

A review of pharmacy education reform in Japan: Past, present, and future

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ABSTRACT

Over the past 25 years, pharmacy education in Japan has undergone substantial reform in response to evolving healthcare demands. A major milestone in this reform process was the legal amendment in 2004, followed by the nationwide implementation of a six-year pharmacy education program in 2006, aimed at cultivating pharmacists with advanced clinical competencies, while a four-year program was retained to support research-oriented education. To support this transition, a Model Core Curriculum was established, incorporating approximately five months of experiential clinical training, together with national systems for achievement-based assessment and program accreditation. Subsequent revisions to the Model Core Curriculum in 2015 introduced an outcome-based educational framework, and the 2022 revision adopted a unified curriculum structure aligned with medical and dental education to further enhance consistency with these fields. Japan is currently advancing toward a fully integrated basic–clinical educational model to enhance pharmacists’ contributions to the healthcare system.

Key words: pharmacy education, educational reform, Model Core Curriculum, clinical competency, outcome-based education

1. Introduction

Over the past quarter-century, pharmacy education in Japan has undergone a profound transformation in response to the evolving demands of the healthcare system and broader societal changes. Historically, pharmacy education has been predominantly grounded in the basic sciences, with comparatively limited emphasis on clinical practice. However, the growing complexity of healthcare delivery, coupled with the continued advancement of the separation of prescribing and dispensing, has increasingly underscored the necessity for clinically oriented education and training (Inui 2016).

Reforms in pharmaceutical education in Japan have been documented in this journal from diverse perspectives (Chen et al., 2025; Ohtani, 2021; Ozawa, 2018; Shirakawa, 2019; Takase et al., 2025). Focusing on the six-year pharmacy education system, this review is structured into three sections: (1) reforms in Japanese pharmacy education over the past 25 years, (2) the current state of pharmacy education in Japan, and (3) future perspectives. Through these analyses, the review explores the emergence of a new paradigm in pharmacy education in Japan.

2. Reforms of Japanese Pharmacy Education over the Past 25 Years

The reform of pharmacy education in Japan was the subject of prolonged debate (Akagi, 2013; Kirino, 2016). Discussions on establishing a six-year pharmaceutical education program began in 1967, when the Japan Pharmaceutical Association submitted a proposal titled “*On the Improvement of Pharmaceutical Education*” to the Council on Pharmaceutical Education.

The second amendment of the Medical Service Act in 1992 represents a critical milestone, as it formally recognized pharmacists as “healthcare providers” (*iryō no ninaite*), thereby laying important groundwork for the subsequent recommendation of the six-year program.

In 1994, the Committee for the Examination of Pharmacist Training Issues of the Ministry of Health and Welfare recommended introducing a six-year program by the end of the century, which would include at least six months of mandatory practical training.

Since 1996, a series of conferences on pharmacist training have been convened by the Ministry of Education, the Ministry of Health and Welfare, the Japan Pharmaceutical

Association, the Japanese Society of Hospital Pharmacists, the Council of Deans of Schools of Pharmacy, National and Public Universities of Japan, and the Japan Association of Private Pharmaceutical Universities. Deliberations at these conferences ultimately led to the development of a core curriculum.

In 2002, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) established the Study Group on the Improvement and Enhancement of Pharmaceutical Education. In the same year, the Model Core Curriculum for Pharmacy Education was developed through consultations and deliberations among pharmaceutical education stakeholders and organizations in Japan, under the framework of bodies such as the Pharmaceutical Society of Japan.

In 2003, the Model Core Curriculum for Practical Training was developed by the Subcommittee on the Development of the Model Core Curriculum for Practical Training, which was established under the Study Group of MEXT (Ichikawa and Tomita, 2016).

In its final report, released on February 12, 2004, the Study Group recommended extending the pharmacy education program to six years. Subsequently, the Central Council for Education issued its own recommendation on February 18, 2004. A bill partially amending the School Education Act was passed on May 14, 2004, followed by the passage of a bill partially amending the Pharmaceutical Affairs Law on June 15, 2004. These legislative amendments were accompanied by the following supplementary resolutions:

1. Establishment of a third-party evaluation system (quality assurance)
2. Development of educational and instructional systems for practical training
3. Implementation of common achievement tests

These resolutions articulated important policies to ensure the quality of pharmacy education and enhance practical competence, and they subsequently served as the basis for the Model Core Curriculum and various institutional frameworks.

