

RESEARCH ARTICLE

Professional competency and challenges of clinical pharmacists in India: An assessment among the Pharm.D. graduates

Anitha Jose Subin¹, Sarath Chandran C.², Aiswarya Thomas³, Swathy Ramesh T C⁴

¹ Learning and Development, Life Pharmacy Group, United Arab Emirates

² Government Medical College, Kannur, India

³ Labcorp Drug Development, India

⁴ East West College of Pharmacy, India

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Correspondence

Anitha Jose Subin
Learning and Development
Life Pharmacy Group
United Arab Emirates
anitha939@gmail.com

Abstract

Objectives: To assess the suitability of the existing Pharm.D. programme curriculum in producing professionally competent clinical pharmacists in India. **Methods:** A survey was conducted using a structured questionnaire with closed-ended questions, among the Pharm.D. graduates who were working as clinical pharmacists across various hospitals in India. The questionnaire was shared using an online platform (Google Forms) among 138 clinical pharmacists and the responses obtained were assessed and discussed. **Results:** The response rate was 25.3% with the majority of participants in the age category below 25 years. 65.7% of participants had not undergone any training programmes to improve their professional skills after the completion of the Pharm.D. programme. 45.7% of the study population had the opinion that the absence of clinical preceptors with clinical knowledge in their pharmacy school was the reason for the weak outcomes of the programme. The weakness of the curriculum was well explained by the participants by the absence of clinical training and specific objectives of the curriculum. The professional difficulties faced by the clinical pharmacists include lack of confidence to interact with other health care professionals (41.9%), poor professional management (32.3%) and difficulty in identifying the appropriate drug and dosage forms (19.4%). 24.2% had the opinion that they may avoid pursuing the Pharm.D. programme in India if they were starting all over again. **Conclusion:** The pharmacy schools should not conduct programmes only to make monetary benefits, but the prescribed quality standards shall be met completely without compromise. The assignment of setting up clinical pharmacy expertise in the nation may remain another unfulfilled dream, if screening, tuning in, and updating is not carried out at whatever point essential.

Introduction

The pharmacy profession is an essential part of a health care system that takes care of the medication-related needs of a patient. The pharmacist provides the necessary support for the primary care providers, i.e. supporting physicians to ensure that their patient received the right dose of the right medication at the right time as per the prescription. Even though this profession has been practised since ancient times, it has taken a great struggle to transform it to the present status it holds. From the initial stages of practising compounding and dispensing, it has transformed into a clinically oriented profession.

The pharmacy programmes across the world were updated or revised regularly to meet the challenges of the present health care domain, and it took years for

developed countries like the United States, Canada and Australia to revolutionise the pharmacist job from being a basic dispenser to a highly skilled clinical pharmacist (Scott *et al.*, 2007). The programmes such as Diploma in Pharmacy (DPharm), Bachelor of Pharmacy (BPharm), Bachelor of Science in Pharmacy (BSc. Pharm) are a few qualifications offered across the world to pharmacists. But in the last decade or more, the Doctor in Pharmacy (Pharm.D.) has gained great popularity and acceptance, as a robust programme to practice as a clinical pharmacist. The Pharm.D. programme started in the 1950s from United States universities but soon gained great acceptance across the world. Pharm.D. is a multidisciplinary and multifactorial programme that aims to produce clinical pharmacists equipped with excellent clinical skills to

provide the best pharmaceutical care to patients.

In India, the Pharm.D. programme was introduced in 2008 with great expectations of producing clinical pharmacists who can work as a team with fellow healthcare professionals to take care of the needs of the patient community (Deshpande *et al.*, 2012; Bhuyan B. 2013; Gaur A. *et al.*, 2018). The Pharm.D. is an international professional degree programme with a curriculum designed using the social standards and healthcare settings of that country. Hence, the Pharmacy Council of India (PCI) modified the programme curriculum in India, considering the socio-economic aspects of our country.

