

# Advancement of Pharmacy Accreditation in the Field of Chinese Higher Education

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## Abstract

**Background:** The last two decades have witnessed the advancement of accreditation of Chinese higher education, with pharmacy programs being one of the most important. The purpose of this research was to review and elucidate the evolution of the pharmacy accreditation system in China. **Methods:** A literature search was conducted using PubMed, CINAHL, Embase, Cochrane databases and Google Scholar and CKNI databases, the website of the Working Committee for the Accreditation of Medical Education, and related university websites. Search terms used with each database were “accreditation” AND “pharmacy” AND “China”. The search strategy was designed to identify studies that report pharmacy program accreditation in China. **Results:** The primary outcomes indicate that the timeline of current Chinese pharmacy accreditation can be divided into four distinct chronological periods. **Conclusion:** After two decades of evolution, the qualification of the pharmaceutical program in China has significantly advanced its committees, criteria, methods, and systems, though with areas for refinement. As China embarks upon the process of pharmacy accreditation, it is simultaneously drawing upon lessons from the developed world, as well as infusing the process with its own distinct cultural identity. To effectively tackle current issues in the field of pharmacy accreditation, a commitment to continual quality advancement is required.

## Keywords

Pharmacy Accreditation, Field of Pharmacy Education, Current and Future, China

## 1. Introduction

In the age of globalization, the quality of higher education is emphasized. With the increasing role of higher education in economic development, international competitiveness and social cohesion, quality assurance in the field of higher

education has become a hot topic, and accreditation has become one of the prevailing approaches to external quality assurance. It is also widely accepted as a procedure for providing internal and external legitimacy to higher education. According to the Council for Higher Education Accreditation (CHEA), accreditation, which includes institution accreditation and program accreditation, is a process of external quality review of higher education institutions or programs for quality assurance and improvement [1]. Accreditation is a matter of quality assurance as well as quality improvement. A professional program must be evaluated to achieve its stated objectives and in accordance with the notion that pharmacy can be a uniquely personal service in the field of health science. Accreditation affirms a fundamental quality of pharmacy education [2]. The US Department of Education officially recognizes the Accreditation Council for Pharmacy Education (ACPE) for its accreditation and pre-accreditation of professional degree programs in pharmacy within the United States. The evaluation and operational procedures of accreditation set by ACPE may include submission of a program self-study, completion of prescribed administrative summaries, written third-party comments, and on-site evaluation with a written evaluation team report [3]. The objective of Canadian Council for Accreditation of Pharmacy Programs (CCAPP) is to confer accreditation to Pharmacy and Pharmacy Technician programs that abide by the CCAPP Standards and to stimulate sustained advancement of these educational programs for pharmacy practitioners and pharmacy technicians. Attaining professional accreditation for pharmacy degree programs ensures a standard of quality across the US and Canada [4].

After 2000, medical education standards and professional accreditation were introduced in China [5].

According to the Working Committee for the Accreditation of Medical Education (WCAME) of the Ministry of Education (MOE) of the People's Republic of China, accreditation of medical education refers to the process of reviewing and evaluating medical schools or programs by designated institutions using established standards and procedures [6]. As a major component of the accreditation of medical education, the accreditation of the pharmacy program was officially launched 16 years ago in China. Combined with the current status, it can be concluded that pharmacy program accreditation is a process, in which authoritative pharmacy education accreditation bodies review and evaluate whether the established pharmacy programs satisfy the corresponding educational objectives by following publicly-referred standards and procedures, to establish public recognition and conclusion. This study was conducted to review and assess the development of the pharmacy accreditation system in China.

## 2. Methods

A literature search was conducted using the PubMed, CINAHL, Embase, Cochrane databases and Google Scholar and China National Knowledge Infrastructure (CNKI) database, website of the Working Committee for the Accreditation of Medical Education, and related university websites through July 1, 2023 (no

start date specified). Search terms used with each database were “accreditation” AND “pharmacy” AND “China”. The search strategy was designed to identify studies that report pharmacy program accreditation in China. This study was exempt from institutional review board review because it did not involve human participants.