The six-year pharmacy program was officially approved and implemented on April 1, 2006.

The six-year pharmacy education program is designed to cultivate pharmacists with advanced clinical competencies and is followed by a four-year Ph.D. graduate program. In parallel, the conventional four-year program has been maintained to train researchers and specialists in life and environmental sciences, followed by a two-year master's program and a three-year Ph.D. program. The six-year pharmacy program features three components: the Model Core Curriculum, the accreditation system, and common achievement tests (Ozawa, 2018). To ensure the quality and standardization of pharmacy education, two key institutions were established: the Pharmaceutical Common Achievement Tests Organization (2006) and the Japan Accreditation Board for Pharmaceutical Education (2008). Several systems and organizations support the six-year pharmacy education program, working in close coordination with one another (Figure 1).

This review focuses on changes in the Model Core Curriculum. For details regarding the accreditation system and common achievement tests, readers are referred to other review articles (Ohtani, 2021; Ozawa, 2018).

The first version of the Model Core Curriculum consisted of 81 course credits and included 1,442 specific objectives. The Model Core Curriculum would constitute 70% of the pharmacy curriculum of each university, with the remaining 30% based on the respective university's

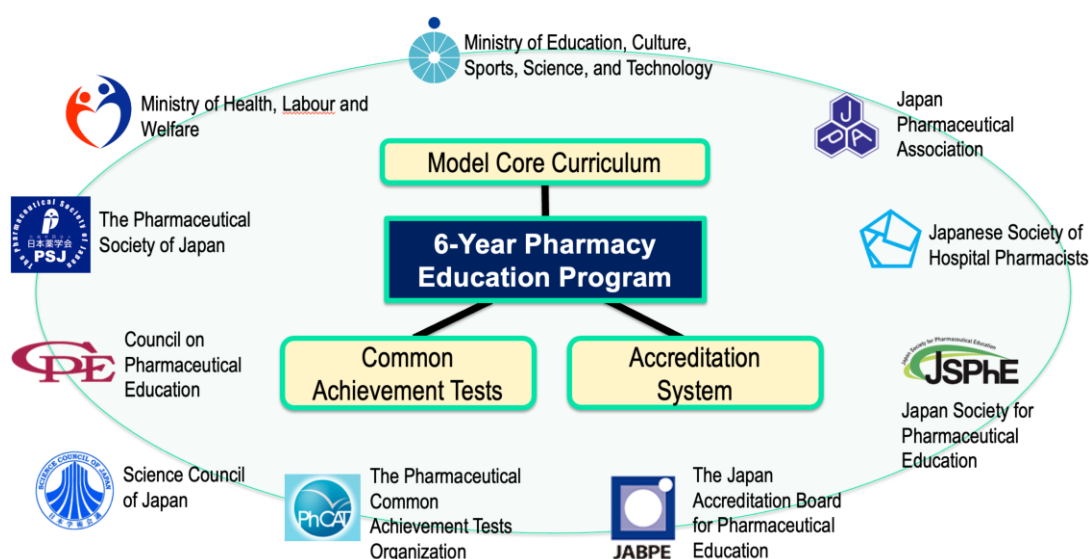


Figure 1. Coordinated Systems and Organizations Supporting the Six-Year Pharmacy Education Program. The supplementary resolutions accompanying the 2004 legislative amendments outlined key policies to ensure the quality of six-year pharmacy education and to enhance practical competence, subsequently serving as the foundation for the Model Core Curriculum and various institutional frameworks.

original curriculum, which highlights their originality. The Model Core Curriculum also included five months of experiential training in both community pharmacy and hospital settings.