Pharm.D. in India is a post-graduate doctoral programme that has been divided into two programmes. First is Pharm.D. (regular) of a six-year duration for students taking admission after the completion of their higher secondary education or D. Pharm. This regular course was divided into two phases. Phase-1 is between the first to fifth years. Phase-2 consists of an internship undertaken in the sixth year, involving posting at various speciality units. The next programme is Pharm.D. Post-Baccalaureate (Pharm.D. PB) with a duration of three years and divided into two phases. Phase-1 is for the initial two years, and Phase-2 consists of an internship programme in the last academic year. This course was designed for students who are graduated from BPharm and are interested in pursuing a career as a clinical pharmacist.

The present BPharm programme in India is an all-embracing programme with footprints in the industry, teaching, research, and community pharmacy. However, it was more leaning toward the pharmaceutical industry than clinical practice. This gap was meant to be filled by the Pharm.D. programme. Even though there is a master's programme offering specialisation in clinical pharmacy, hospital pharmacy, pharmacy practice etc., the early exposure in clinical areas for Pharm.D. graduates was indeed a big advantage offered by the programme (Garipelly R. *et al.*, 2012). By introducing the Pharm.D. programme in the country, PCI aimed to educate and train the pharmacy students to meet the requirements of clinically competent pharmacists in Indian hospitals and to match the entry-level curriculum of international Pharm.D. programmes, especially from the USA (Sachan A. *et al.*, 2012, Mazhar M. *et al.*, 2015). This programme had the objectives to raise the quality of clinical pharmacy education to international standards and thereby enable clinical pharmacists to provide better services to citizens regarding their health needs.

The students pursuing pharmacy programmes are

expected to learn large volumes of scientific information and to assimilate the knowledge clinically across multiple disciplines. After ten years of launch, the Pharm.D. programme was expected to bring out a new set of pharmacy professionals who can play a major role in transforming the healthcare sector of fast-growing India. But whether the programme could deliver the set target was a matter of serious discussion among healthcare professionals.

Even though Pharm.D. graduates are already employed in many organisations as clinical pharmacists, the objectives and learning outcomes of the present programme had not yet been subjected for an assessment in the country (Al Arifi M.N. *et al.*, 2012, Toklu H.Z. 2015). The primary objective of this study was to assess the suitability of the existing curriculum for the Pharm.D. program in producing professionally competent clinical pharmacists in India. The secondary objectives were to identify the gap between the existing programme curriculum and the clinical pharmacist profession, and modifications can be suggested to bring a better outcome.

Methods

The survey was conducted to assess the capability of the existing Pharm.D. curriculum in delivering professionally competent clinical pharmacists in India. A survey was conducted only among the Pharm.D. graduates from India and presently working as a clinical pharmacist in various healthcare organisations. The details of clinical pharmacists with Pharm.D. qualifications were collected from the databases available with professional bodies and college alumni associations. The questionnaire was validated, reviewed, and modified to a simple as well as a readable form before being shared through Google Forms. Participation in the survey was a voluntary exercise, and informed consent was included in the questionnaire. The participants were not offered any monetary benefits or gifts, and their credentials were kept confidential. No ethical clearance was insisted for the community-based survey studies by the institutional ethical committee; hence ethical clearance was not required for this study.

The 51 close-ended questions were based on the Indian Pharm.D. curriculum, course contents, learning outcomes, professional training programmes and challenges. The Google Form was shared with a total of 138 Pharm.D. graduates working in various hospitals as clinical pharmacists. Social media tools and emails were used to share the Google Form. The survey was conducted between 15 January 2020 to 30 January

2020, and responses were collected. The average time to complete the questionnaire was approximately 15 minutes. Each response was summarised in percentages and subjected to discussion. The information was collected through a comprehensive literature review, and interactions with Pharm.D. graduates were used for the assessment of results and subsequent conclusions.

Result

Professional training programs for clinical pharmacists

A total of 35 participants responded to the survey with a 25.3% response rate. 71.4% of the respondents were 25 years old or less. Approximately 26% of the respondents were female clinical pharmacists. A significant proportion (66.7%) of the respondents didn't undergo any specialised training programmes to improve their professional skills after the completion of the Pharm.D. programme, while 33.3% had participated in at least one training programme in India (Figure 1). 8.8% of the respondents had participated in quality improvement programmes conducted at overseas locations. 80% of respondents preferred training at developed foreign locations, whereas the remaining 17.1% suggested training under Indian settings may improve skills.

