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Review Article

DOCTOR OF PHARMACY EDUCATION IN INDIA - STRENGTHS, WEAKNESSES AND OPPORTUNITIES, *A CRITICAL ANALYTICALSTUDY BASED ON FIVE YEARS EXISTENCE IN INDIA.*

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Abstract:
The post 1920 period, particularly the 1940 to 1970s, witnessed many scientific developments and achievements in the area of Hospital pharmacy helping the evolvement of Clinical Pharmacy in USA. Clinical Pharmacy denotes the practice of pharmacy near the bed side of the patient. It is practiced by both hospital and community pharmacists. The Doctor of Pharmacy (Pharm.D) degree, is a professional doctor degree in Pharmacy and is a global program in pharmacy education.The first effort to introduce Pharm.D in India was initiated in Trivandrum in 1999 when University of Kerala approved the syllabus and regulations, framed by K.G.Revikumar , the head of Hospital and Clinical Pharmacy, of Trivandrum Medical College. The program could not be started for certain reasons. In 2008 the Pharmacy council of India managed to introduce a six year regular Pharm D and the three year post baccalaureate Pharm.D in India. By 2013 November, the PCI had given approval to over 140 institutions covering states like Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Rajasthan, UP and Punjab for starting Pharm.D in India. The first batch of regular Pharm.D will graduate by the end of 2014. The strengths, weakness, opportunities and threats (SWOT) of Indian Pharm.D are critically and scientifically analysed and evaluated in this study paper.

Key Words.:- Doctor of Pharmacy, Pharm.D, Indian Pharm.D education, Pharm.D critical study.

Introduction:

It was in 1821 that the first Pharmacy College – Philadelphia College of Pharmacy- was started in USA. Till then pharmacy education was very much focused in other countries like France, Germany and Italy. Philadelphia College was followed by Massachusetts College of Pharmacy (1823) and New York College of Pharmacy (1829) and since then Pharmacy education started popular in America. The post1920 period, particularly the 1940 to 1970s,

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witnessed many scientific developments and achievements in the area of Hospital pharmacy which led to the evolvement of Clinical Pharmacyin USA. The term 'Clinical Pharmacy' was not seriously used in any book even in the early 1960's and it was only in 1969 that Clinical Pharmacy was linked with "patient orientation". Today Clinical Pharmacy denotes the practice of pharmacy near the bed side of the patient and is practiced by both hospital pharmacists and community pharmacists' [1,2].

The first scientific residency program in pharmacy in USA was developed by Harvey A.K. Whitney at University of Michigan hospital in 1927. Inspired from the success of Whitney's experiment on Drug Information Center in Michigan University, Paul F Parker opened the first Drug Information Center at a Pharmacy School in 1962. Other Universities like the University of Kentucky had also taken leading roles in developing Clinical Pharmacy programs in the world. The first unit dose distribution program in a hospital set up in USA was initiated at the University of Kentucky in 1965. In 1968 the pharmacy residency program was started at University of Kentucky which help to award both Pharm.D degree and residency certificates to the students[1]. The introduction of Post graduate programs in hospital pharmacy, clinical pharmacy and starting of Doctor of Pharmacy (Pharm.D) programs contributed positively for the development and popularisation of pharmacy practice in USA and other countries[3,4,5].

The Doctor of Pharmacy degree, abbreviated as Pharm.D. or PharmD, is a professional doctor degree in Pharmacy. It is very much similar to professional degrees like Doctor of Medicine (MD) or Doctor of Dental Surgery (DDS) in USA or equal qualifications in other countries.Today Pharm.D became a global program available in all most all countries in the world. The duration of the program varies from five years (e.g. USA, Pakistan) to eight or nine years (e.g.Ghana,France) of academic education at the University/ College levels. In some countries like Hungry, Netherland, Portugal etc. It is a post graduate program while in yet other countries Pharm.D is considered as superior to master's qualification and post graduates are admitted to the program. During the last few years, Pharm. D became popular even in the middle east countries.

Through the Pharm.D programs the pharmacists are trained to become active and integral members of the patient care team. Increasing emphasis on improving quality of medication use and enhancing medication safety have dramatically increased the demand for clinical pharmacy and the Pharm.D program in all parts of the world. The ward rounds, clinical postings, clerkship and the residency are the core components of the Pharm.D program. It is through these the students get accustomed to real hospital practice situation and oriented to the evidence based therapy concepts. The clinical rotations provide students the opportunity to apply knowledge acquired in the classroom to the practice of pharmacy in different patient care settings[1,6,7].

Genesis of Pharm D Course and its impact in Pharmacy practice.

ThePharm.Dprogram as it is understood and popularized today, originated as an innovation program of University of Southern California (USC) in 1950 as a six year program. The USC is a private research University in USA established in 1880 with its main campus in Los Angeles, California. USC started its first Pharmacy School -USC School of Pharmacy- in Southern California in 1905.The takeoff of the Pharm.D in USA was not smooth and resistance free. It has to face some unfriendly reactions and resistances from certain corners within the country. In 1955, the University of California at San Francisco (UCSF) also started Pharm D and by 1960 many other Universities in USA started Pharm.D. It took about two decades for getting Pharm. D popularized in USA and other parts of the world. Those who opposed the program in the beginning later started welcoming it and by 1970s students from other countries joined the program in large number. In 1973 UCSF started Department of Clinical Pharmacy as an independent unit which

was responsible for the development of the first clinical pharmacy curriculum in the world. Today the clinical pharmacy residency program of UCSF is the largest in USA[8,9].

The US authorities adopted Pharm.D as a national professional degree program by 1980s. In 1992, the American Association of College of Pharmacy (AACP) and other pharmacy professional organizations took a joint decision to make Pharm D as the minimum requirement for practice of Pharmacy in USA. The Accreditation Council for Pharmaceutical Education (ACPE), the national organization that accredits pharmacy degree courses, also endorsed the decision. For the next few years they were jointly doing the homework for implementation of the decision. All the existing pharmacists with B.Pharm / B.S and M.Pharm qualifications were provided sufficient opportunities to take Pharm.D through various modules in the 1990s. The Universities framed their own modules for part-time and distance/ e-learning process of Pharm.D for existing licensed pharmacists.
Till 1998 both B.S (Pharmacy) and Pharm D programs of 5 year duration were conducted in America. In 1998 orders were issued to all American Universities to replace their B.S (Pharmacy) and B.Pharm with Pharm D focusing on clinical and community pharmacy practice. Since the graduating class of 2006, the BS Pharm / B.Pharm degree has been completely replaced by Pharm.D degree in USA[7]. All these developments have positively influenced the pharmacy educational institutions and authorities in other countries in the world to take proper precautions in their education system.