In 2015, the Model Core Curriculum was revised to keep pace with advances in healthcare services while preserving its key concepts. This version introduced an outcome-based education (OBE) framework and established ten standard competencies essential for modern pharmacists (Pharmaceutical Society of Japan, 2018).

In 2016, the Japan Society for Pharmaceutical Education was established to firmly position pharmaceutical education as the scientific foundation for the improvement and advancement of pharmacy education in a new era. The society's immediate priorities include holding annual academic conferences and publishing its official journal, the Japanese Journal of Pharmaceutical Education. Through these initiatives, the society aims to foster diverse and distinctive academic activities.

The most recent revision in 2022 further aligned pharmacy education with medicine and dentistry under a unified national framework for health professions education (MEXT, 2024a; 2024b; 2024c). This alignment aims to cultivate professionals capable of responding effectively to the increasingly complex demands of healthcare (Figure 2). The revision adopted a unified catchphrase- "*Fostering medical professionals who can play an active role in connecting diverse settings and people, with a focus on society and communities of the future*"- shared across medical, dental and pharmacy education. Common basic

qualities and competencies required of physicians, dentists, and pharmacists are defined (Figure 2). This approach seeks to train healthcare professionals who can play actively bridge diverse settings and individuals, while addressing the needs of a rapidly changing society and future communities.

The basic policies for the revision are as follows:

1. Educational content designed for pharmacists who can play an active role in a society undergoing major changes.
2. Development of a new Model Core Curriculum that presents the basic qualities and competencies required of pharmacists to be aimed at throughout life.
3. Greater autonomy for each university to responsibly implement the curriculum.
4. Further enhancement of the clinical pharmacy education system
5. Further enhancement of perspectives for cultivating talent for scientific inquiry and exploration.
6. Partial alignment with the Model Core Curriculum for medical and dental education.

The Model Core Curriculum for Pharmacy Education is structured into the following main sections:

- A. Basic Qualities and Competencies Required of Pharmacists
- B. Social Pharmacy
- C. Fundamentals of the Pharmaceutical Sciences
- D. Pharmacotherapeutics
- E. Pharmaceutical Health Science
- F. Clinical Pharmacy
- G. Research

Catchphrase: "*Fostering medical professionals who can play an active role in connecting diverse settings and people, with a focus on society and communities of the future.*"



Common "Basic Qualities and Abilities Required of Physicians, Dentists, and Pharmacists"



1) This content is adapted, with modifications, from the MEXT website.

2) The term "Pharmacotherapy Management" is used for pharmacists, and "Clinical Skills" is used for physicians and dentists.

Figure 2. Overview of the Model Core Curricula for Medical, Dental, and Pharmacy Education (2022 Revision)¹⁾.

Table 1. An excerpt of the specific content of Section G (Research) (MEXT, 2022).

<p>G. Research</p> <p><Major Learning Objectives> Students find research topics on their own by utilizing the knowledge and skills learned in major sections B to F, formulate research questions, and develop research plans based on the collection, analysis, and evaluation of information related to those questions. Conduct research and come to conclusions based on the analysis and consideration of the results. Acquire the problem-finding and problem-solving skills necessary for research that contribute to advances in pharmacy. Understand the basic attitudes required in research and cultivate the qualities to carry out research in a scientific and ethical manner.</p> <p>G. Research Consists of the Following Two Secondary Sections: G-1. Attitude Towards Finding Topics and Conducting Research G-2. Conducting Research</p> <p>< Connection with A. Basic Qualities and Competencies Required of Pharmacists > The research abilities acquired in the major section G. Research is the basis of all the qualities and abilities required for pharmacists to contribute to society through the advances in pharmacy.</p> <p>< Guidelines for Evaluation ></p> <ol style="list-style-type: none"> 1) Understand the academic importance and social significance of research in pharmacy, evaluate the results of research reports through critical thinking, and find topics to be explored by themselves. 2) Engage in research with the responsibility to contribute to the advances in pharmacy. 3) Formulate hypotheses, set research questions, and develop plans through creative thinking to solve research topics. 4) Conduct research in an ethical manner and in compliance with laws, regulations, and guidelines. 5) Come to conclusions based on analysis and consideration of research results using creative thinking and to write up academic reports and present their results.