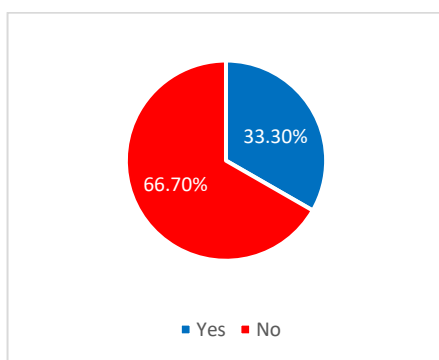


Figure 1: Proportion of people who had undergone training to improve their professional skills

The Pharm.D. curriculum and learning outcomes in clinical pharmacy practice

A total of 35.7% of Pharm.D. graduates working as full-time clinical pharmacists were not aware of the expected learning outcomes of the Pharm.D. programme in India. 62.9% showed a strong objection

to a statement that the Pharm.D. curriculum in India was designed to provide the required skills and knowledge to meet the clinical practice requirements in India. The majority of the respondents (45.7%) considered the lack of clinically trained preceptors and faculties at the pharmacy schools as the weakest link of the present curriculum. A small percentage of clinical pharmacists had the opinion that the present Pharm.D. curriculum was outdated.

The lack of training under clinical settings and non-specific objectives of the Pharm.D. programme for clinical pharmacists were considered as a weakness of the curriculum by 31.4% of the respondents. Moreover, more than half of the respondents (58.3%) had the opinion that the current assessment parameters included in the Pharm.D. programme were insufficient to test the skills and knowledge required for the profession (Figure 2).

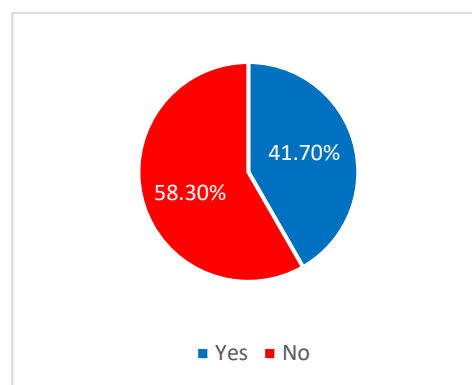


Figure 2: Proportion of opinions regarding whether the existing assessment tests in the curriculum really test the skills of clinical pharmacists or not

A total of 74.3% of the respondents were trained under preceptors with Pharm.D. or MPharm (Pharmacy Practice) qualifications with clinical experience, but 25.7% did not receive training from qualified and clinically experienced preceptors. 65.6% of the respondents encountered problems in their profession as they were not trained under qualified preceptors with enough clinical experience. The professional difficulties faced by the clinical pharmacists include lack of confidence to interact with other healthcare professionals (43.8%), poor professional management (31.3%) and difficulty in identifying proper drug and dosage forms (18.8 %) etc. (Figure 3).

