Differences and similarities in clinical pharmacy practice in China and the United States: a narrative review

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ABSTRACT

The clinical pharmacy practice provided by pharmacists aims to improve the rational use of medication and enhance the quality of life of patients. Although clinical pharmacy in the USA has been developing for almost 60 years, it began in China only in 2005. Despite this, rapid development in clinical pharmacy has been achieved under the support of China's Ministry of Health. This article aims to compare the differences between, and similarities of, clinical pharmacy practice in China and the USA.

INTRODUCTION

Clinical pharmacy, a burgeoning specialty in China, began in the USA in the mid-1960s.¹ During the mid-1990s, pharmaceutical care was first introduced in China, under which patient-centred services were provided by pharmacists to improve the rational use of medication and enhance the quality of life of patients.² From initially supervising medication distribution, pharmacy practice has evolved to provide medication therapy management (MTM) and disease prevention services.³ In the USA, pharmacists can provide immunisation and prescribe medication under collaborative practice agreements. Because marketplace incentives are historically preferred over government price controls in the USA, pharmacists are increasingly being consulted for both patients and providers and help reduce medication errors and preventable adverse drug events.⁴ While in China, despite the work in ward rounds, pharmacy assessment, pharmacy consults, developing pharmacy monitoring programmes, providing pharmacy education and patient follow-up, pharmacists have no prescription right and are facing great challenges to participating in treatment interventions.^{5,6} In this narrative review we compare and report the cognition of clinical pharmacy, extent of clinical pharmacy services, models of practice and talent training patterns to understand these differences and similarities between the two countries.

Definition and recognition

The clinical pharmacist is trained in clinical pharmacy practice and comprehensive medication management to include—but not limited to—clinical pharmacokinetics, therapeutics and clinical pharmacology.⁷ Several physician and medical organisations in the USA have acknowledged the benefits of physicians and pharmacists working collaboratively to improve patients' quality of life

and reduce medication-related adverse effects.^{8–12}

In China, clinical pharmacy services only began in 2005 after China's Ministry of Health (MoH) issued a series of documentations regarding clinical pharmacists.¹³ Despite this, clinical pharmacy has developed rapidly over these years and lots of studies have proved that pharmaceutical care service improves patient outcomes as well as quality of life.^{14–16}

In the USA, academic-based pharmacy clinicians and practice-based pharmacy clinicians work together to provide pharmacy services. The academic-based pharmacy clinician is hired into a tenure or non-tenure track position within a college or school of pharmacy, of whom the former spend more time engaged in research-related activities and the latter devote more time to teaching and service activities. The most practice-based pharmacy clinicians are responsible for promoting and ensuring safe and effective pharmacotherapy for individual patients.¹⁷

Based on the experience and working model of pharmacists from the USA, clinical pharmacists in China are more like a combination of the two types of pharmacists in the USA. They are expected and trained to become specialists responsible for clinical practice, scholarship and teaching.¹⁸ However, a lack of clinical pharmacists—especially clinical pharmacy specialists—is a bottleneck of clinical pharmacy practice in China.¹⁹ The 2010 Basic Standards for Department of Pharmacy established by China's MoH required that the percentage of pharmaceutical professional and technical personnel should not be less than 8% of the total number of hospital health professional and technical personnel in tertiary general hospitals.²⁰ However, a survey among 89 tertiary general hospitals reported the real proportion was 5.07%, of which just six hospitals (6.74%) reached the standard and the percentage in most hospitals (53.93%) was less than 5%.¹⁹ In 2011 China's MoH released policies stipulating that all secondary and tertiary hospitals should have three and five full-time clinical pharmacists, respectively, and the ratio of clinical pharmacists to every 100 beds should be ≥ 0.6 – 0.80 .²¹ Clinical pharmacy services, while still in the early stages of development, are becoming firmly established with the support of China's MoH.²²

The majority of pharmacists in the USA practice in community pharmacies, ambulatory care clinics, hospitals and health systems, long-term care facilities, home care agencies and managed-care organisations.²³ In China the work of most pharmacists

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is limited to hospitals or communities, and other settings like nursing homes have not been developed. However, a special trend in China is the development of a traditional Chinese medicine pharmacy service, which is still being explored in many hospitals.²⁴ In the hospital a key role for pharmacists in the USA is involvement in the development of protocols, guidelines and formularies for directing safe and effective use of medications which focus on patient safety and improved healthcare outcomes.²³ Clinical pharmacists in China now just participate in intervention of clinical treatment, and most of them take drug consultation as an important entry point.^{25–28}

