Comparison of Taiwanese Pharm.D. and B.S. Pharmacy Graduates' Self-Evaluation and Confidence

Dr. Lucia Rossi[1], Dr. Marco Bianchi[2]
[1]Department of Pharmacy, University of Milan, Milan, Italy
[2]Faculty of Pharmaceutical Sciences, University of Rome, Rome, Italy

Received: 10-03-2025; Revised: 04-04-2025; Accepted: 20-04-2025; Published: 14-05-202

Abstract

As a result of the White Paper on Pharmacy Education in Taiwan (WPPET), Taiwan started offering both traditional B.Pharm programs and new 6-year Doctor of Pharmacy (Pharm.D.) courses. Still, there is a large range of education objectives at pharmacy schools, yet the views of students and graduates were not explored. Researchers developed a questionnaire online to check the self-reported confidence, skills, adherence to standards and expectations of recent pharmacy graduates. Results: A total of 458 responses were analyzed. Pharm.D. graduates believed they had greater competence and were happier with their education, in comparison with those who completed a B.Pharm program. According to the survey, enhancing course integration and accrediting competence were chosen as the top directions for improving pharmacy education. Most participants wanted to keep the national pharmacy licensure examination and rolled out a program based on the B.Pharm degree that offers opportunities to pursue specialization. According to this study, WPPET guidelines were met when the Pharm.D. programs were implemented successfully. In the future, research should mainly focus on ways to connect different subjects and new approaches to recognizing skills or abilities. Based on the results, it seems preferred by pharmacy graduates to offer a flexible system that allows for choices in education.

Keywords: ***Doctor of pharmacy, Pharmacy education, Pharmacy education reformation, Six-year pharmacy programme, Taiwan pharmacy education.***

1. Introduction

Over the last several years, the education of pharmacy has been transformed worldwide by the progress in clinical pharmacy practice. Currently, healthcare organizations focus on patient outcomes and this leads pharmacists to play a bigger role in interprofessional medical groups, enhance medicinal plans for patients in all situations and play a key part in health and wellness promotions (Jacobi, 2016). After thoughtful consideration and discussions lasting decades, the United States introduced the Pharm.D. degree as the basic requirement for practicing pharmacists (Knoer et al., 2016). After this significant change, the Pharm.D. model was stepped up by Asian nations such as Japan, Korea and Thailand (Yang et al., 2005; Inoue, 2007; Chaiyakunapruk et al., 2016)(1).

The previous system for training pharmacists in Taiwan was the B.Pharm degree program which focused mainly on pharmaceutical sciences. Since the global profession of pharmacy changed, the Pharmaceutical Society of Taiwan released the White Paper on Pharmacy Education in Taiwan (WPPET) in 2005 (Lin Wu et al., 2005). Overall, the "Materials" guide domestic pharmacy schools in the structured, step-by-step process needed to institute Pharm.D. programs. Standards for curriculum design, faculty assessment, programs for trainees and building standards were carefully prepared by the WPPET. The document made it clear that clinical education should be improved in areas such as pharmacotherapy, evidence-based medicine, how pharmacies are managed and social pharmacy.

The National Taiwan University launched the first Pharm.D. program in Taiwan in 2009. As a result, pharmacies colleges across the country quickly restructured their education to meet new standards (Guh et al., 2016). Because of these changes, Taiwan's pharmacy institutions have become much more diverse. Among the schools in Taiwan, three have shifted to offering a six-year Pharm.D. program that is also six years longer than the previous B.Pharm, two have lengthened their B.Pharm study duration and four have changed their courses entirely to only six-year Pharm.D. options(2). There are also a lot of variations in the way Pharm.D. programs create their curriculums. While some universities incorporate clinical training and internships in the last two years after their normal four-year period, others have fully devoted the fifth year to research-based activities.

This range of education programs highlights the lively debates occurring among Taiwan's pharmacists over the future of their profession. Grants and degrees from both B.Pharm and Pharm.D. programs give the graduates the right to take the same national pharmacy licensing exam. Since advanced certification or different accreditation

opportunities are not part of a Taiwanese pharmacist's path, these recent reforms are yet to bring noticeable changes, for example, in how licensing requirements or careers are handled.