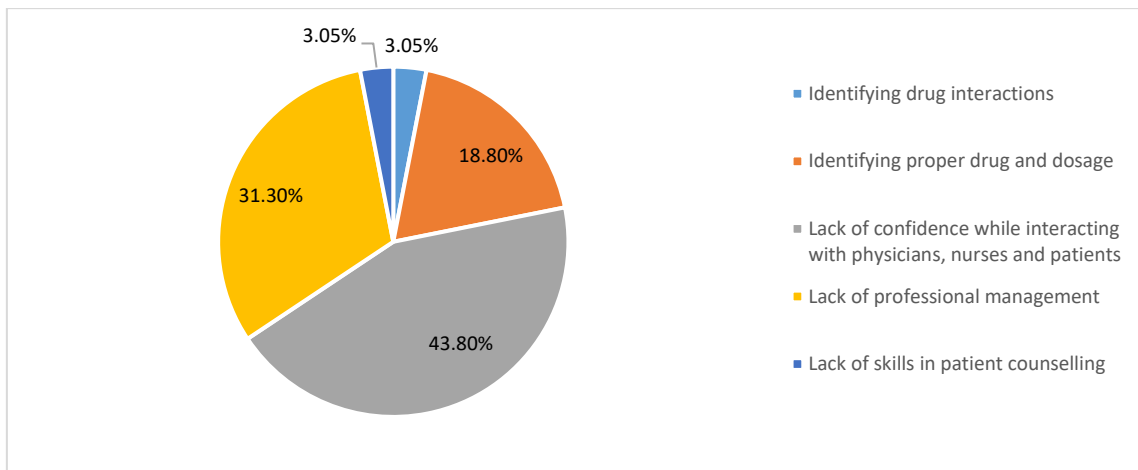


Figure 3: Professional difficulties faced by clinical pharmacists during their job

One-third of the respondents had the opinion that the skills to deal with other healthcare professionals and patients were not improved even after the completion of the Pharm.D. programme. One of the significant observations made during the study was that 11.4% of respondents were low in confidence while handling the clinical queries. But, 17.6% of clinical pharmacists suggested that other healthcare professionals preferred to take the opinion of a clinical pharmacist on all drug-related queries.

Professional challenges of clinical pharmacists

The survey revealed that 70.6% of responding clinical pharmacists were not a part of the pharmacy Therapeutic Committee (PTC). 67.6% of surveyed clinical pharmacists were collaborating with other healthcare professionals to propose a pharmaceutical care plan, but only 50% could directly interact with the patients to implement the proposed pharmaceutical care plan. 21.2% of the survey respondents did not engage in providing any patient counselling on proper therapeutic self-management, which indeed suggested a poor utilisation of the Pharm.D. qualified clinical pharmacists in a hospital.

The pharmacist is expected to be a socially committed person, especially in the management of health issues affecting the community around him or her. But the survey suggested that 47.1% of the respondent clinical pharmacists were not involved in resolving any community healthcare issues (Figure 4). This data suggested the reluctance of Pharm.D. qualified clinical pharmacists to get involved with the healthcare needs of the community. But the clinical pharmacists who had participated in regular community service had the opinion that it improved their overall clinical skills and knowledge.

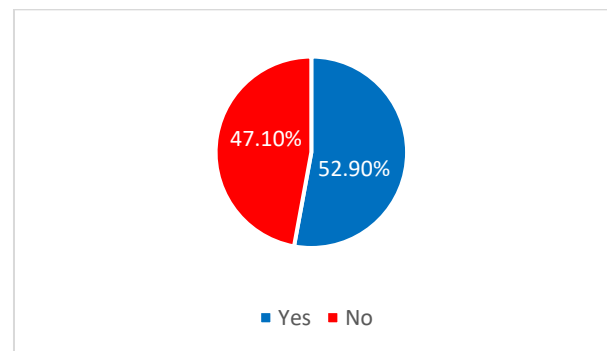


Figure 4: Clinical pharmacist's ability to address and assess the clinical problems faced by the community

Course objectives and learning outcomes in clinical pharmacy practice

The questions were also framed to assess the extent of knowledge and skills gained from the courses completed during the Pharm.D. programme for the application in the profession. 23.5% of the clinical pharmacists never applied the knowledge gained from the pharmaceutical analysis course in their profession. In contrast, 64.7% had applied their knowledge of the biotransformation of drug molecules in actual clinical practice. 20% of participants were not competent in understanding and explaining the pharmacokinetic profile of prescribed drugs effectively at a professional level. 11.8% of surveyed participants were able to explain the possible physical and chemical incompatibilities that may occur in the compounded or pre-packaged dosage forms. 87.9% of the responding clinical pharmacists were confident in their competency to identify and explain possible adverse drug reactions (ADR) during drug therapy. The knowledge and skill gained from the microbiology

course during the Pharm.D. programme were applied in the profession by 70.6% of clinical pharmacists. In comparison, more than three-quarters of the respondents had never tried or rarely used the knowledge from the pharmacognosy course included in the Pharm.D. curriculum. A very small percentage of respondents were not skilled enough to identify the toxic effects of various categories of medications. 38.2% of the respondents were ignorant of the rules and regulations applied to the pharmacy profession in India. Overall, 67.6% shared the opinion that the present Pharm.D. curriculum may not help in creating a clinically competent clinical pharmacist for society, and 26.5% had the opinion that they may avoid pursuing the Pharm.D. programme in India if they were to start all over again (Figure 5).