The 'Gallup poll' in USA is well known among professionals all over the world. It was initiated by George Gallup in 1978 with the objective of evaluating various professions which are supposed to serve humanity in the country. The main question asked to the participants of the Gallup poll is "How would you rate the honesty and ethical standards of people in these different fields?" The Americans rate the honesty and ethical standards of 28 or more professions/ occupations surveyed by the Gallup poll. The pharmacists are ranked in No 1 or No 2 positions among all professionals in USA for the last thirty or more years.(See Fig1)

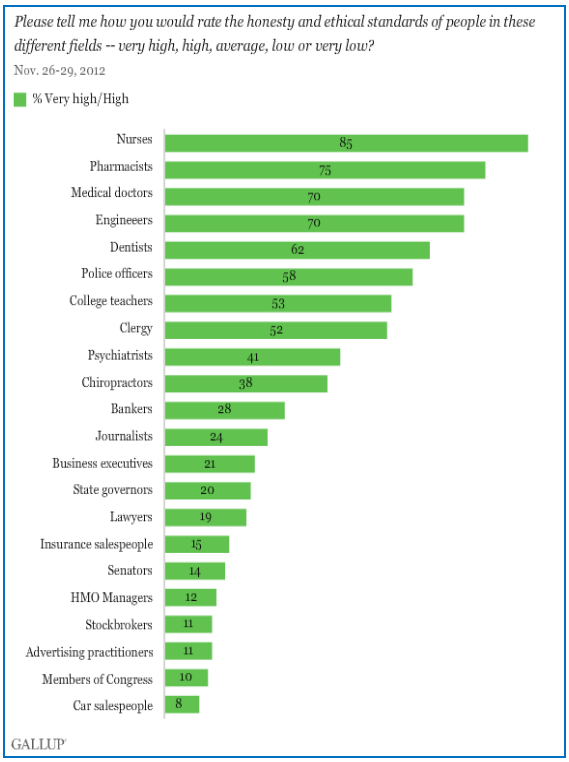

Fig 1. 2012 Gallup poll Result.

A similar type of rating known as 'Morgan poll' is conducted in Australia since 1994. The Australians too rate their professions based on ethics and honesty. The nursing profession and pharmacy were closely ranked as No 1 and 2 up to 2002. Since then there is always a tight fight between Pharmacy and Nursing for the first position. In Canada in 2012 Pharmacists were ranked at No 1 position among all professionals (Fig 2). This is not the case with USA or Australia or Canada alone. Throughout the world where well regulated pharmacy education and practice systems are in existence, pharmacy or pharmaceutical sciences has emerged as a high profile, sought after profession. Itis mainly because of the services, innovations and

achievements in the areas of hospital, community and clinical pharmacies.


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Poll: Pharmacists are Canada's most trusted professionals

January 8th, 2012

TORONTO – In Canada, pharmacists are at the top of the list of the most trusted professions, according to a survey by Ipsos Reid.

The public opinion and market research firm said this week that nearly eight in 10 Canadians (78%) say they trust pharmacists, scoring them a 5, 6, or 7 on a trust scale of 1 to 7.

It was the second straight year that pharmacists finished first in the online poll, which surveyed more than 1,000 Canadians in mid-December.

In fact, the top five most-trusted professions for 2011 were the same as in 2010. After pharmacists, respondents rated doctors (75%), Canadian soldiers (74%), airline pilots (73%) and teachers (65%) high on the trust scale.

"We already know how many people rely on their community pharmacist. This poll confirms that patients trust their pharmacist to provide the expert advice and guidance needed to help them manage their health," Marnie Mitchell, chief executive officer of the BC Pharmacy Association (British Columbia), said in a statement.

Fig 2. Canadian Poll 2011 – a report

Pharm.D- Lessons from Thailand and Pakistan

The Universities and pharmacy schools through the Pharm.D program prepare pharmacists who can assume expanded responsibilities in the care of patients and assure the provision of rational and effective drug therapy both in public and private set ups. The Pharm.D students are provided with the opportunity to gain experience in patient care in close relationships with health practitioners like physicians, nurses, biochemists, nutritionists and other health care professionals. The Universities conducting the program continuously enhance the curriculum with new course offerings that reflect the pharmacist's importance as a frontline health care provider. Problem-based learning and active exposure to clinical opportunities will help the students attain necessary skills and personalize the education to reflect their individual interests and professional goals.

Thailand is country located in the Indo-China peninsula in South East Asia with about 640 lakh people. When Americans were taking serious steps to introduce Pharm.D as their national program, Thailand started the home work. In 1984-85 Thailand signed an agreement with 9 American Universities paying a sum of US $ 15 million (about 30 crore rupees) to train their teachers in the Pharmacy Schools in USA for starting Pharm.D Courses in their country.

After 7 years preparative works, in 1992 Thailand started the first Doctor of Pharmacy (Pharm.D) program in Asia (a six year program) focusing on Pharmaceutical Care at the Faculty of Pharmaceutical Sciences in Naresuan University. In 1993 they formed a US-Thai Consortium between all Thai Pharmacy Schools, the ACCP and ten Colleges of Pharmacy from USA (University of Florida, Purdue University, Ohio State University, University of Wisconsin, University of Arizona, University of Minnesota, University of Illinois at Chicago, University of Maryland at Baltimore, University of North Carolina, and Rutgers University). Through this consortium exchange programs of students and faculty members were also introduced. Today they have a number of Pharmacy Schools conducting Pharm.D programs in a manner as in USA[10,11].

The pharmacy education and pharmacy practice in Thailand were elevated to international standards and levels because of the introduction of Pharm.D in that country. The Thai Pharmacy Council in 2002 established for the first time competency standards with the goal that new pharmacy graduates like Pharm.D should know how to apply the knowledge and skills they have attained during pharmacy education. These standards are used for the pharmacy licensure examination as well as to maintain the standards of practice of pharmacy.

In the case of Pakistan the story is totally different. When their B.Pharm holders were not getting license and placements to practice pharmacy in other countries they discovered the way to overcome the situation without doing much home work. In 2004 Higher Education Commission of Pakistan and the Pharmacy Council of Pakistan revised their B.Pharm syllabus and changed the 4-year B.Pharmacy Program to 5-year Pharm-D. program[12].