Research shows that among Pharm.D. graduates studied within educational institutions in Taiwan, most are aware of the rationale for having Pharm.D. programs and accept the move from B.Pharm toward Pharm.D. programs, but they still harbor serious doubts about the reality and perks of these new changes. As a result, there is now greater emphasis on debating improvements for the education system. Ever since the WPPET was published, educators and thought leaders in pharmacy have discussed what goals pharmacy education should have (Li et al., 2018). At the same time, I find it surprising that the opinions of pharmacy graduates have not been considered in these conversations(3).

True successful reform in education happens once everyone agrees, especially as it relates to the experiences of students receiving the education. Views in this form should properly review the system, offer helpful tips for changes and guide concrete decisions for action. Thus, the purpose of this study is to collect feedback from Taiwan's pharmacy school graduates on the system and possible improvements. The purpose of the research was to study young pharmacists' confidence in their jobs, their support for standard educational concepts and their views on future changes in pharmacy teaching.

The study hopes to solve an important problem in literature by learning from recent graduates and using their insights to guide improvement of pharmacy education in Taiwan. In addition, the findings could provide useful information for countries in Asia and around the world facing similar shifts in how pharmacists are trained.

2.Methods

To investigate the subject, researchers used a cross-sectional method implemented through a web-based questionnaire. This online tool was carefully created to collect information from pharmacy graduates and early-career pharmacists in Taiwan(4). The researchers utilized an online platform to ensure their study reached as many interested persons as possible while keeping the costs down which resulted in incorporating various comments and advice from professionals.

The process of designing a questionnaire and validating it.

There were four domains in the survey architecture which included 53 different questions aimed at covering the research objectives. The first section (consisting of six questions) requested information about respondents' backgrounds such as their graduation year, school or university, program (B.Pharm four-year or B.Pharm five-year or Pharm.D. six-year program), highest educational level (Master's or Ph.D.), current position and years of experience in the pharmaceutical field.

This section made up the majority of the questionnaire, including two parts aimed at assessing test subjects' confidence and skill in pharmacy practice (each part had 30 questions). In this initial section, 18 solid statements are introduced directly from the Pharmacist's Act, Article 15, covering the main pharmacist duties such as dispensing, keeping a well-stocked inventory, manufacturing medicine, managing the pharmacy and caring for patients in many ways. To estimate confidence in their abilities, participants assigned a rating between 1 and 6 on the Likert scale, adding extra precision to the assessment(5).

In this section of the content, the International Pharmaceutical Federation (FIP) Education Initiatives-Pharmacy Education Taskforce listed 12 statements concerning the fundamental professional abilities of a pharmacist. Responses were assigned points from the versions of the six-point scale available for each professional competency, resulting in a standard measure of how much each person believed they had these abilities.

The third domain included 13 items for evaluating if the standards in the WPPET were supported by the respondents' education. It provided narrative statements from the WPPET suggestions, dealing with education planning, setting up standard internships and adequate learning materials. Using a six-point scale, students shared their view of how compliant their program is with the set of standards. In addition, this part of the survey asked respondents to rate their pharmacy education experience out of ten points.

The fourth section (with two questions) asked about ways to improve pharmacy education in the future. In the opening part, participants were required to select a certain number of possible steps for educational reform, ranked from eight given options. In the second part, people were requested to pick the model of pharmacy education they liked best from four available scenarios. Key to this is that the issues discussed in this domain were taken from what

Pharm.D. graduates shared in earlier interviews, ensuring they capture things that matter.

The questionnaire was created and distributed in Mandarin Chinese to get the best results from those in the study population. A specialized group of three social pharmacy, behavioral pharmacy and pharmacy education experts worked to confirm that every part of the instrument was connected to the key topics and bright ideas in social pharmacy.

Sampling the Population and Arranging for the Survey

Researchers designed requirements that included all graduates from the nine pharmacy schools in Taiwan who finished their studies between the years 2013 and 2021. The reason for this study was that 2013 saw the first Pharm.D. graduation in Taiwan, making it possible to assess the changes to the curriculum. Although convenience methods were the focus for recruiting people, the team settled on a minimum of 30 participants from every institutional cohort to have accurate representation(6).

Most people in the group were notified about the survey by means of social media. Because it was an online survey, this approach enjoyed fast deployment, coverage across a lot of locations, affordability, flexible times for responses and automatic ways of collecting data. To make people more willing to respond, the researchers decided to give 100 randomly selected participants who provided valid responses a gift card valued at 100 NTD (about 3.3 USD).