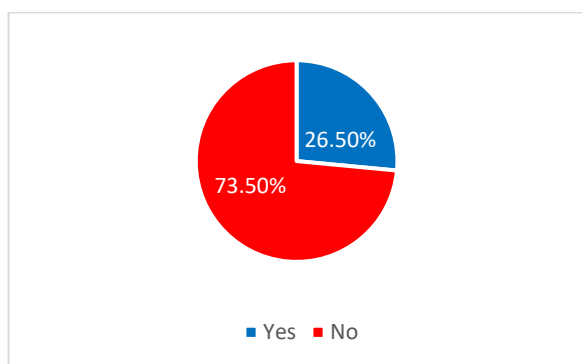


Figure 5: Percentage of CPs who choose Pharm.D program in India if they start all over again

Discussion

Professional training programmes for clinical pharmacists

The general trend of Pharm.D. graduates, who were working as clinical pharmacists, was not to undergo any kind of training programmes to improve their professional skills, which may lead to a lack of expertise in their professional practice (Zoe E *et al.*, 2021). There were several reasons behind such an attitude towards the professional training programmes among the clinical pharmacists working in hospitals. Most employers are not organising any such training programmes for the clinical pharmacists in their organisation. Continuing medical education programmes are conducted on a regular basis for physicians, nurses, physiotherapists etc., by most of the hospitals, but unfortunately, the clinical pharmacists are not encouraged or permitted to conduct or attend similar sessions. Only limited numbers of clinical pharmacists are employed in most of the Indian hospitals, and most of the hospitals are yet to identify

the benefits of appointing qualified clinical pharmacists. Hence, organising such training events may be considered as an extravaganza by the employers. The healthcare professionals (excluding physicians) employed in most of the Indian private sector hospitals work under stringent human resource policies, where the possibilities of availing leave may not be easy, not only for professional training but also for personal needs.

The professional bodies of physicians and nurses regularly conduct training programmes that keep them updated with the latest happenings. The professional bodies for pharmacists / clinical pharmacists and the Pharmacy Council of India were neither regularly nor keen on conducting any such events which may be helpful for professional clinical pharmacists in India. The pharmacy schools in the country organise many such events on a regular basis. But most of those training events or workshops are designed for the students. The quality of such events may be questionable as most of the events have similar themes, resource persons and set of audiences (Ryan M. *et al.*, 2008). The professional bodies, as well as pharmacy councils/societies in developed countries like the United States, Canada, Australia, Great Britain etc., are always focused on organising high-level training programmes for their professional clinical pharmacists, which helps update with the latest happenings in the healthcare sector (Mekonnen A.B. *et al.*, 2018).

Pharm.D. curriculum and learning outcomes in clinical pharmacy practice

As per the survey reports, the lack of trained faculties and preceptors associated with Pharm.D. programmes may be a major concern not addressed effectively by the pharmacy schools and Pharmacy Council of India. In developed countries, the service of experienced clinical pharmacists is utilised as preceptors and adjunct faculties. It was a fact that most of the faculties or preceptors presently associated with the Pharm.D. programme in India were part of conventional pharmacy programmes, i.e. MPharm. The approach of faculty or preceptors towards the clinically oriented Pharm.D. programme should be different (Toklu H.Z. 2013). The Pharmacy Council of India initiated the organisation of workshops for faculties across the country to train them to adapt to the curriculum of Pharm.D. programme. But due to various reasons, such programmes were not continued further and resulted in a shortage of trained faculties or preceptors to conduct the Pharm.D. programme. The International Pharmaceutical Federation (FIP) provides overseas training for selected faculties, which is limited to a few. The shortage of trained faculty, as well as preceptors,

may be a reason for the poor professional competency for many clinical pharmacists working in hospitals.