All the 21 Pakistan Universities started the 5-year Pharm.D Program and stopped their B.Pharm. More over they made a provision for their B.Pharm graduates to become Pharm.D by undergoing one year non-traditional Pharm.D which is equal to Indian Pharm.D (PB). According to experts from Pakistan, it was almost a forced conversion from 4 year B.Pharm to 5 year Pharm.D. Students who joined for four year B.Pharm during 2001- 03 have to end up with 5 year Pharm.D. They started the program without any planning, but in a smart manner. For Pakistan, Pharm.D is only a tool to get placement in Gulf countries or to sit for licence examination in USA and other countries. The Pharm.D students in Pakistan go to hospitals as visitors and have no proper affiliation and mentor expertise[13,14]. However Pakistan managed to popularise Pharm.D education in their country through a shortcut method which no other country in the world dared to do.

Pharmacy education in India.

The pharmacy education in India is not very old. It was started at the University level only in 1932 in Banaras Hindu University(BHU) by a thirty year old youth, MahadevaLalSchroff popularly known as M.L. Schroff[15]. By 2013 there are about 1500 pharmacy degree institutions in India offering various courses as shown in Table No 1.

Sl. No	Course	Duration	Eligibility
i)	Diploma in pharmacy (D.Pharm),	2 year program	after 10+2
ii)	Bachelor of pharmacy (B.Pharm),	4 year program	after 10+2
iii)	Master of pharmacy (M.Pharm) ,	2 year program	after B.Pharm
iv)	Doctor of pharmacy (Pharm.D)	6 year program	after 10+2
v)	Doctor of Pharmacy (Pharm.D P.B).	3 year program	after B.Pharm
vi)	Doctor of philosophy (Ph.D)	generally 3 years work)	after M.Pharm

Table No 1. Pharmacy courses in India.

Starting ofPharm. D in India.

The first effort to introduce Pharm.D in India was initiated in Trivandrum Government Medical College in 1999 when the syllabus and regulations framed by K.G.Revikumar , the head of Hospital and Clinical Pharmacy, of the Medical College with the help of some American Universities got approved by the Board of Studies and the Faculty of Medicine of the University of Kerala. However the program could not be started as Revikumar was transferred to Calicut Medical College subsequently[1]. It was designed as a post graduate program aimed at moulding a team of young pharmacy practice professionals and teachers.

In 2002 the Foreign Pharmacy Graduation Equivalency Committee (FPGEC) in USA mandated a 5 year pharmacy graduation program to be eligible to take their Foreign Pharmacy Graduation Equivalency Examination (FPGEE). Naturally the pharmacists from South Asian countries including India got upset and put in a quandary.Indian pharmacy graduates with 4 year B.Pharm degree were not permitted to appear for the North American Pharmacist Licensure Examination(NAPLEX) as a prequalification for practice of pharmacy[16]. It was in that background the Indian authorities started thinking seriously about the introduction of Pharm.D in India.

The Pharmacy council of India (PCI) managed to introduce a six year regular Pharm D and the three year post baccalaureate Pharm.D in 2008 in the country through a Gazette

notification of Government of India dated 16th May 2008 (Fig.4). Interestingly by the time the notification for Pharm.D came out, the University Grants Commission (UGC) has sanctioned Rs. 50 lakh to Annamalai University in Tamil Nadu, a public University, for starting Pharm.D as an innovative program. By the time Govt.notification came for Pharm.D, Annamalai University got the grant from UGC for the program. In fact they are the first to notify Pharm.Dadmission in India.


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Fig. 1. Govt. of India Gazette notification on Pharm.D

By 2013 November, the PCI had given approval to over 140 institutions covering states like Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Rajasthan, UP and Punjab for starting Pharm.D in India. Rajasthan, Punjab and UP have one each, Gujarat two and Maharashtra three colleges. Out of them about 130 have already started the Pharm.D program. However the fact that only four Government institutions- two in Maharashtra, one each in Andhra Pradesh and Tamil Nadu, have started Pharm.D course. It shows that involvement of government institutions in the course is currently nominal and insignificant. In Maharashtra out of the three PCI approved institutions, two are in government sector one at Aurangabad and another at Amarabati. In Tamil Nadu out of 18 institutions one, Annamalai University, is in Government sector. In Kerala the Pharm.D was not yet started in Trivandrum Medical Collegeeven though they gotthe PCI approval in 2011. It is in this background that some Pharmacy teachersare endorsing the message that Pharm.D is designed for exporting pharmacists to other countries and that it is designed for the rich and affordable sections of society.

State	Private Colleges	Government Colleges
Andhra Pradesh	70	01
Gujarat	02	Nil
Karnataka	32	Nil
Kerala	11	Nil
Maharashtra	01	02
Punjab	01	Nil
Rajasthan	01	Nil
Tamil Nadu	17	01
Uttar Pradesh	01	NIL

Table 2. Pharm D Colleges in India approved by PCI (As on Oct.2013)

The opportunity to popularise the Pharm.D in India with the help of UGC and AICTE was not exploited and used by PCI or other government institutions or Universities. Since government institutions are the only shelter for poor and financially backward sections of society, such institutions have to encouraged to take new and emerging programs like Pharm.D.The authorities should have taken steps to promote, popularise, encourage and support public sector institutions to start Pharm.D.When AICTE grants approval to a course, they forward the approval letter to the Higher Education Secretary of respective state government for information and follow up. It is also interesting to note that AICTE is giving

many concessions and considerations for government institutions like fee waiver for starting new courses and preference for giving funds under various schemes. The involvement of government institutions is essential in popularising Pharm.D in India and also for ensuring job opportunities for Pharm.D graduates in the country. Did PCI failto convince the Govt. institutions and their officials about the relevance of Pharm.D in India?

Indian Pharm.D Regulations - Critical SWOT Analysis .

India is a country where one can find lot of potential for Pharm.D, provided it can produce an young battalion of professionally motivated and competent pharmacists who are properly educated and trained in a manner suited for the effective practice of pharmacy in the country. The norms and regulations for Pharm.D program were prescribed by the Pharmacy Council of India (PCI) in 2008 and notified in the Gazette, of Govt. of India dated May 10- 16, 2008. Usually the Universities are prescribing the syllabus for various courses conducted in the country. The first batch of regular Pharm.D will graduate by the end of 2014. Certain aspects of the strengths, weakness, opportunities and threats of Indian Pharm.D are identified through this critical analytical study and are mentioned here for the detailed discussions and deliberations.

1. Planning and homework

PCI invited first applications for starting Pharm.D in India in July 2008 giving just one month time for the institutions to plan and apply for the course. Still they received about 50 applications from pharmacy colleges in states like Andhra Pradesh, Karnataka, Tamil Nadu, Kerala, Maharashtra, Madhya Pradesh and Orissa. Inspections were conducted in August 2008 and in September PCI issued approval to about twenty pharmacy institutions from Tamil Nadu, Andhra Pradesh, Karnataka, Maharashtra and Kerala for starting Pharm.D course from the academic year 2008- 09**.** Subsequently few more institutions were approved for starting the program. Some of them were given the permission to start both Pharm.D and Pharm.D post baccalaureate[1].