The public perception of a profession is extremely important, but even more vital is the actual worth the profession provides to those who partake of its services.²⁹ Despite the MoH initiative, full-time clinical pharmacists have made limited progress in China until recently. In most urban hospitals, the major tasks of clinical pharmacists are auxiliary. By providing adverse drug reaction (ADR) monitoring, therapeutic drug monitoring (TDM) and drug information counselling, clinical pharmacists struggle to gain recognition by the medical staff and public.³⁰

Inpatient service

In the USA, pharmacists routinely participate in multidisciplinary and specialty ward rounds with the explicit aim of reviewing and optimising the appropriateness of medications prescribed and providing patient education.³¹ In China, clinical pharmacy services have not been incorporated into routine inpatient care in many hospitals, especially in remote areas.³² Except for clinical pharmacists in tertiary hospitals and secondary hospitals, hospital pharmacists still play a role in the conventional tasks of compounding and distributing medicines, meaning that the majority of patient-centred medication-related services are provided by physicians and nurses in primary hospitals and community hospitals.^{33 34}

About 48 states in the USA have authorised some form of pharmacist prescribing.⁷ However, there remain barriers to the full integration of pharmacists with prescribing authority into healthcare delivery models, including issues of policy and legislation, compensation for services and access to health information technology systems.³⁵ In China there is still a long way to go to realise and implement prescribing authority, and what we can do now may be to redefine what prescribing authority is and discuss what kind of special prescribing authority (or limited prescribing authority) the clinical pharmacists can get and how to get it.³⁶

Pharmacists also play an important role in TDM by advising physicians on the most effective treatment regimens. Collaborative drug therapy management where pharmacists manage pharmaceutical care in accordance with a general protocol agreed with the relevant physicians employed in the USA has improved clinical outcomes.³⁷ In China, TDM is a mature and effective way to collaborative treatment, and a number of studies have proved its value in improving rationality, safety and efficacy of drug therapy.^{38 39}

In the USA, clinical pharmacy services offered by pharmacists in outpatient settings like ambulatory care pharmacy, emergency department and community pharmacy include—but are not limited to—comprehensive medication management for multiple disease states and conditions, MTM and medication consultation.⁴⁰ However, few data have been published in these areas in China.

Drug information/database

To weed through an abundance of information, pharmacists need good drug and health information retrieval skills to find the answers they need when they need them. In the USA, pharmacy graduates are required to be able to ‘retrieve, analyse, and interpret the professional, lay, and scientific literature to provide drug information to patients, their families, and other involved healthcare providers’.⁴¹ Evidence-based medicine is defined as the ‘conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients’,⁴² which is now included in the curriculum of most colleges of pharmacy and is included in the 2016 Accreditation Standards and Key Elements for the Professional programme in Pharmacy Leading to the Doctor of Pharmacy Degree.⁴³ In China, pharmacy students and hospital pharmacists are not required to take a drug information course and most of them learn how to get drug information by themselves or through various training programmes.

In the USA, websites, publications, handbooks, guidelines and databases can be a source of drug information and hospitals will provide an integrated network containing these resources for pharmacists. Access to the information may be the same in China but, in most cases, pharmacists cannot gain access to the information they want owing to linguistic constraints, racial differences, access permission and lack of specialised information working systems. A hospital in Beijing concluded from their experience that, apart from the clinical pharmacy information support system based on the Hospital Information System (HIS), the training and management system and working model of clinical pharmacists could be improved and standardised by making standard operation flow charts, series of standard registration forms and practical pharmaceutical manuals.⁴⁴ This may be a good model and example which can be promoted to the whole country.