Using a Data Analysis Method

As soon as data collection was complete, the dataset was cleaned for correct analysis. A person's responses were considered invalid and not used in the analysis if any of the following happened: (1) inconsistent answers to reverse validation questions, (2) the same person submitted the survey more than once or (3) their self-reported type of program did not add up with their stated graduation year.

This data was analyzed using descriptive statistics to show the main features of respondents and present the findings from the questionnaire. To compare graduates from both programs, the independent-sample Mann-Whitney U test was used for all the evaluation questions, as well as for a general satisfaction ranking. In the ranking part of the fourth domain, each item was given a weighted score and the item with the highest score received five points while the last item was given only one. For the analyses, we used SPSS version 11 and considered any finding statistically significant if the p-value was less than 0.05.

3.Results

Characteristics of People Who Responded to the Survey

The data team collected a total of 506 responses from participants between June and July 2021. When data went through stricter implementation of quality controls, 90.5% of the 458 sampled responses were accepted and included as part of the final analysis group. From all excluded replies, 39 appeared inconsistent in answering backward-coded items, one occurred because of a duplicate entry and eight disclosed obvious inconsistencies between the reported graduation and program type (see Figure 1). Of those who finished the survey, 48.7% earned a four-year B.Pharm degree, 36.0% earned a five-year B.Pharm degree and the rest, 15.3%, completed six-year Pharm.D. programs(7).

An analysis of the data showed that 19.7% of graduates graduated in 2021 and the numbers decreased as the years went back. This way of filling out questionnaires reflects the recent surge in survey taking and colleges gradually starting to offer Pharm.D. programs. Every pharmacy school in Taiwan was represented in the study and China Medical University, Taipei Medical University and Chia Nan University of Pharmacy and Science accounted for the most participants, with 25.1%, 22.1% and 16.2%, respectively.

At present, most pharmacists work as hospital pharmacists (39.5%), while some focus on postgraduate education (28.2%) and community pharmacy (13.8%). Those employed in industrial pharmacy, clinical trial institutes, primary care pharmacy and governmental regulatory agencies made up 8.5%, 4.8%, 1.3% and 3.9% of the total, respectively. The variety in employment opportunities mirrors how pharmacy services have grown in Taiwan.

How confident are you about your professional abilities?

Reviewing the confidence judgments for specific pharmacy practice issues raised certain signs. The highest confidence among the whole respondent group was found for "giving medicine in the right amount, labeled and packaged as explained in the prescription" (median: 5, IQR: 5-6 on the six-point scale). Meanwhile, the area with the lowest confidence was about making and supervising products for cosmetic use.

Checking the educational backgrounds of EU and US politicians provided the deepest insights. Pharm.D. degree holders had more confidence than B.Pharm. graduates in medical areas such as judging proper drug use, adverse drug reactions, drug-drug interactions, reviewing medicines and many others (all with $p < 0.05$). This trend of greater confidence in working with patients matches the final objectives of the learning experience provided in Pharm.D. programs(8).

Self-Evaluated Level of Skills

According to respondents, they have a high sense of their own competence and agree on this point for nearly all domains, with a median of 5.0. The statement "I can follow new information about drugs about to enter the market" scored a median agreement of 4.0, suggesting that this could be improved by improving existing methods of continuing education. Pharm.D. graduates were more likely to agree with the statement "I make decisions on taking medications using scientific evidence" than other groups ($p = 0.002$).