The Indian Pharm.D syllabus and Regulations were adopted without sufficient pilot studies or proper home works. The didactic curriculum ensures a strong educational base for the clinical component of the program, though not of real hospital and community pharmacy aspects. It gives emphasis on pharmacotherapeutics, pharmacokinetics and pathophysiology. However the curriculum lacks teeth to make the students skilled enough to make Indian Pharmacy Practice to international levels and standards.

The laboratory, practical and training component of the Pharm.D is very poor and similar to the traditional B.Pharm/ M.Pharm programs. To cite an example in the first year the Pharm.D students do the Physiology practical in a similar manner as is done by B.Pharm students. They are not getting proper orientation for taking the B.P of patients or doing some clinical, biochemical and laboratory investigations even though such aspects are covered in their theory subjects. The students fail to take B.P of patients accurately.Even at the time of examinations they are tested for taking BP of their colleagues who have normal pressure. In the present Pharm.D syllabus there is no real practical component of Hospital Pharmacy and Community Pharmacy other than what is there in D.Pharm syllabus of ER 91.

After 5 years of existence of the program in India, it can be seen that except in a very few institutions the core subjects are taught by junior teachers who are not aware of the basic concepts of Pharm.D and Pharmacy practice. There is little effort on the part of authorities to make them aware of such aspects. In professional education, the 'blind leading blind' situation can cause serious harm, injury and damage for the profession.Pharm.D is having more than 60 years existence in its present form and is not an innovative program of India.

In all countries where Pharm.D and pharmacy practice are well established, the students are trained by skilled and trained teachers who have the calibre to teach, train, guide and mentor the students in the manner supposed to be done by them. The process of starting and governance of Pharm.D in India are very similar to Pharm.D in Pakistan.The Pharm.D students in many Indian institutions go to the hospitals as visitors and most of their teachers are strangers to the hospitals and hospital environment. Innovative teaching methods are lacking in Indian Pharm.D institutions because of the rigid syllabus framed by PCI. They have blocked the opportunities for innovating thinking in developing suitable syllabus at the University levels. In certain institutions there are competent and skilled teachers, but they too stick to the syllabus as framed by the authorities.

2. Course content and training component of Pharm.D

Indian Pharm.D has to be developed as a program giving sufficient opportunities for effective residency and other hospital, community and clinical postings. It should promote research and evidence based practice culture. The practice and education have to move in tandem through out the program from Pharm.D 1st Year (P1) to last year (P6). It is essential to provide sufficient opportunities for carrying out real and innovative practice experiences in the Pharm.D program. Population- based and research –focused course contents that provide sufficient emphasis on the principles of health policy, pharmacoeconomics, and the application of management techniques should be incorporated. Students have to be taught seriously about drug policies in private and public set ups.

The health insurance is getting popularized in India under various government schemes. From 12 % in 2010, the population coverage has increased to 25 % by 2013 . In the years to come health insurance will become either the rule or at least necessary for all those approaching both public and private hospitals. The Government of India started introducing generic dispensing of free medicines for non-communicable diseases (NCDs) through the state governments. States like Kerala have already implemented the scheme in Government Hospitals. Hospital formularies and Standard Treatment Guidelines (STG) will also become popular in the country because of such schemes. The Indian Pharm.D students should be educated and trained in such aspects of medicine uses.

Pharm.D students need to be familiarised with the medicines and other health care items used in the hospital. In many good Universities in the world, the Pharm.D students have to study and work on 'lead 100 medicines' used in the hospital. Through such course components the students learn about widely used medicines in the hospital. During the P1 to P3 period, they have to be familiarised with surgical items, dressing materials, first aid items, dietary/ nutraceuticals etc. Without knowing the medicines and their profile (including pharmacoeconomics and pharmacovigilance aspects), the students cannot properly interact with the clinicians. Apart from other objectives, ward rounds, clinical postings, residency and clerkships have the role to inform and educate other health care professionals regarding the capability and skills of modern pharmacists. This type of teaching –learning process will in turn help health care professionals and the management to demand the services of Pharm.Ds in the hospital after the completion of the course.

3. Clerkship, Internship and Residency in Pharm.D

In many countries, the Universities have established their own systems for providing clerkship (rotationship), internship, residency and fellowship components of Pharm.D. Unfortunately in India no such facilities are in existence. The Pharm.D teachers are also not trained or oriented for such works. Terms like preceptors, clerkship administrator, rotations director, mentor etc. are new to Indian pharmacy teachers.

Both clerkship and residency components of Indian Pharm.D needs to be made more

effective and practical to ensure placements in India. Students should be lead to where they should be. The Pharm.D syllabus does not specify the activities related to Clerkship, though 100 marks are allocated for it in P5. Clerkship is a gateway to world of real pharmacy practice. It should be developed as an opportunity to find career path for Pharm.Ds.

Clerkship is for obtaining clerical workmanship in pharmacy practice aspects and will be very much useful during residencies. It is not equal to ward rounds or clinical postings. Clerkship is usually done out sidethe hospital where the student studies. It differs from internship which is done within the hospital by performing in-house jobs and training. The clerkship co-ordinator or director will take the students in small groups of 3-5 to other institutions including primary health centres to speciality or super-speciality hospitals and pharmacies during clerkship to acquire the skills for practice in various situations with the support of departmental teachings and discussions. It is not a simple requirement for obtaining a degree. The work hours are that of full time jobs but with week-end and on-call works as decided by the clerkship director or administrator. Issues like why the student cohort is divided into small groups for clerkship/rotations or who can be appointed as a clerkship administrator/ coordinator or director and what are their duties etc. need to be defined to Indian Pharm.D teachers and students. Problem solving and decision making skills have to be developed in the students with the support of clerkship. Residencies help for the acquisition and development of required professional skills and expertise.

Many of the students may stick with what they know and believe even after clerkship and residency. However a few will be prompted to step out of their comforts and traditional locations and dare to see a different and challenging side of practice. Home infusion, geriatric care homes, prison pharmacy, pet animal pharmacy, satellite pharmacies, part-time pharmacies, family planning pharmacies, managed care pharmacies and insurance pharmacies are examples of concepts originated in the minds of Pharm.Ds during their clerkships, internships and residencies. Mentorship helps to support, inspire, motivate and guide students in both professional and personal growth and developments. Good mentorship is essential to polish the thinking power of students and prompt them for challenging and innovative professional activities.