### 3. Results

#### 3.1. Overview of Pharmacy Program Accreditation

The quality assurance of pharmacy training is influenced by a variety of internal and external factors. First of all, China experienced a college enrollment surge from 1999 onwards. The year 2021 witnessed the popularization of higher education, which was considered a privilege. The far-reaching growth raises concerns about the quality of higher education [7]. Second, in the past few years, various academic institutions in China, especially non-pharmaceutical ones, contributed to a remarkable expansion of pharmacy programs. Nonetheless, these new programs lack the long-standing professional education traditions or academic attitudes such as benevolence, rigour, and truthfulness, which are essential for maintaining quality. Third, since the entry of China into the World Trade Organization, the Chinese education system, including pharmacy education, is subject to competition from international and world-class universities. Fourth, the global academic community values quality assurance frameworks. For instance, the United States of America continues improving its quality assurance system, mainly consisting of accreditation and academic ranking. Accreditation of pharmacy schools and programs is regarded as an essential component of the quality assurance system [8]. Since then, China gradually realizes the importance of enhancing its competitive advantage in international education through quality assurance. The existing internal quality assurance system of pharmacy education, built upon traditional perception, cultural self-awareness and teaching by example, is challenged, thereby necessitating the introduction of new external quality assurance and quality control with unified standards.

#### 3.2. History of Pharmacy Program Accreditation

Since the beginning of the century, the Chinese pharmacy education community propose and implement quality assurance measures. Considering several key milestones, the process of establishing a pharmacy accreditation system can be roughly divided into four phases (Table 1).

##### 3.2.1. Embryonic Phase (2001 to 2006)

At the beginning of the 21st century, Chinese universities and colleges with pharmacy programs demonstrated remarkable dedication to education quality assurance. In 2001, a Seminar on Quality Control of Pharmacy Programs of Higher Education Institutions was convened by over a dozen esteemed pharmaceutical institutions, including China Pharmaceutical University and Peking University College of Pharmacy. Having acquired a collective agreement, the panel drafted

**Table 1.** Summary of four development stages of accreditation in China.

Stage	Period	Highlights
Embryonic phase	2001-2006	Prototype of Chinese pharmacy program accreditation standards were drafted at Seminar on Quality Control of Pharmacy Programs of Higher Education Institutions
Pilot phase	2007-2012	The MOE launched the Quality Project, convened the 2007-2010 Medicine and Pharmacy Teaching Advisory Board for Universities then entrusted the Pharmacy Teaching Advisory Board with organizing and initiating the pilot accreditation at 5 universities.
Adjustment period	2013-2017	MOE appointed 92 advisory boards to draft national standards for undergraduate programs. Eight pharmacy science programs received accreditation.
Innovation period	2018-present	The Evaluation Center collaborates with Advisory Board on Pharmacy Education in the oversight and implementation of pharmacy accreditation with application of three-tier pharmacy education accreditation system.

the Basic Requirements for Undergraduate Pharmacy Programs, which is the prototype of Chinese pharmacy program accreditation standards [9].

### 3.2.2. Pilot Phase (2007 to 2012)

In 2007, the Ministry of Education (MOE) of China launched the Project on Quality Control and Teaching Reform of Undergraduate Teaching in Higher Education Institutions (known as the Quality Project) and proposed exploring evaluation system reform with emphasis on promotion of pilot accreditation in engineering and medicine to gradually establish a primary accreditation framework for professional education. Pharmacy program was granted to be included in the first pilot batch of accreditation. In the same year, the MOE convened the 2007-2010 Medicine and Pharmacy Teaching Advisory Board for Universities and entrusted the Pharmacy Teaching Advisory Board with organizing and initiating the pilot accreditation of pharmacy programs under the support of allocated funding. Pharmaceutical College of Guangdong (now known as Guangdong Pharmaceutical University) was the first institution to receive pilot accreditation for a pharmacy science program in December 2007. In 2009, pilot accreditation was further promoted among four universities, including China Pharmaceutical University, Shenyang Pharmaceutical University, Inner Mongolia Medical College (now known as Inner Mongolia Medical University) and Hainan Medical University. The accreditation standards and procedures underwent revision and refinement following pilot accreditation.