Professional challenges of the clinical pharmacist

The clinical pharmacists reported difficulties in identifying proper drugs and dosage forms which must be considered a serious drawback. This may be due to the poor exposure received from the pharmacy schools for such graduates. The volume of theory-based courses is not matched according to in practical setup. The theory knowledge must go hand in hand with sufficient practical training. The responsibility of faculties and preceptors to identify the gap between theory and practice is an important exercise in their academic responsibilities. The students shall be adequately exposed to this area, where the international Pharm.D. programme curriculum from the United States, Australia and the Middle East may be the best example. The curriculum is designed in such a way that, when therapy is subjected for discussion, anatomy and physiology of related organs, pathophysiology, drugs and their chemistry, pharmacology, toxicology and pharmacokinetics of drugs, different formulations and storage etc., will be explained in a series of sessions. Later, a clinical pharmacist plays the role of preceptor in training the students in a hospital setting on those topics discussed in the classroom. This kind of arrangement is not available in the Indian curriculum, where classroom activities and practical training moves in different directions.

To accommodate the faculties and utilise the existing facilities, the Pharmacy Council of India has designed and adopted a programme curriculum, which is one of the major reasons for the weakness of the Pharm.D. programme in India. This may be a reason for the inclusion of some of the least significant courses and associated practical activities in the programme. The academic regulators shall seriously consider this situation, where curriculums shall be designed and executed to meet the requirements of the profession. Some of the reputed deemed universities conducting MPharm programmes emphasise this area, where their course content and curriculum are designed in consultation with the industry experts, which helps to mould the graduate as an industry-ready product (Shrestha S., 2013).

It should be noted that only 17.6% of primary care providers were ready to take the opinion of clinical pharmacists on the drug-related queries. Even though the clinical pharmacists are qualified, they are not included in the Pharmacy and Therapeutics Committee (PTC) and development of hospital formulary in many tertiary care hospitals. This may be due to the quality

of services offered to primary care providers and the team of experts (Jacobi J, 2016). The poor confidence level of the clinical pharmacists in dealing with other healthcare professionals may prevent the primary care providers from approaching the clinical pharmacists for their drug-related queries. Interprofessional training can also improve this situation effectively (Page R.L., 2009). The lack of training from qualified preceptors under proper clinical settings may be the reason for confidence related issues for clinical pharmacists in their professional life. The pharmacy schools must ensure the services of faculties and preceptors who are adequately experienced as clinical pharmacists to provide quality training for the Pharm.D. students. The availability of such qualified faculties and preceptors, along with an updated curriculum, may be essential for producing highly skilled clinical pharmacists in this country (Shrestha S., 2020). The excellent training received during the academic period could give great confidence in professional life for any individual.

Course objectives and learning outcomes in clinical pharmacy practice

The majority of the Pharm.D. graduates working as clinical pharmacists suggested that the weakness of the existing curriculum was that it was not structured around the specific educational outcomes. During the survey, 10% of the clinical pharmacists shared the opinion that they were not able to incorporate the knowledge gained from some courses to take key professional decisions, especially in drug therapy and management. It was surprising to identify that almost a quarter of participating clinical pharmacists were not competent in identifying and resolving possible drug interactions with complementary and alternative medications (CAM), such as Ayurveda, Homeo, and Sidha, which are common practices in India. Many patients, irrespective of the advice of their physicians, follow both modern medicines and CAM simultaneously. The outcome from learning pharmacognosy and pharmaceutical analysis courses available in the existing syllabus shall come in handy in such a scenario. But the survey revealed that clinical pharmacists hardly utilise the knowledge gained from both courses. It may be suggested that the syllabus and learning outcomes for both the courses were not clinically oriented, which prevented the application of the knowledge gained from these courses in actual clinical practice (Page, R.L., 2009, Bhuvan, K.C., 2017). This shall be considered as a serious issue, as it affects the quality of service provided by clinical pharmacists, not just to physicians but also to a patient.