The term preceptorship is well known to the American Pharmacists and medical doctors right from the beginning of 20th century, though it was introduced in their nursing profession only in late 1970s. However the concept of preceptors andpreceptorship are new to Indian pharmacy education. Preceptorship implies one-to-one teaching leaning relationship involving an experienced preceptor and a novice transitioning into practice. Preceptor helps the preceptee to connect the link between the theory taught in class rooms and the actual practice set up in hospitals and communities.

4. Preconditions for starting Pharm.D program.

The PCI made a condition that permission to start Pharm.D will be given to only such institutions which were conducting B.Pharm course for the previous four years. It indirectly helped to make Pharm.D a parallel B.Pharm course in India. Teachers started teaching Pharm.D students many subjects (like anatomy, physiology, biochemistry, pharmaceutics, pharmaceutical chemistry, pharmacognosy etc.) in the same manner they were teaching B.Pharm students. The practical classes and the examinations are also carried out and conducted in an identical manner. In some colleges both B.Pharm and Pharm.D classes are clubbed together for certain subjects.

Hardly 15 per cent of Indian pharmacy colleges are situated in health care campus or attached to a hospital or other health care facilities. As per the 2008 Pharm.D Regulations of PCI hospitals with 300 bed capacity is required for starting Pharm.D with 30 students intake. It can be either anown or a

'rented' hospital with the support of an MOU. The hospital is needed for providing training, internship and residencies for the students. The tie- up or memorandum of undertaking (MOU) provision is found misused or improperly used by majority of Pharm.D Colleges in the country. Many Pharm.D colleges use the MOU only for PCI inspection purpose and not for academic activities.

In medical colleges(teaching hospitals) 50 to 250 students are admitted for MBBS and a number of other students from nursing, dental or other paramedical programs are also using the hospitals for education and training. Insuch big teaching hospitals, pharmacy students in the beginning can expect only little priority as Pharm.D is new to majority of Indian doctors and hospitals. With the exception of very few, most of the major teaching hospitals in private sector are not having sufficient number of patients and their occupancy rate is very less for various reasons. Even during MCI inspectionsuch hospitals are forced to 'hire' or 'rent' patients by giving many incentives, concessions and commissions. In hospitals where MBBS course are not conducted the situation is different as Pharm.D students will get more opportunity to visit patients and involve in health care activities. They will get more support from other health care professionals. They can also anticipate acceptance and respect from patients if they sincerely work for patient care related aspects.

The question is whether 300 bed hospitals are essential for training 30 Pharm.D students? We have to think seriously whether a 100 bed hospital is sufficient for training 30 Pharm.D students or not. The students should also be encouraged to be exposed to other small and big hospitals including primary health centres (PHCs) and clinics to understand the real practice system there during the clerkship and study periods. In fact the purpose of clerkship or rotationship of Pharm.D was introduced in US universities for that purpose only. Otherwise only internship or in-house training and residency was sufficient. Wherever possible, Pharm.D students should be encouraged to go for international visits and also training in other hospitals with the objective of learning and understanding different practice situations.Exchange programs for students and faculty have to be encouraged at local, regional, national and international levels taking Thailand as a role model.

5. Separate Board of Studies for Pharm.D at Universities.

Board of Studies (BOS) in Universities play an important role in framing and updating the syllabus and Regulations or various courses and programs. Jointly with the help of concerned Faculties the BOS help the Universities in solving the academic issues and problems related to the programs conducted. Currently at the Universities the BOS constituted for B.Pharm or M.Pharm courses are supervising and managing the Pharm.D program. Those who are ignorant of the intricacies of Pharm.D cannot regulate the program. Even in Health Universities separate BOS are absent for Pharm.D, and the Universities cannot be blamed for that as they were not accordingly advised. The normal UG / PG pharmacy BOS will naturally fail to help rectify the defects of the PCI Regulations or syllabus.

Without using their prerogatives, the Indian Universities simply look at PCI for small and big things and cause difficulties and hardships to the students. By this time the PCI had issued any number of amendments to the Regulations published in the Govt. of India Gazettein 2008. What is the legal validity of such circulars if they are not notified in the same manner it was originally done?This type of intellectually unfit regulations were not framed in any other countries in the world till date, except perhaps in Pakistan.The Indian Pharm.D regulations lack all the components required to promote innovations in Pharmacy Practice and education in the country both at University and institution levels. All Universities and other autonomous institutions running the Pharm.D program shall have separate BOS for Pharm.D. Apart from Pharm.D teachers with good calibre, professionals from medicine, nursing

and other health care areas should also be included in BOS for Pharm.D.

6. Who should frame the syllabus- Universities or PCI?

One of the major criticisms about Indian professional education is that it fails to go with the time, style and needs. Out dated and time expired syllabus and reading materials are widely used for teaching in Universities and affiliated institutions. The professionals of tomorrow have to be taught bythe teachersof today using the syllabus for tomorrow. Unfortunately Indian teachers are using the curricula of yesterdays (rather grand old days) for moulding the new generations.

The two year Diploma in Pharmacy (D.Pharm) education in India is mainly governed by the PCI under its Education regulations (ER). No other agency demand or request the control of Indian D.Pharm other than PCI. The B.Pharm and M.Pharm courses are governed by the All India Council for Technical education (AICTE) based on the provisions of AICTE Act 1987. The PCI was established in 1948 under the provisions of the Pharmacy Act 1948. Right from the beginning the PCI was satisfied with the governance of Diploma program in Pharmacy and hence failed to popularise and encourage the degree and higher education in pharmacy in the country. The AICTE was established in 1945 as an Advisory body and later elevated to the level of a Statutory body in 1987 under AICTE Act 1987. These two agencies have to work in tandem for the benefit of profession of pharmacy in India. AICTE makes only guidelines for syllabus and the Universities frame their own detailed syllabus and regulations for programs like B.Pharm and M.Pharm.

Since AICTE makes only flexible syllabus leaving the freedom to the Universities , the Indian Universities have the liberty to update the syllabus at any time and incorporate new concepts and innovations in the regulations and curriculum. However only very fewIndian Universities dare to make additions and deletions in their syllabus at regular intervals. In this era of science, technology and computer based information, some Government Universities notorious in using syllabus framed before 10 or 15 years for pharmacy courses. One cannot blame such Universities as the PCI itself is doing the same thing in a more shameful manner.