### 3.2.3. Adjustment Period (2013 to 2017)

In 2013, the MOE convened the Advisory Board on Higher Education for 2013-2017. In the same year, the MOE appointed 92 advisory boards to draft na-

tional standards for undergraduate programs [10]. The national standards and accreditation standards are fundamental components of the quality standard system of Chinese pharmacy education. Accreditation standards must be evaluated and improved in alignment with the establishment of national standards. Meanwhile, as a trial, the accreditation standards are divided into two tiers, assurance criteria and advancement criteria with distinct requirements applicable to schools with different orientations. In 2015, the MOE issued the Opinions on Promoting the Separation of Education Governance, Administration from Evaluation to Facilitate Government Function Transformation. Since then, organizations, such as the China Pharmaceutical Association, are included in pharmacy accreditation to establish an accreditation body involving multiple stakeholders. Financial support is supplied through initiatives like the Expanded Pilot Program for the Handover of Functions from the Government to Associations affiliated with the China Association for Science and Technology. Contrasting with the previous stage, revisions were made to accreditation standards, board members, and funding sources. A total of eight universities, including Zhejiang University and Harbin Medical University, were accredited for pharmacy science programs.

#### **3.2.4. Innovation Period (2018 to Present)**

In 2018, the MOE convened the Advisory Board on Higher Education from 2018 to 2022. In the same year, after a short period of exploration and adjustment, the pharmacy accreditation was included in the evaluation system, which is maintained by the Education Quality Evaluation Agency of MOE (the Evaluation Center), a national professional institution for education quality assurance in China. The Evaluation Center collaborates with the recently established Advisory Board on Pharmacy Education in the oversight and implementation of pharmacy accreditation. Starting 2019, a three-level pharmacy education accreditation system is implemented. First- and second-level pharmacy accreditation standards learn from three tiers of teacher training accreditation, with the highest-level standards yet to be established. Concurrently, the Undergraduate Pharmacy Education Accreditation Board (the Accreditation Board) is refreshed to further improve the accreditation team. Furthermore, the Accreditation Board is advanced by expediting the selection and enlistment of experts from pharmacy schools or pharmaceutical institutions and by upgrading committee member training. Hebei Medical University received the first joint accreditation of pharmacy science and professional pharmacy programs.

### **3.3. Characteristics of Pharmacy Education Accreditation in China**

The pharmacy education accreditation in China noticeably develops characteristics in terms of board members, standards, procedures, and systems.

#### **3.3.1. Establish a Government-Led, Independent Accreditation Institution**

Third-party accreditation organizations can be divided into two categories: one convened by non-governmental entities or professional organizations, and the

other one led or authorized by the government, but independent of other education administrative departments [11]. Pharmacy education accreditation bodies in Western countries, such as the United States, belong to the former category, whereas China has adopted the latter system. This divergence results from their respective dimension of national context, education history and cultural differences, therefore no supremacy can be identified. The Chinese pharmacy education accreditation board maintains independence in assessing the quality of pharmacy education rather than focusing on institutional autonomy. This transformation from institutional autonomy to accreditation autonomy constitutes a considerable improvement in academic research of third-party assessment of Chinese higher education [12]. The accreditation practice demonstrates that the education administrative department does not interfere with the drafting and revision of accreditation standards, the recruitment of board members, or the accreditation results.

