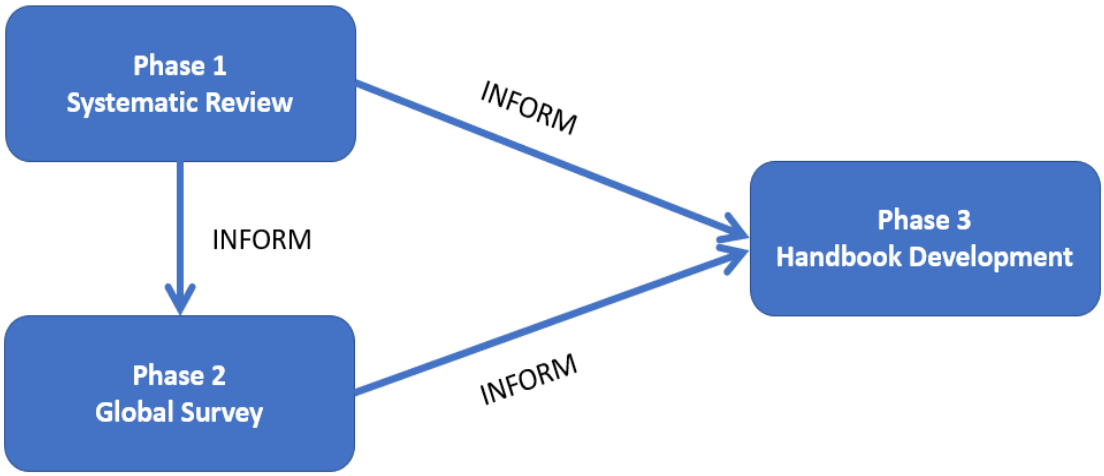

Figure 1: Relationship of each phase

The development of the handbook has been supported by evidence derived from the first two phases: (1) a systematic review and (2) a global survey, as described in the previous section.

Systematic review

A systematic review was conducted to identify features and underlying aspects of the CBE employed in pharmacy education across nations (McMullen *et al.,* 2022). The systematic review focused on education and training for pharmacy students and pharmacists without any limitations on pharmacy practice sectors and study methods. The literature included was limited to those published in English from 2010 to 2021, considering the duration of development and publication of the GbCF version 1 in 2012. Studies were included if they were original research papers with relevance to CBE of pharmacy or pharmaceutical science students, pharmaceutical scientists, or pharmacists. Studies were excluded if they were commentaries, reviews and letters. Studies with a narrow topic, module, or singular element of teaching without a broader discussion about CBE were also excluded. Detailed information on the systematic review can be found in the article authored by McMullen and colleagues (2022).

The systematic review analysed 28 studies, most of which were conducted in countries classified by the World Bank as high-income countries. This fact may anticipate the struggles and challenges of CBE implementation in resource-limited countries and schools of pharmacy.

The review identifies prominent features and aspects of the CBE approach applied in pharmacy education and training across nations. These are the bases of the handbook supporting evidence of successful implementation of the CBE approach in pharmacy education as well as considerations for any challenges that may be encountered.

Global survey

An online questionnaire was developed by the project team based on the preliminary findings from the systematic review. The survey questionnaire was designed to explore the current extent of CBE utilised worldwide for pharmacy and pharmaceutical sciences programmes, the perceived challenges of implementing CBE in pharmacy and pharmaceutical sciences, and the characteristics of CBE-related elements incorporated within programmes, modules or units. The survey was conducted between November 2021 and March 2022. The online questionnaire was distributed to the FIP Academic Institute Membership (AIM) member institutions and Academic Pharmacy Section individual members. A snowballing sampling approach using the personal networks of the project team members was used to broaden the dissemination of the survey beyond the FIP membership.

In total, 74 responses were collected and included in the analysis. The responses covered all WHO regions, though representation varies: Africa (n=1, 1%), Americas (n=14, 19%), South-East Asia (n = 2, 3%), Europe (n=32, 43%), Eastern Mediterranean (n=15, 20%), and Western Pacific (n=10, 14%). A response rate could not be calculated since there is no definite number of schools of pharmacy in the world, and the distribution of the survey was partly assisted by a snowballing approach. The survey revealed the current use of the CBE approach in pharmacy and pharmaceutical science education and the challenges encountered in the process of CBE implementation. However, considering the varying representation of the number of schools in terms of regions, the results need to be interpreted with caution. The results of the survey

were reported in the handbook (International Pharmaceutical Federation, 2022).

Handbook development

Evidence generated and identified from the first two phases was embedded throughout the handbook. Experts in the fields collaboratively contributed to all aspects of the handbook by sharing knowledge and experience together with evidence. This was done through regular meetings of the project team and all contributors to the handbook. The wording and terms used for the handbook were also discussed by the team to harmonise the contents of each chapter.

The handbook starts by describing the theory and concept of the CBE approach in pharmacy education to help readers and educators deepen their understanding of the CBE approach. The findings from the systematic review and global survey informed the structure and contents of the handbook but also were presented to illustrate the need for the handbook and the current use of CBE in pharmacy education. Evidence-based instructions for implementation and faculty support were also included. The handbook provides a reference list for further reading for CBE in pharmacy education or research.

The handbook may not cover all details of the theory, implementation sciences, and instructions of CBE implementation in pharmacy curricula of all settings due to the limitations of evidence available and current experiences of CBE implementations in pharmacy. However, the evidence-based handbook can be used by schools of pharmacy across the world to assess their curriculum development using the CBE approach and support those interested in implementing CBE in their curriculum. Because the handbook is freely available on the FIP website, it will also support those in resource-limited settings who cannot undertake a complete curriculum overhaul using CBE principles but may wish to implement some CBE aspects.

Future plans

This project aimed to deliver the FIP handbook for implementing CBE in pharmacy education. The handbook was launched in November 2022 and disseminated across the FIP membership through the FIP Academic Pharmacy Section newsletter, the FIP newsletter, and a webinar. The developed handbook is available on the FIP website at https://fip.org (International Pharmaceutical Federation, 2022).

Future plans after the launch include developing a training programme or course to support the targeted audience with CBE implementation based on guidance provided in the handbook. A train-the-trainer programme on the use of the handbook with practitioners experienced with the use of CBE concepts would support those who would like to initiate the implementation of CBE principles. The provision of such a programme will be supported by the FIP Provision and Partnerships programme, which aims to facilitate collaborations and partnerships to assist members with their professional development avenues. This requires broader collaboration in and beyond the FIP constituencies; UNITWIN, the Academic Pharmacy section, and the Academic Institute Membership of the FIP will have a significant part.

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