Currently the D.Pharm course is governed by the ER 1991 of PCI. It was framed and finalised though a Workshop conducted in 1986 at Govt. Medical College, Trivandrum. The author of this paper was a teacher in Trivandrum Medical College on those days and was a member of the organising committee of the 10-Day long ER 91 Workshop. Now in 2013, the Indian pharmacy teachers are forced to teach the D.Pharm students with the same syllabus framed in 1986. How old is the current Indian D.Pharm syllabus? Hardly 27 or 28 years! The same PCI has in 2008 framed a rigid syllabus for Pharm.D and notified through Gazette of India.

The Pharm D courses in USA and many other countries are similar but not identical. They are not enforcing rigid rules on curricula as is done in India. The curriculum leaves option to the Universities and Colleges to initiate innovations and take the program to higher levels. The governing authorities through the syllabus only enforce a common core of subjects so that Universities / Institutions put their emphasize on certain subjects and areas. That is their strength and weakness.

Indian Pharm.D syllabus require serious changes in structure, orientations, functions and style. It has to be made flexible by specifying only the core areas of subjects. The Universities should be entrusted with the responsibilities of framing and updating the regulations and course contents. The syllabus should be updated regularly and shall meet the requirements of global, national and regional demands and situations.

For a program like Pharm.D, the syllabus has to framed by involving as many teachers, professionals and experts as possible. There shall be healthy completion between Indian Universities for framing skill promoting and job oriented syllabus for Pharm.D. The hospital

pharmacy, community pharmacy, clinical research and clinical trial components of present Pharm.Dsyllabushave to be made effective to create practice and research interests in students. Let the PCI monitor the syllabus and Regulations of various Indian Universities and encourage them for innovations through awards or other appreciations.There are a number of Pharmacy institutions in India, including Hamdard University, DIPSAR Delhi, Manipal etc. which can support the clinical research and trial component of Indian Pharm.D program.

PCI should not try to imitate Medical Council of India (MCI) in academic matters. MCI trains the students for Indian set up based on national needs and ensure their jobs in the country. The constitution of MCI is totally different from PCI and only teachers and subject experts become members of MCI. They can verywell frame the syllabus for medical programs in India. They have the mechanism to revise and update the syllabus and make it suitable for the national requirements. In many countries Indian doctors are not even permitted to practice with their Indian degrees, rather can work only as technicians.

With its existing structure, constitution and functioning, the PCI is not competent even to frame the syllabus for a programme like the two year Indigenous D.Pharm course.PCI should do the work of supervision, governance and umpiring of Pharm.D programs conducted in various Universities and institutions in the country.They can initiate some activities like Accreditation of Pharm.D programs based on the syllabus and regulations framed by Universities and the competency and capability institutions for conducting the courses.

7. Pharmacy Practice content of Pharm.D

About 55 per cent of total pharmacists in any country work in community pharmacies and another 30 per cent in hospitals as hospital / clinical pharmacists. This 85 % of working pharmacists constitute the class of practising pharmacists and they are the image builders of the profession of pharmacy. If more and more qualified pharmacists like Pharm.Ds take up the job opportunities in Indian community pharmacies and hospital pharmacies, that will help to make pharmacy practice in India to international levels. That should be the focus of Indian Pharm.D. The existing syllabus is not having an effective pharmacy practice component. Teachers who did not even see the inside of an Indian or foreign community pharmacy teach the students about Community Pharmacy and those who don't know the 'a.b.c.' of hospital pharmacy try to inculcate the culture of pharmacy practice in students.

Michigan University USA is a public University. The author of this paper got the opportunity to study their Pharm.D in detail, few years before. It was the Pharmabridge program of AgatheWherli that provided me the opportunity to study the American Pharm.D . AgatheWherli, a former officer of WHO is doing wonderful service to promote pharmacy practice in developing countries. I could see that Pharm.D students of Michigan are taught about community pharmacy by private community pharmacists working in neighbourhood community pharmacies. These community pharmacy teachers alsowork as preceptors and clerkship supervisors in community pharmacies. Same is the case with hospital pharmacy. Even though the Michigan University has a state of art hospital, students are taken to other small and medium private hospitals in the neighbourhood for clerkship and residencies by their Clerkship Director.

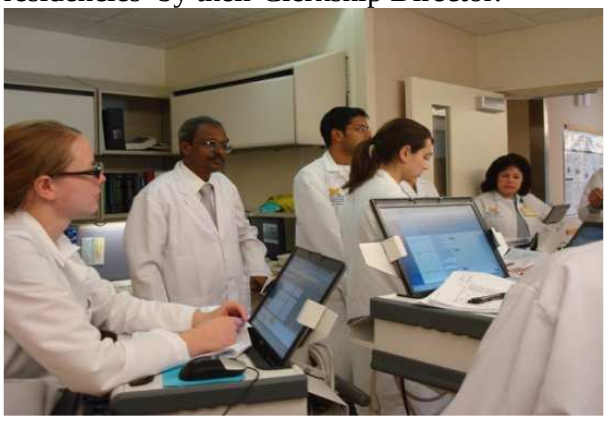

Photo. 1. Michigan University clinical rounds with clinical pharmacists

Indian pharmacists are very much attracted by the community pharmacies of other countries. However they are not attracted to in the Indian community pharmacies. Why? Indian Pharmacy profession should think seriously about it. The Pharmacy Council of India (and its state branches) with the support of professional organisations and the Drugs Control departments can do wonders in this regard. Indian Pharmacy Act 1948 is as old as independent India. The Drugs and Cosmetics Act 1940 is 8 years older. Still even in 2014 we do sell "English Medicines" with the support of a licence taken in the name of a registered pharmacist whose physical presence and identity are not always ensured at the work place. The "business" show of Indian community pharmacies are often managed by the owners or their spouses and domestic aids in disguise.

Photo.2 Pharm.D students in USA doing clerkship in community pharmacy

If there is any category of professionals working in India, without dress code and professional guidelines, it is our community pharmacists and the hospital pharmacists working in government hospitals, though in recent times the situation is getting much better. If the country adopt and implement certain guide lines for practicing pharmacists including dress codes, good dispensing practices and other ethical and professional aspects, that will help to accelerate the process. Indian community pharmacies and hospital pharmacies can be standardised with the support of certain accreditation process. Agencies like PCI, and their state branches can play a vital role in this aspect with their existing structure and constitution.

There are about 8 lakh community pharmacies and two lakh hospital pharmacies in India. Huge majority of them are pure business or trade centres, though some of them both in private and government sectors are professional pharmacies where highly qualified pharmacists with dress codes and badges are working. We have to take earnest steps to increase the professional strength. The qualified and educated pharmacists working in the community pharmacies have to be engaged in teaching the community pharmacy. Similarly the hospital pharmacy should be taught by those working/ worked in hospital pharmacies. Indian pharmacy teachers will take time to get themselves oriented to hospital situations. Subjects like pharmacotherapy have to be taught with the support of medical professionals in the beginning years, wherever possible.