### **3.3.2. Accreditation Standards and Procedures Conform to the Trend and Development of China**

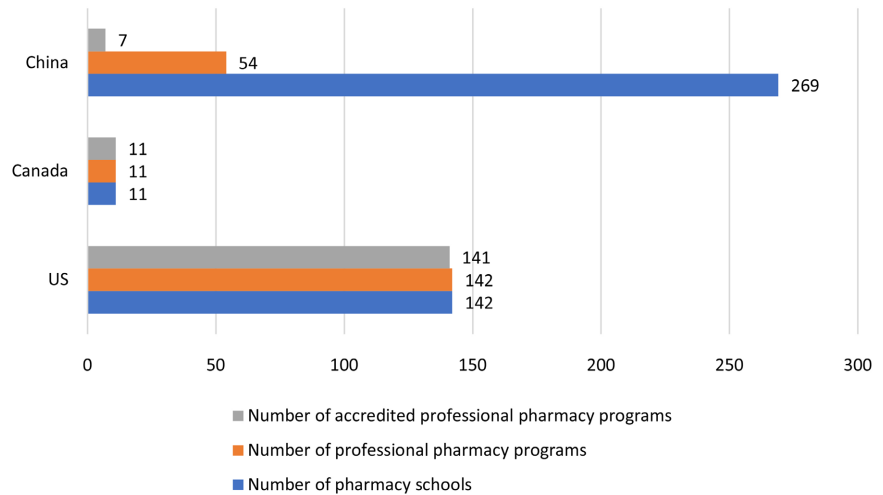
The ongoing industrial and technological transformation is enforced by the emergence of cutting-edge technology, applications, and industry. To accommodate the current condition and demands of pandemic prevention and control, Chinese pharmacy program accreditation gradually incorporates intelligent technology to promote online evaluation in addition to on-site visits. The intelligent technology enables live lectures, online interaction with graduates, practicum sites or employers, quick access to supporting materials, online conference, the development of an accreditation management system, and so forth. Accreditation system built upon the internet improves and enforces continually.

### **3.3.3. The Accreditation System Complies with the Development Characteristics of Chinese Higher Education**

Pharmaceutical education in China is of large scale however unevenly developed. As of July 2023, statistics indicate that a total of 456 undergraduate pharmacy programs, including 250 science pharmacy programs and 56 professional pharmacy programs, are established at 269 universities in China, which replaces the United States (142 pharmacy schools) to constitute the world's largest pharmacy education system (**Figure 1**) [13]. Nevertheless, the quality of pharmacy education across different regions and universities in China is highly disparate. Therefore, a three-level accreditation system is creatively designed with a first tier as entry requirements, the second level as a level of uniqueness and a third level as a level of advancement to maximum education quality under current circumstances. To adhere to the current development of Chinese pharmacy education, pharmacy accreditation involves both pharmacy science education (science-oriented) and professional pharmacy education (service-oriented).

### **3.3.4. Outstanding Educational, Public and Non-for-Profit Characteristics of Accreditation**

China emphasizes the publicity of accreditation and value judgement of education,



**Figure 1.** Accredited professional pharmacy programs in the US, Canada and China [2] [3] [4] [14].

as opposed to industry organization-led accreditation. Accreditation expenditure is supported by national education finance to significantly preserve the impartial and non-profit nature of accreditation. Meanwhile, accreditation fulfills the requirements of the pharmaceutical industry and society for pharmacy education by recruiting professionals from the pharmaceutical industry. The accreditation standards also emphasize the competencies of the profession.

## 4. Discussion

### 4.1. Limited Accredited Pharmacy Programs Require Expansion of the Accreditation and Optimization of Quality Structure