The updated curriculum may be essential for any professional programme. Even though the Pharmacy Council of India implemented a syllabus that may meet

the professional requirements as per the socio-economic condition of India, even after a decade, there was not even a single update made in this syllabus. It would have been ideal if timely feedback was collected from faculties, preceptors, students and even the Pharm.D. graduates presently employed as clinical pharmacists to identify whether the objective set was met or any modification was essential so that curriculum can ensure quality output. Effective discussion with other healthcare professionals, especially physicians, dentists, nurses etc., was needed to understand and accommodate their expectations or requirement from the clinical pharmacists (Hall K. *et al.*, 2012). It may be suggested to address the demands of stakeholders, which includes the industry that shall avail the services of Pharm.D. graduates on a regular basis. The periodic modification of the syllabus and regulations are essential to keep the programme fresh and effective.

The interaction with Pharm.D. graduates working as clinical pharmacists and personal observations of investigators suggested that the institutions with a memorandum of understanding (MoU) arrangement without their hospital were not able to provide proper training and practice for their students. To practice as a clinical pharmacist, the development of clinical pharmacy skills is essential. The lack of training, as well as practice under the clinical settings, produced difficulties later at the professional level for the Pharm.D. graduates in India. The institutions that do not own a hospital may be forced to compromise on the practical and training part of the Pharm.D. programme (Shrestha S., 2020). The survey identified that poor clinical exposure during academic life was causing real trouble for the Pharm.D. graduates in their professional life. The compromised clinical settings with inexperienced faculties or preceptors may create clinical pharmacists who may risk the life of a patient in their profession. It was unfortunate to know that a large section of surveyed clinical pharmacists gained information or knowledge only after entering the profession. The government, universities, pharmacy schools and Pharmacy Council of India should focus on this area and make necessary arrangements to avoid such an alarming situation.

The profession of clinical pharmacists has had lots of obstacles and challenges, which prevented many passionate aspirants from entering the profession. The other healthcare professionals have the reluctance to accept clinical pharmacists as efficient and clinically competent professionals. The scenario was not different in other developed countries, where presently, the clinical pharmacy profession is highly appreciated. The gradual progress by providing high-quality service to other healthcare professionals and

patients changed the perception and the acceptance of clinical pharmacists in those countries. The physicians consistently raised objections against the Pharm.D. programme and the establishment of the clinical pharmacy profession in India. The physicians, in the majority, wrongly consider clinical pharmacists as a threat to their profession. But the fact is, most physicians, nurses, dentists etc., have no clarity regarding the objectives of the Pharm.D. programmes and the role played by the clinical pharmacists in a hospital setting. The social media platforms were wrongly used by both clinical pharmacists and other healthcare professionals to prove their professional competency. It is a fact that each profession has its responsibilities and role to play in society, which was unfortunately forgotten by many. The Pharmacy Council of India must rectify the mistake committed in the last decade and must create a common platform where all healthcare professionals can meet and clarify the confusion regarding the professional role each one is expected to play. This professional harmony is essential for the establishment of a successful clinical pharmacy profession in India. The findings of this investigation need not be conclusive due to its limitation. The reluctance to respond to the survey by the employed Pharm.D. graduates, even after multiple reminders, caused a drop in sample size. Yet, in many instances, the personal interaction was helpful to collect the information. A large-scale study on these objectives may be helpful to overcome the existing obstacles of the clinical pharmacist with the Pharm.D. qualification.

Conclusion

A properly structured and updated curriculum will bring up professionally skilled clinical pharmacists. The Pharmacy Council of India shall constantly monitor the development happening in the healthcare sector to make necessary changes in the curriculum and programme syllabus. The professionally competent graduates may change the perception of the clinical pharmacist among themselves, other healthcare professionals and the patient community. The pharmacy schools should not conduct programmes only to make monetary benefits, but the prescribed quality standards shall be met completely without compromise. The universities and regulators shall confirm the same from their end. The appointment of a clinical pharmacist shall not be just for hospital accreditation (e.g. NABH, JCI); beyond that, it should be utilised to serve the patients and assist the other healthcare professionals in patient care. The introduction of the Pharm.D. programme in India was a

fresh beginning made a decade ago. The ambitious task of establishing the clinical pharmacy profession in the country may remain just as another unfulfilled dream if it isn't monitored, listened to, and updated whenever and wherever necessary.

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