Each major section (B–G) includes Major Learning Objectives, Connections with A: Basic Qualities and Competencies Required of Pharmacists, and Guidelines for Evaluation. An example of Section G (Research) is shown in Table 1. Each secondary section comprises an Aim, Related sections, Learning objectives, and Evaluation guidelines. The concept and the progression of these education reforms are described in detail in the paper (Takeda, 2026).

In 2022, MEXT published a report entitled “*Summary on Quality Assurance of Pharmaceutical Education in the Six-Year Program*,” compiled by the Study Group on the Future of Pharmaceutical Human Resource Development. The report recommends measures to ensure the quality of education at schools of pharmacy, including restricting the establishment of new schools and increases in enrollment quotas, strengthening internal quality assurance systems in pharmaceutical education, and promoting greater transparency through information disclosure (MEXT, 2022).

The six-year pharmacy education program was implemented along with supplementary resolutions attached to the legislative amendments passed by the National Diet in 2004. These supplementary resolutions called for the enhancement of practice-oriented education to improve the professional competence of pharmacists, particularly by establishing a system to ensure the appropriate and sufficient implementation of practical training in healthcare settings. In addition, they required due consideration to be given to ensuring the quality of educational content, developing

adequate instructional systems, and strengthening collaboration with training institutions. It has become evident that the pharmacy education currently being implemented generally conforms to the provisions outlined in these supplementary resolutions (Ohta, 2024).

3. Current state of pharmacy education in Japan

In Japan, the number of pharmacy faculties remained below 40 until 2000; however, following the introduction of the six-year pharmacy education program, this number increased steadily, reaching 78 faculties by 2025 (MEXT, 2024d).

In the 2003 academic year, before the implementation of the six-year program, the total number of enrolled pharmacy students (including both undergraduate and graduate students) was 11,065. In contrast, in the 2024 academic year, the total number of enrolled students in pharmacy programs, combining the four-year and six-year programs, rose to 14,778. This total comprised 11,687 undergraduate students and 304 graduate students in the 6-year program, as well as 1,442 undergraduate students and 1,345 graduate students in the 4-year program (Figure 3, adopted from MEXT, 2024d).

Among these students, only graduates (or expected graduates) of the six-year pharmacy education program are eligible to take the national pharmacist examination. Until the early 2000s, the examination was based on a four-year pharmacy education system and focused mainly on pharmaceutical knowledge.

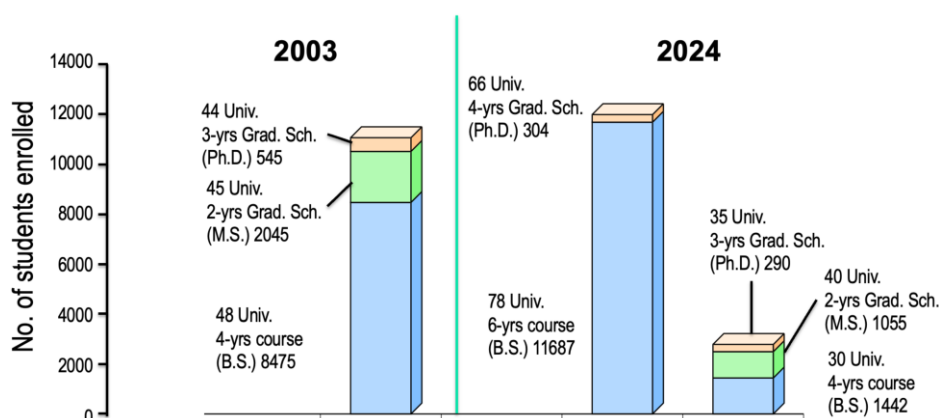


Figure 3. Enrollment Capacity of Pharmacy Schools and Graduate Programs (MEXT, 2024d). In the 2003 academic year, before the implementation of the six-year program, the total number of enrolled pharmacy students, including both undergraduate and graduate students, was **11,065**. By the 2024 academic year, the total number of students enrolled in pharmacy programs, combining both the four-year and six-year programs, had increased to **14,778**.