8.Qualified Teachers and Training Programs.

India is a country where the nursery children and high school students are taught by professionally trained teachers. However at the professional degree educationlevels we don't have a system to train the future teachers. Only those having a flair for teaching should become teachers. The Pharm.D teachers in India needs proper training and orientation with the help of some well organised residential programs. It can even be an M.Phil or some other similar innovative programs with the support of UGC or AICTE. Some good Universities should take the lead. Teachers have to be role models and inspirations for the students.

Many of the Indian Pharmacy teachers are not aware of the potential and prospects of Pharm.D programs. Most of the HODs of Pharm.D in India are teachers qualified in either Pharmaceutics or Pharmacology with very little background and knowledge about the emerging activities and potentials of pharmacy practice. In some colleges Pharmaceutical Chemistry and Pharmacognosy persons are

supervising Pharmacy Practice. Some institutions have sufficient number of intelligent and young / junior Pharmacy Practice teachers. But their HODs and principals are with different background. Without the support of middle and senior competent teachers the junior teachers cannot empower the skills required to lead the students. Most of the Pharm.D departments and their HODs highlight only two aspects - 'ADR' and 'drug interactions'- as the benefits of Pharm.D to hospital managements. Earnest steps have to be taken to improve the quality of Indian Pharm.D teachers.

9.Indian Pharm.D (PB) program.

Along with the regular Pharm.D, the Pharm.D (Post Baccalaureate) program was also initiated in 2008 with a maximum intake of 10 candidates in a year. It was started as a three year program after B.Pharm and adopted the 4th, 5th and 6th year syllabus of the regular Pharm.D as such. The Pharm.D (PB) was started when over 30 institutions were conducting AICTE approved two year M.Pharm Pharmacy Practice program in India. Being an AICTE approved program, all the GATE/GPAT qualified M.Pharm students are eligible to get a monthly stipend of Rs. 8000.00 from AICTE. Since Pharm.D (PB) is not having AICTE approval, the students with GPAT qualification will not dare to join the course. Then who will join for Pharm.D (PB)? Naturally those who fail to clear such exams like GPAT. Did PCI apply proper sense before starting Pharm.D (PB)?

By 2013, the Pharm.D (PB) program in India has already became a no man's programme. Out of 10 seats some colleges just manage to get one or two students. An academic program needs the support of properhome work, thoughts and discussions. Let it be a learning process for those who managed to design the Regulations and the syllabus of Pharm.D (PB) in an ad-hoc manner.

Both from technical and legal aspects, PCI is not having an effective role in regulating Pharm.D (PB). Their role rests with such courses which are considered as minimum qualification for registration as a Pharmacist in India. Those who join Pharm.D (PB) or M.Pharm or other courses are having the required qualification for registration as a pharmacist in India. The Pharm.D (PB) should have started as an AICTE approved two year program after B.Pharm replacing M.Pharm Pharmacy Practice or as a non-traditional Pharm.D program for Indian Pharmacy Practice professionals.

It is wise to withdraw the Pharm.D (PB) as quickly as possible before being abandoned/ or totally disowned by others. Indian Universities should come forward to design some practical and effective syllabus for non-traditional Pharm.D program.Through such programs, we should convert all our M.Pharm graduates in Pharmacy Practice area to Pharm.D, if they so opt without affecting their working/ practice activities.

10. Joined degrees and Twinning Programs.

The current course duration of Pharm.D is currently prescribed as 6 year which has to be re-designated as 5+ 1 = 6 years for regular program. Since the students through P1 to P5 years of study acquire the skills for handing public health, physiological investigations, biochemistry tests, lab data interpretation etc. required for the hospital and community practice situations they can contribute seriously for the hospital health care programs during the general residency in P6. They also have to practice hospital pharmacy and clinical pharmacy in the hospitals. Above all, the P6 Pharm.D can act as preceptors and guides for all the junior students. If properly utilised, they will be more effective in teaching and training junior students than their teachers. The students have to be paid proper stipend in P6 without charging any tuition fee.

Since opportunities will become available for pharmacists with advanced training and knowledge, Pharm.D. plus other programs like Fellowship/ Sr. residency/ M.Phil or PhD can be thought about to train and mould clinical pharmacists in specialties such as ambulatory care, geriatrics, paediatrics, neurology, nephrology, dermatology, oncology,

psychology, clinical pharmacokinetics, drug information, drug policies, clinical research, and nutrition support at University levels.

Let us have any number of deliberations and discussions on the matter through out the country. The educational institutions should also be centres for such discussions and debates so that the students will also understand the issues in true perspectives. The Pharm.D syllabus should give more emphasis to community pharmacy and hospital pharmacy activities and exposure, both in didactic and practice aspects.

INSPECTION OF INSTITUTIONS FOR STARTING PHARM.D.

As per the PCI Regulations, the pharmacy colleges starting Pharm.D have to fulfil the minimum requirements as fixed like sufficient number of class rooms, laboratories, training facilities, qualified staff etc. The approval to start a program in an institution is given after verification of their infrastructure and instructional facilities. It is done through various levels of inspections by agencies like PCI , State Government and University. Pharm.D being a new program in India, all levels of inspections have to be designed professionally in a scientific and systematic manner.

The inspections have to be conducted in a pre-designed transparent mannerand should not permit or harbour with it sufficient provisions permitting un-ethical practices. The present AICTE inspection process appears to be more professional than PCI inspection and prevents corruption and unethical practices to a certain extent. The AICTE made the inspection related activities transparent and corruption free as a result of the CBI case against its own chairman and some other officers few years before. It is interesting to note that Dr.Kethan Desai, the powerful former President of Medical Council of India was also arrested by CBI on certain corruption charges related to inspection and approval of medical colleges. Among the various Indian Councils regulating the professional courses, perhaps the Nursing Council may be the one generally free from allegations related to corruption.

The AICTE inspectors are empanelled and appointed based on a computer soft- ware program. The inspection dates are fixed by the officials of AICTE and the inspectors have no freedom to change the dates. AICTE inform the institutions about the inspection team just one or two days in advance and the inspectors quite often know about the institution to be inspected only on the day of inspection. The AICTEinspection report is updated to the AICTE website immediately after the inspection, from the institution itself. However AICTE failed in ensuring quality assurance, effective follow up of approved institutions, their programs and management of M.Pharm courses. In fact, the M.Pharm program in India became a mockery and a tutorial college style part-time/ distance education program in pharmacy in recent times in certain institutions because of the lethargic attitude of AICTE.