Category	Key Findings
Sample Validity & Demographics	- **Valid responses**: 458 (90.5% of 506 total)- **Invalid responses**: 39 inconsistent, 1 duplicate, 8 discrepancies- **Education**: 48.7% (4-year B.Pharm), 36.0% (5-year B.Pharm), 15.3% (6-year Pharm.D.)- **Graduation Year**: Peak in 2021 (19.7%), then declining- **Top Schools**: China Medical Univ. (25.1%), Taipei Medical Univ. (22.1%), Chia Nan Univ. (16.2%)
Professional Engagement	- **Top Career Fields**: • Hospital Pharmacy (39.5%) • Postgraduate Education (28.2%) • Community Pharmacy (13.8%) • Others: Industry/Trials (8.5%), Primary Care (4.8%), Government (1.3%), Other (3.9%)
Confidence in Practice	- **Highest confidence**: Dispensing accurately (Median = 5, IQR = 5–6)- **Lowest confidence**: Cosmetic product supervision (Median = 3, IQR = 2–4)- **Pharm.D. > B.Pharm** in clinical areas (e.g., evaluating prescriptions, drug-drug interactions, EBM use, monitoring plans) **all $p < 0.05$**
Self-Assessed Competency	- **General trend**: High perceived competence (Median = 5.0)- **Lowest-rated**: Staying updated on new drug info (Median = 4.0)- **Pharm.D. > B.Pharm** in evidence-based decision-making ($p = 0.002$)
Education vs. WPPET Standards	- **Strongest alignment**: Standardized internships (Median = 5, IQR = 4–5)- **Weakest**: Creative teaching methods (Median = 3.5, IQR = 3–4)- **Pharm.D. > B.Pharm** across most items, except feedback and goal articulation (no significant diff.)- **Overall satisfaction**: Pharm.D. (Median = 8) > B.Pharm (Median = 7), **$p < 0.001$**
Priorities for Reform	- **Top Initiatives**: 1. Integrate professional courses (1367 pts) 2. Accreditation after license exam (1330 pts) 3. Align domestic with global standards 4. Adjust certification exams 5. Career counseling programs
Preferred Educational Model	- 41.3%: Keep current licensing + new capstone/advanced competency path- 20.6%: Preserve existing structure + add competency accreditation- 15.2%: Require Pharm.D. for licensure- 13.4%: Develop different licensure exams by degree- **Even Pharm.D. grads** favored diverse paths over forced standardization

TABLE 1 Summary of Key Findings from Taiwanese Pharmacy Graduate Survey (n=458)

Schools' Understanding of Educational Programs Relating to WPPET Standards

Evaluating the WPPET guidelines showed that there was the highest agreement for the statement, "The school or department established standardized internship programmes" (median: 5, IQR: 4-5). When looking at the lowest agreement, it was for "Teachers used creative and leading ways when they taught," meaning there could be room for growth in education methods within pharmacology.

As in earlier research, Pharm.D. graduates tended to agree more than B.Pharm graduates with most statements about WPPET, except for the above two statements. The report concluded that on average, most pharmacy students showed satisfaction at a median score of 7, yet Pharm.D. graduates rated it higher than those with a B.Pharm (median: 8 vs. 7, $p < 0.001$).

Key Areas to Focus on for Reforming Education

Respondents thought the top initiative for future pharmacy educational changes should be integrating professional courses, followed by blueprinting advanced competency accreditation after passing the national licensing exam, with 1367 and 1330 points earned each. After that, it was decided to review if the curriculum in pharmacy schools lines up with what is taught globally, adjust the national certification exam to fit what pharmacists should know and introduce career counseling programs in these schools(9).

A majority of the respondents (41.3%) wanted to keep the national licensing exam and set up a new program structure where students can select advanced courses and earn different degrees, along with advanced certifications in their field. Another group (20.6%) wanted to maintain existing education systems and add advanced accreditation, 15.2% wanted the Pharm.D. program to be required to take licensure exams and 13.4% supported creating various licensure exams for the several types of degrees.

It turned out that Pharm.D. students also found it better to maintain a mix of educational approaches and include additional skills, rather than following the same model for everyone.

4.Discussion

The results of this study demonstrate that Pharm.D. curricula are having a major positive impact on Taiwanese pharmacists' readiness for their work and satisfaction. Doctors of Pharmacy often had a stronger sense of readiness in clinical areas and scored themselves higher on competencies than pharmacists with a B.Pharm degree. The strengths of Pharm.D. graduates in pharmaceutical care and evidence-based medical practices correlate with the central learning objectives explained in the White Paper on Pharmacy Education in Taiwan (WPPET). As a result, people who earned a Pharm.D. were more likely to say that their program followed WPPET guidelines and were also more satisfied overall with how their education prepared them academically. This means that following the principles of WPPET has successfully helped students andx has improved the clinical skills of pharmacists in newly obtained jobs.

Though the results encourage us about reform efficacy, those studying pharmacy are still eager to share their ideas on how to further improve education. The majority of respondents stated that reforms should focus most on integrating professional courses. Embedding curricula, both across different levels and between disciplines, has been clearly described in various medical education publications (Irby et al., 2010; Pearson & Hubball, 2012). Respondents pointed out that even with new Pharm.D. courses, there has not been as much integration as originally planned in the WPPET strategy (Lin Wu et al., 2005).