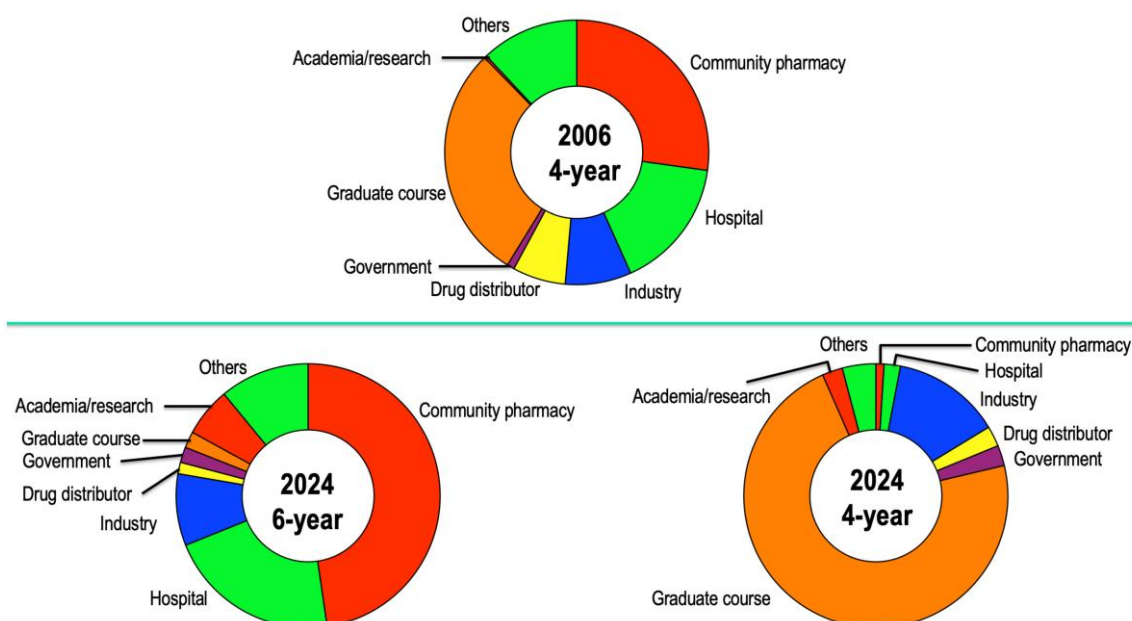


Figure 4. Career Paths of Graduates before and after the Introduction of the Six-year Pharmacy Education Program (Council on Pharmaceutical Education, 2024). Following the introduction of the six-year program, the career paths of pharmacy graduates have increasingly reflected the distinct characteristics of the two educational tracks.

The national pharmacist examination has undergone substantial reform in parallel with the transition from a four-year to a six-year pharmacy education system. As healthcare became more complex and team-based care expanded, the need for clinically competent pharmacists increased, and the examination gradually shifted toward evaluating clinical practice abilities. From 2012, a new examination for graduates of the six-year pharmacy program was fully implemented, based on the model core curriculum and incorporating more case-based and practical judgment questions.

Since then, the examination has continued to evolve, emphasizing areas such as community care, home healthcare, interprofessional collaboration, and patient safety. By 2024, it has become a well-established system that assesses not

only knowledge but also practical judgment, ethics, and professional responsibility.

In 2024, 13,310 examinees took the exam, of whom 9,164 passed, yielding a pass rate of 68.9%. Notably, the number of successful candidates is not substantially different from that in 2003, when there were 10,850 examinees, 8,802 successful candidates, and a pass rate of 81.1%. The apparent discrepancy between declining pass rates and stable numbers of successful candidates may be explained by the rapid increase in the number of pharmacy schools, which has expanded the pool of examinees and maintained stable absolute numbers of successful candidates despite lower pass rates. In addition, variability in educational quality may also be a contributing factor.