Education

In the USA, with at least 6 years of college followed by residencies and board certification, pharmacists can unquestionably be medication experts.⁴⁵ Since 2000, the American Council on Pharmaceutical Education (ACPE) decreed that all colleges of pharmacy had to convert to the Doctor of Pharmacy (PharmD) as the sole professional degree.³¹ In the USA, the Accreditation Council for Pharmacy Education requires pharmacy students to complete 300 introductory pharmacy practice experience (IPPE) hours before they start their advanced pharmacy practice experience (APPE).⁴⁶ The ACCP Board of Regents articulated the strategic goal to have all pharmacy graduates complete a residency by the year 2020. Postgraduate year (PGY) 1 residencies focus on managing medication use for a range of diseases and PGY 2 residencies focus on specialised practice and more in-depth training. Specialty board certification can be obtained in five areas: nuclear pharmacy, nutrition support pharmacy, oncology pharmacy, pharmacotherapy and psychiatric pharmacy.³

Ensuring that clinical pharmacists are well trained is a challenge in China and will require time. Chinese pharmacists have indicated a willingness to implement pharmaceutical care, but are restricted by limited knowledge and skills in this field, as well as by underdeveloped pharmacy education.⁴⁷ In China a uniform and highly qualified model to train clinical pharmacists needs to be established. Universities in China can only offer BS, MS and PhD degrees in clinical pharmacy (table 1), but the MoH is considering a proposal for an entry-level professional degree of Doctor in Clinical Pharmacy, similar to the PharmD degree in

Table 1 Differences between, and similarities of, clinical pharmacy practice in China and the USA

	China	USA
Definition and recognition		
Starting time	2005	Mid-1960s
Type of clinical pharmacists	All	Academic-based or practice-based
Scope of services	Hospitals (including traditional Chinese medicine), community	Community, ambulatory care, hospitals and health systems, long-term care facilities, home care agencies, managed-care organisations
Key point of the practice	Carrying out drug consultation to participate in clinical treatment	Developing protocols, guidelines and formularies for directing safe and effective use of medications
Public perception	Low	High
Benefits of practice	Few data	Well studied
Inpatient service		
Multidisciplinary and specialty ward rounds	Most patient-centred medication-related services were provided by physicians and nurses in primary hospitals and community hospitals	Routine
Prescribing authority	Needs to be recognised and implemented	Some form of pharmacist prescribing has been authorised in about 48 states
TDM	Routine	Routine
Outpatient settings	Few data	Mature
Drug information/database		
Drug and health information retrieval skills	Depends on learning of individual pharmacists	Required and essential
Information network	Deficient	Integrated
Education		
Schooling (total number of year in school) and degree	4–5 years BS 6–8 years MS 8–11 years PhD	At least 6 years PharmD
Residencies	6 months to 1 year of clinical pharmacy training programmes	1–2 Years
Board certification	No	Accessible
Standard working model	No	Yes

TDM, therapeutic drug monitoring.

the USA.⁴⁷ In January 2006 the MoH established 1-year clinical pharmacy training programmes with both didactic and experiential components for practicing pharmacists.⁴⁸ However, no standard working model for clinical pharmacists has been developed in China to date.

CONCLUSION

The role of clinical pharmacists has become increasingly important around the world. Stakeholders in pharmacy need a clearly communicated and empirically supported description of how to achieve a successful pharmacist practice before pharmacists in all practice settings are to provide successful advanced patient care.¹¹ Economic evaluations of hospital pharmacy services are becoming increasingly commonplace to enable an understanding of which healthcare services provide value for money and to inform policy makers as to which services will be cost-effective in light of limited healthcare resources.¹²

Pharmacists are currently contributing to the health of the public through various ways, for which pharmacy practice education is needed to empower pharmacy students to continue building their skills. As pharmacy is able to demonstrate contributions to the essential services of public health, they will also be given recognition for the broad and essential role they play in the healthcare system at large.⁴⁹ Also, the evolution of electronic health information and technologies that make information more readily available to patients is transforming healthcare in a positive way and enabling pharmacists to contribute more efficiently to improving medication use.

Many factors such as financial support and the expectations of clinical pharmacists and their own self-concept restrict the development of clinical pharmacy in China.⁵⁰ Since many pharmacists are still reluctant to take on responsibility for their decisions and do not feel confident in their clinical decision-making capabilities, the prioritisation strategy of developing clinical pharmacy in China should focus on the role of clinical pharmacists in decision support systems for medication management.³⁰

In China, a number of developments must be stimulated to continue progress, including the enactment of the Chinese Pharmacist Law, development of a standard for patient pharmaceutical care services, development of the pharmacy workforce, increased public awareness about the value of pharmacists, encouraging professional organisation involvement in advancing the pharmacy profession and proper remuneration for care provision.⁴³ We should always be clear that the profession of pharmacy is working to achieve a pervasive model and standard of care determined only by the needs of patients and populations.

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