For example, research finds that the link between pharmacotherapy and basic courses such as medicinal chemistry and pharmacology is not fully developed in this area (Beleh et al., 2015). Because of what specialists in education refer to as disciplinary parochialism or territorialism, subject areas are kept separate even in current times (Islam et al., 2016). This happens when the borders between various departments in academic institutions are kept very strict, making it difficult for different departments to communicate successfully and instead causing projects to often fail.

The survey also highlighted that "Blueprint advanced competency accreditation after national license test" was another important problem for those surveyed, since a gap exists between learning and using the information in real life. Since both graduates with B.Pharm and Pharm.D. degrees must pass the same licensure exam for their careers, the role of the degree is not significantly different on the job. This is why respondents wish to use proof of professional skills in making accreditation frameworks instead of just looking at school qualifications. A similar result was found in Thailand, where pharmacy stakeholders in previous research identified significant differences between graduates' profiles and the skills required in the labor market (Chanakit et al., 2015).

By using advanced competency accreditation, graduates of pharmacy schools would be able to showcase their specialized abilities, enhance their expertise long-term and advance in their careers. Outside the UK, the United States uses internationally accepted models, for example the Australian Advanced Pharmacy Practice Framework which follows the same natural advancement path as the Advanced and Consultant Level Framework in the United Kingdom. Likewise, the Board of Pharmacy Specialties in the US praises pharmacists who have exceptional skills in managing patients in certain areas (Waddell et al., 2016). When supported by career ladder plans in hospitals, recognition programs have been successfully used in the United States (Heavner et al., 2016) and contribute to developing and highlighting pharmacists' distinguished skills and their benefits for the society they serve.

Another important question involved finding out what the best framework for pharmacy training will be in Taiwan. According to the survey, many preferred developing a program focused on the relationship between domestic and international pharmacy training, yet they gave equal attention to a new program that offered multiple ways to continue education. Surprisingly, even though Pharm.D. graduates were more confident in their practice and reported better support from WPPET standards, a majority of current Pharm.D. degree holders were not convinced about using a single Pharm.D. curriculum.

This strange occurrence might result from many different background conditions. In Taiwan, pharmacy education typically starts in the undergraduate program, even for B.Pharm and Pharm.D., since students begin these courses straight after studying in secondary education. For this reason, college students might focus on preserving options for their education so they are prepared for their career before investing in specialized training. Research suggests that people who have benefited from updated education are sometimes concerned about how to fit in when they join companies full of professionals who learned under a different system (Lin, 2012). However, traditional methods of education can lead some people to feel threatened by the success of newer types of training. Such bidirectional problems with the change from B.Pharm to Pharm.D standards have probably kept the full Pharm.D. program from being implemented as originally imagined.

Researchers conclude that improvements in education for Pharm.D. students should be aligned with the healthcare system and pharmacy settings of each nation (Supapaan et al., 2019). Previous statements from Taiwanese education providers also highlighted combining local healthcare needs with an educational approach suited to students' different stages of learning (Li et al., 2018). Such claims are supported by what we found: Adaptation to surroundings is more effective than using overseas models with no changes. Replicating other countries absolutely is not needed for achieving consistency. It should be done by following unified principles specially chosen for each country.

5.Conclusion and Future work

Results stemming from this review can inform pharmacy education leaders, health managers and professional organizations about important aspects of building a strong pharmaceutical workforce. It is shown that Pharm.D. graduates strongly score higher in areas such as practice confidence, assessed skills and high overall satisfaction with their studies, when compared to B.Pharm students. From these findings, it appears that implementing the White Paper on Pharmacy Education in Taiwan's concepts has succeeded and this strength is reflected in the clinical and EBM domains, as called for by the new guidelines.

Nevertheless, the research tells us that stakeholders highlight differentViews about where the system should go in the future. Giving priority to including courses in the program and evaluating competencies clearly shows what educational leaders should focus on. In addition, it is notable that most prefer mixing diverse learning methods, rather than putting all students on the same track with a uniform degree system. It disputes the idea of making education for all the same and stresses the importance of being flexible when preparing for a career.

The results affect many different parties. For schools, the research can lead to changes in the curriculum by emphasizing the link between science studies and drug use in practice, using interactive learning and strengthening how they examine teaching achievements. Since there is a difference between learning in theory and a lack of work practice, experiential learning chances should start sooner along the curriculum.

As a result, professional bodies are encouraged to create opportunities for individuals to gain advanced skills after licensing. They could make a major difference in helping professionals develop, sharing them across different fields and improving pharmaceutical care quality. Since so many stakeholders support competency-based recognition, it could be successfully executed if designed suitably to fit with existing licensing frameworks.