As shown in Figure 4, the career paths of graduates from

the four-year program before the introduction of the six-year pharmacy education in 2006 were diverse. Among 8,369 graduates (based on responses from 45 universities), the most common career paths included employment at community and hospital pharmacies and enrollment in graduate school. Following the introduction of the six-year program, the career paths of pharmacy graduates have come to reflect the distinct characteristics of the two educational tracks. Among graduates of the six-year program (9,438 graduates in 2024), employment at community and hospital pharmacies remains the most common outcome. In contrast, among graduates of the four-year program (1,166 graduates in 2024), graduate school enrollment is the predominant career path (Council on Pharmaceutical Education, 2024).

4. Future perspectives

Japan faces an unprecedented demographic and fiscal challenge driven by rapid population aging, a shrinking workforce, and escalating social security expenditures (United Nations, 2024). However, population aging is also a result of remarkable success in health improvement and economic development within a country or region, and similar trends are now emerging globally, particularly in Asia. In this sense, Japan can be seen as a frontrunner of an aging world, and its experiences offer valuable lessons for countries that will follow (Nakatani, 2019; Sakanishi, 2025).

The Study Group on the Training and Professional Development of Pharmacists, established by the Ministry of Health, Labour and Welfare (MHLW), published projections of the future supply-demand balance of Pharmacists (MHLW, 2021). In 2020, the number of licensed pharmacists (325,000) already exceeded estimated demand (320,000). Assuming the annual number of newly licensed pharmacists remains

unchanged, total supply is projected to reach 458,000 by 2045. By contrast, if pharmacists' roles and scope of practice remain unchanged, demand in 2045 is estimated at 332,000 (Figure 5, Scenario A).

The report also presented an alternative scenario. If the number of candidates for the national pharmacist examination declines in parallel with population decline, the projected supply in 2045 would decrease to 432,000. Conversely, if pharmacists' roles in healthcare expand, demand is projected to increase to 408,000 by 2045 (Figure 5, Scenario B). Nevertheless, even under these alternative assumptions, the projected supply of pharmacists substantially exceeds demand (Matsuyama, 2021). On the other hand, the Expert Committee on the Eighth Medical Care Plan and Related Matters, MHLW, noted that there are issues, including regional disparities in the distribution of pharmacists and a shortage of hospital pharmacists (MHLW, 2022).

In 2024, the Study Group on the New Regional Medical Care Vision and Related Matters, established by MHLW, released a report outlining projected changes in Japan's healthcare delivery system (MHLW, 2024). The number of outpatient visits is expected to peak in 2025, while the proportion of patients aged 65 years and older is projected to continue rising, reaching approximately 60% by 2050. Meanwhile, the number of patients receiving home-based care through multidisciplinary collaboration is expected to peak after 2040. In many regions, home care demand is projected to increase for the foreseeable future, with 237 secondary medical care areas expected to reach their peak number of home care patients after 2040. The policy shift toward Community-Based Integrated Care Systems further expands the role of pharmacists beyond traditional dispensing functions (Ishii, 2024; Nakamura, 2024; Yasuhara, 2024).