Despite the expansion of pharmacy accreditation, the amount of accreditation remains limited. By the end of 2022, 27 accredited pharmacy science programs and 8 accredited professional pharmacy programs account for merely approximately 6% of pharmacy science programs and 15% of professional pharmacy programs respectively. As of March 2023, 141 Doctor of Pharmacy (PharmD) programs are accredited by the Accreditation Council for Pharmacy Education in the United States, and one institution was granted candidate accreditation, with another school granted precandidate status [15]. For the first round of medical education accreditation in China, 123 (about 75%) schools are accredited for Doctor of Medicine programs by May 2021 [16]. High-quality development necessitates the simultaneous progression of quality, structure, magnitude, effectiveness, and outcome. Therefore it is recommended to promote accreditation, motivate institutions to become involved in the accreditation and expedite the recruitment of board members to provide workforce support. Further research and improvement of the accreditation standards and procedures are beneficial for continuous quality improvement. In addition to structure optimization, accreditation coverage is advanced based upon a plan of educational modernization and the construction of a world-class program. The importance



of accreditation can be augmented by correlating the accreditation result to other education assessments.

#### **4.2. The Accreditation Standards Require Further Improvement**

High-quality development values content and quality. The ACPE accreditation standards comprise three sections, three appendices, and one guidance document. The appendices outline compulsory components of the didactic Doctor of Pharmacy curriculum, terminology related to experiential learning, expectations of the curriculum, necessary documentation for standards and essential elements. The guidance documents present detailed recommendations for satisfying the mandatory requirements, as well as examples of accepted evidence and other critical information [3]. The current Chinese accreditation standards comprise one section and one guidance, which provides clarification for each criterion and the corresponding required supporting documents, however, the clarification remains non-specific. Comparatively, abundant annotation and interpretations are identified in the accreditation standards for Doctor of Medicine programs. For example, the commentary elucidates the meaning of teaching methods in medical education. In the definition, teaching method covers both teaching and learning. Medical training is distinct from other professional education because it incorporates specific teaching strategies, for instance, didactic lectures, group discussions, problem- or case-based learning, peer learning, experiments, experiential training, bedside demonstration, clinical skills training, community practice and online teaching. Therefore, several approaches can be incorporated to promote the evolution of accreditation [17]. First, the pharmacy accreditation standard criteria can be refined via investigation, interpretation, and explanations of specific teaching inquiries. Second, guidance is provided on curriculum reform in addition to the introduction of main course list and core teaching content of individual courses. Third, refinement of criteria can be further achieved via clarification of terminology and provision of guidance for implementation.

#### **4.3. Move from Medication-Oriented Education to Patient-Oriented Education**

Future places emphasis on the establishment of a higher education system with balanced development between humanism and science in the cultivate college students with both humanistic and scientific qualities. The recent advances in technology and industrialization result in environmental, ecological, and ethical issues, such as the lack of spiritual beliefs or crisis of ethical judgment [18]. The typical limitation of pure scientism is its tendency to focus on things rather than people, which is reflected in the field of pharmacy education where drugs are given precedence over patients. Although the Chinese accreditation standards set criteria for professionalism, ethics, and communication competencies, the course framework only stipulates one humanities course (Pharmacy Management) alongside the Liberal Arts courses [19]. The ACPE standards stipulate 11



general education courses (involving humanities, behavioural sciences, social sciences, and communication skills), for example, Cultural Awareness, Ethics, Pharmacy History, Jurisprudence and Regulatory Affairs, and Pharmacoeconomics [3]. The medicine accreditation standards stipulate that humanities and social sciences, which include medical ethics, jurisprudence, medical psychology, medical sociology and health management, are included in the field of professional education, with the content and weight of humanities and social sciences being adjusted and optimized [17]. Consequently, pharmacy accreditation standards should reflect the humanistic spirit [20]. For example, training objectives emphasize the knowledge of ideology, values, humanities, society and behaviour. The curriculum should optimize the content and credits of both the general education courses and pharmacy liberal art courses. Furthermore, the appraisal of school and program culture can be integrated into on-site visits. The advancement of pharmacy education requires support from the comprehensive integration of medicine and pharmacy and the specification of the teaching requirements for clinical science courses to familiarize pharmacy students with practice.