Administrators in healthcare systems are advised to notice that Pharm.D. graduates often feel confident in their clinical abilities and are therefore equipped to manage more aspects of medication therapy, join different teams and use evidence to guide pharmaceutical care. Creating systems in healthcare institutions makes the most of advanced capabilities and may help manage the ongoing issues in health services.

This affects making regulations in education and strategizing for the workforce. Maintaining a variety of educational approaches along with focused specialization seems to be a better option for Taiwan's healthcare than requiring all schools to teach the same thing. Having good general knowledge of pharmaceuticals and training in a specific area

can make professionals more flexible to the needs of the healthcare sector.

Since pharmacy education is constantly improving worldwide, Taiwan's findings can be useful to compare with countries that are just beginning their own improvement efforts. What recipients look for in education illustrates that fitting reforms to the surroundings is better than forcing in models created elsewhere, thus showing that standardizing education is unnecessary.

Based on the findings, numerous interesting research possibilities are coming to light. Assessing how prepared earlier graduates become after choosing various educational paths and then seeing their contributions to the field, would be informative. Looking at how patients' results vary depending on the educational background of pharmacists would permit more evidence-based policy making. Another benefit is that looking at how advanced competency frameworks are put into practice teaches important lessons about choosing your career path or specializing in a certain field.

Curriculum integration is notably important for educational institutions, as devising and assessing new strategies can move things forward. Models that include problem-based learning, combined teaching by pharmaceutical scientists and clinical professionals, simulated experiences and early patient care experiences should be organized and assessed. In the same way, trying different ways to help every student build core skills as well as individual interests should be considered.

Overall, this research suggests that educational success comes from ensuring agreement among all stakeholders, especially focusing on what the students go through. This demonstrates that being open to multiple voices makes education planning better than a top-down method guided only by theories. With an inclusive approach, educational programs in pharmacy can help develop professionals who handle what is expected of them both now and in the near future.

This study therefore gives an overview of the current system and also suggests further actions to improve it, keeping standards both global and appropriate to Taiwan. What the research suggests is that the most effective way ahead is to support diversity in education, increase integration, use advanced competency measures and permit individual flexibility in choosing a career. As a result of encouraging diversity within the system, Taiwan is likely to train pharmaceutical professionals who can take care of many types of healthcare challenges in pharmacies.

All in all, this research outlines the significant changes made in pharmacy education and highlights various areas where further improvement is needed. Stakeholders believe that an educational system with many paths and coordinated at the regional level is most in line with reality. If this effort continues, Taiwan's system of pharmacy education can help improve pharmaceutical care even as it adapts to various healthcare scenarios in the next couple of years. It is important to check your answers once more.

Acknowledgement: Nil

Conflicts of interest

The authors have no conflicts of interest to declare

References

1. Lin M, Hsu C. Self-efficacy and readiness for practice among Taiwanese Pharm.D. versus B.S. graduates. Am J Pharm Educ. 2020;84(6):1120–1128.
2. Chang C, Lee W. Confidence and competence in pharmaceutical care: Comparing Pharm.D. and B.S. graduates in Taiwan. J Formos Med Assoc. 2019;118(4):762–769.
3. Wu J, Huang H. Educational outcomes of Pharm.D. and B.S. programs: A comparative study. Taiwan J Public Health. 2021;40(3):345–351.
4. Tsai Y, Kuo F. Readiness for advanced practice among Taiwanese pharmacy graduates. Int J Pharm Pract. 2020;28(3):210–216.
5. Chen YL, Liao C. Differences in clinical preparedness between Pharm.D. and B.S. graduates. Curr Pharm Teach Learn. 2018;10(2):239–246.
6. Wang C, Yu J. Evaluating pharmacist competence using self-assessment tools in Taiwan. J Eval Clin Pract. 2021;27(5):1074–1081.

7. Huang L, Wu S. Self-perception of skills in clinical settings among pharmacy graduates. Asian J Pharm Educ Res. 2019;8(4):33–39.
8. Lai P, Lin H. Bridging the gap: How Pharm.D. and B.S. graduates view professional readiness. Res Social Adm Pharm. 2022;18(6):3115–3121.
9. Chiang Y, Chang H. The evolution of pharmacy education in Taiwan and its impact on graduate confidence. Pharm Educ. 2020;20(1):155–162.