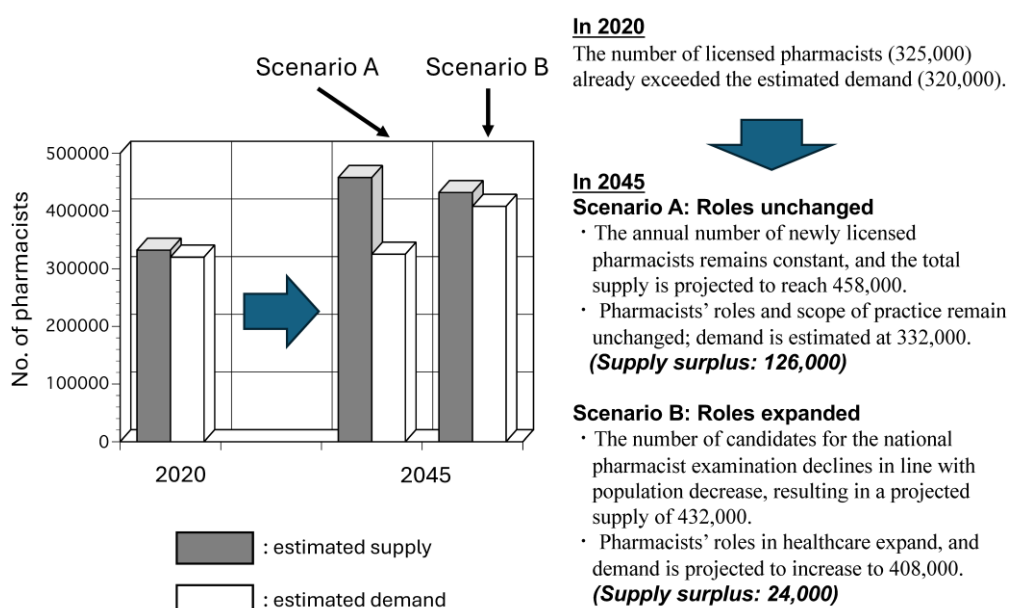


Figure 5. Projections of the Future Supply-Demand Balance of Pharmacists (MHLW, 2021).

Within this context, pharmacists are no longer solely dispensers of medications but are increasingly recognized as key contributors to healthcare efficiency, patient safety, and cost containment. Strengthening the clinical and community-based roles of pharmacists is therefore not merely a professional issue, but a necessary policy response to Japan's rapidly aging population and increasing fiscal constraints. For example, under the proposed near-future model, community pharmacies would evolve into comprehensive health support stations, serving not only patients but also healthy individuals and those in pre-disease states. In this model, pharmacists would take on proactive roles as healthcare "meisters", supporting prevention, early intervention, and continuous community-based care (Nikkei BP Research Institute).

In the six-year pharmacy education program, all students are required to engage in research for their graduation thesis. Both "research" and "problem-solving" are designated as core components of the Basic Qualities and Competencies Required of Pharmacists in the Model Core Curriculum. One of the most feasible strategies for expanding the professional role of pharmacists is to strengthen and broaden the scientific foundation of graduates; accordingly, pharmacy education must be maintained on a rigorous, science-based framework (Ohtani, 2021).

In Japan, drug discovery research has traditionally evolved as an inherently interdisciplinary field, characterized by close collaboration among medicine, pharmaceutical sciences, the natural sciences, and agricultural sciences. However, Japan's share of approved pharmaceutical products, drug discovery-related publications, and patent applications has declined relative to that of other countries, raising concerns about a decline in its international competitiveness in drug discovery research.

In 2024, the Council of the Concept for Early Prevalence of the Novel Drugs to Patients by Improving Drug Discovery Capabilities, led by the Cabinet Secretariat, released an interim report that emphasized the need to review educational content from the perspective of human resource development that can rapidly respond to ongoing changes in medicine and pharmaceutical sciences. This includes reconsideration of the future direction of pharmacy education, which is regarded as essential for strengthening Japan's drug discovery capabilities (Cabinet Secretariat, 2024). In preparation for the revision of the next Model Core Curriculum for Pharmaceutical Education, scheduled to begin in fiscal year 2026, the educational content for training pharmaceutical professionals capable of contributing to drug discovery and development will be examined, taking into account the expanding professional roles of pharmacists.

5. Conclusion

Japan is moving toward a new paradigm in pharmacy education that integrates the basic and clinical sciences into a

unified discipline. University-based pharmacy education aims to promote seamless linkage between undergraduate and postgraduate training, to provide opportunities for lifelong learning, and to cultivate pharmacy professionals capable of responding to societal needs through collaboration with other healthcare professions. This transformation is expected to enhance pharmacists' professional contributions and strengthen the healthcare delivery system in the coming year. By broadening the scientific foundation of graduates, this model redefines the professional role of pharmacists and responds to the growing global demand for pharmacist-scientists with diverse competencies. Although our experience to date is limited, this approach underscores the importance of international collaboration and has the potential to contribute to the harmonization of pharmacy education in the Asian and Pacific regions through the development of shared core professional competencies.

Conflict of Interest

The author declares no conflict of interest.

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