#### **4.4. Lack of Evidence and Monitoring of Accreditation Bodies' Quality Requires Consolidation of Accreditation Meta-Evaluation**

Meta-evaluation is a process of assessing and analyzing educational assessment based on theoretical framework and value criteria. In short, it evaluates the accreditation itself [21]. Examining the accreditation bodies worldwide constitutes an essential method to guarantee the quality of accreditation. For example, the U.S. Department of Education reviews accreditors on a cycle of 5 years. CHEA accreditors are normally reviewed on a 10-year cycle with two interim reports [22]. The accreditation board must adhere to the requirements of meta-evaluation to strengthen self-construction, self-assessment and sustained improvement. At present, due to the lack of quality evaluation and supervision of accreditation bodies and standards, many accreditation bodies in China rely on internal self-awareness and motivation to guarantee and improve quality, with little external evidence, stimulation or monitoring of quality. This may result in inaction, low effectiveness, or even unrestrained power from accreditation. Going forward, it could be a priority for the national educational assessment and monitoring body to take the initiative to create a periodic and consistent evaluation system for various accreditation organizations.

#### **4.5. Enhancing the International Recognition of Chinese Accreditation**

There are currently three types of foreign participation in the quality assurance of higher education, each of which is compatible with one another. To begin with, international specialists are invited to carry out an accreditation appraisal in line with global regulations and protocols. After 2018, 16 of the certified or-

ganizations invited foreign specialists to join site inspections in the clinical medicine program accreditation [6]. Establishing a joint accreditation system between China and other nations is another step forward. As an example, in 2015, the Accreditation Cooperation Memorandum was signed between China and Russia, creating a long-lasting cooperation structure. Through this agreement, accredited programs can obtain accreditation certificates from both countries [23]. Third, China's accreditation is recognized by international authority organizations and accords. In 2016, China became the 18th member of the Washington Accord, and the Working Committee on Accreditation of Clinical Medicine programs was officially recognized by the World Federation for Medical Education in 2020 as a body for accreditation.

Some aspects of the accreditation of the pharmacy program in China are built upon internationally recognized standards and processes, with international experts rarely involved in accreditation, and the system of accreditation has rarely been demonstrated at international levels. It is suggested to expedite the accreditation of pharmacy education to the international arena by bringing in foreign pharmacy specialists or engaging in joint accreditation between other countries and China. Under these circumstances, accreditation of pharmacy education may eventually achieve the same international recognition as engineering and medicine education.

#### **4.6. Integration between Industry and Education**

The standards of accreditation are based on the needs of the society and the development of the individual. The accreditation standards must not only include domestic and global advanced training concepts for the development of talent but should also include the latest information of the industry, integrate local characteristics, and take into account the demands for employment [24]. Accreditation exams compatibility between professional training goals and requirements. Integration of industry and education serves as an external drive to promote accreditation with a focus on the revision of training plans, the achievement of the requirements for graduation, the improvement of the system, the evaluation of quality, the allocation of resources, etc. Practicum site visits during accreditation are leveraged to advance the relationship between industry and education, and to assess the compatibility of training objectives and curriculum maps [25]. Through these site visits, the technology, resources, platforms, and capability of graduates are measured against accreditation standards to propel continuous growth of professional instruction. This professional talent training program is consistent with accreditation criteria, consequently progressing the integration of industry and education. Schools and enterprises examine the professional skills and knowledge of competent experts, develop a curriculum map so that the graduates can fully integrate theoretical knowledge and practical application in order to fully satisfy the training purpose in accordance with community and enterprise needs.

## 5. Conclusion

In the past two decades, the accreditation of pharmacy education in China has developed rapidly. The number of schools or authorized pharmacy programs has increased year by year. Pharmacy accreditation has become an important part of the field of pharmacy education in China. In the process of development, pharmacy accreditation not only draws lessons from developed countries but also incorporates its Chinese characteristics in the meantime. Chinese pharmacy accreditation requires continuous improvement in terms of optimization of the quality structure and recruiting experts.

## Conflicts of Interest

The authors declare that there is no conflict of interest.

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