In the case of PCI, inspectors are appointed months or weeks in advance and they are given the freedom to fix the inspection dates as per their own convenience. Often they fix it based on certain discussions with institutions. The AICTE appointment order strictly prevents the inspectors from receiving hospitalities like hotel accommodation, flight tickets etc. from the inspecting institutions. However the PCI directly or indirectly permits the same. When the flight tickets and accommodation are arranged by official agencies of AICTE, many PCI inspectors avail such facilities from colleges and then claim TA/DA from the PCI. If PCI is not financially strong to provide flight tickets, they should find inspectors from local or nearby areas. Some inspectorsintentionally delay both inspection and reportsending. Since huge majority of Pharm.D institutions are in private sector, they yield to such pressures and make the inspection a ‘win- win situation’. There shall be some specific arrangements to train the inspectors before deputing them for inspections.

Most of the Pharm.D inspections are conducted by teachers who don't have pharmacy practice background or exposure to hospital pharmacy or clinical pharmacy practice set up and culture. In many cases the inspection is like a circus show. Immediately after the inspection, within hours, the drug information centre, patient counselling and quite often the pharmacy practice area itself vanish from the hospital scene. The inspection process permits the hospital management to act like a magician. Even in Pharm.D colleges which are having own hospitals the situation is not always encouraging one.

Pharm.D inspections at the University and Government levels.

It is high time that specificStandard Operating Procedures (SOPs) and guidelines are prescribed for Pharm.D inspections as is being done by NAAC, NBA or AICTE in India. Surprise inspections have to be arranged by the Universities, State Pharmacy Councils and the respective State Governments. The State Pharmacy Councils can play a pro-active role in governing the pharmacy education in their states with the support of the affiliating Universities and State Governments. They have to be encouraged and empowered for such activities. The attitude of focussing the entire powers related to regulation of Pharm.D to PCI has to be changed. PCI is not having the expertise, system and financial support and failed to use the support of UGC or AICTE for the Pharm.D. Pharmacy Councils can do many things to promote the education and practice of pharmacy in the country.

In the case of Nursing Education, apart from the Nursing council of India, the State Nurses Councils do play active roles in regulating the nursing education under their jurisdiction. In Kerala the Nurses and Midwives Council through an August 1, 2013 directive citing deficiencies in infrastructure and lack of permanent faculty members in few self financing nursing colleges of Mahatma Gandhi University (a public University) and barred them from taking admissions to B.Sc. and M.Sc. Nursing courses. The problem was late solved with the direct involvement of state government and chief minister in solving the deficiencies.

The State governments and the Universities have to part with the practice of sending teachers without pharmacy practice background for inspection of Pharm.D institutions. The facilities for conducting the course and presence of regular competent teachers should be assessed understanding the local issues and problems. The inspections should not be limited for the issue of No Objection Certificates (NOC) alone. Regular inspections have to be arranged as a part of quality assurance program. Whenever and wherever needed, surprise inspections should also be conducted.

Residency, Training and Job opportunities for indian Pharm.D.

What is the employment potential for the Pharm.D graduates in India? From the experiences of other countries, the job opportunities for the Pharm.D rests mainly with the Pharmacy Practice areas like Community Pharmacies, Hospital Pharmacies, Clinical Pharmacies, Clinical Research including clinical trials, Pharmacovigilance and Pharmacoeconomic centres in industries, government and private institutions. The Indian community Pharmacies have to be made professional both in outlook and practice. Only registered pharmacists should be given licences and permission to establish and run such pharmacies.

The current Pharm.Dsyllabus and Regulations give very little focus for employability of the graduates coming out of the Universities and schools/colleges of Pharmacy. Those who frame the syllabus andRegulations of a course should be responsible like the parents of well brought up children. Why and for what purpose Pharm.D was introduced in India have to be reflected in the syllabus and Regulation. Students who join the course and spend six years at the universities cannot be treated as orphans of Indian pharmacy profession.

Both the training and residency of Pharm.D needs to be made more effective for ensuring

job guarantee and professional skills. The course duration has to be re-designated as 5+ 1 = 6 years for Pharm.D regular program. The students have to pay fees only for P1 to P5 and they should be given stipend during the 6th year of the course. Through two recent notifications the PCI complicated the fee and stipend issue and suggested either 50% reduction in tuition fee or a monthly stipend of Rs. 5000.00 to students in year 6 of Pharm.D. Since the students through P1 to P5 acquire the skills for handing public health, physiological investigations, biochemistry tests, lab data interpretation etc. required for the hospital and community practice situations they can contribute seriously for the hospital health care programs during the general residency in P6. They also have to practice hospital pharmacy and clinical pharmacy in the hospitals. Above all, the P6 Pharm.D have to act as preceptors and guides for all the junior students.Often they will be more effective in the teaching and training junior Pharm.D than their teachers. Such students have to be paid proper stipend, a minimum of Rs 8000.00 per month during P6. When the Pharm.D was started in Amrita University in 2010, the author of this paper was the Principaland Head of Pharmacy Practice. The management committee finalised the fee structure for Pharm.D in such a way that there will be tuition fee for students only up to P5 and in the P6 they will be paid a monthly stipend in par with what is paid to medical and nursing students.

The Pharmacy Council through one notification equated Pharm.D with M.Pharm. But they failed to do the follow up for that. That notification need to be published in the gazette and communicated to all state Governments and agencies like UGC and AICTE. Will a letter published in the PCI web site or given to Pharm.D institutions help to change the qualifications and method of appointments in Government institutions?

For finding suitable jobs in Indian hospitals, the Pharm.Ds have to be specialised in disciplines like Nephrology and Urology, Psychiatry, Neurology, Oncology, Dermatology, Paediatrics, Endocrinology/ Diabetology etc. so that the concerned medical specialists will seek their support for drug therapy and various clinical studies. The students have to be specialised in the drugs used in those specialities.

Conclusions.

The pharmaceutical industry in India has attained tremendous growth and development during the last few decades. So also the Pharmacy education. However the pharmacy practiceat community and hospital levels are not yet modernized and made professional compared to international standards and practices. The Pharm.D program has to be utilized to rectify that gap. With globalization of the pharmacy education program, the standards of education and practice needs to be of world class levels.

The 6 year Pharm.D program in India should help to establish an effective and trustworthy relationship between the pharmacy practice department and the health care professionals in the hospitals and community set ups. The Pharm.D students have to exhibit their calibre, competence and capabilities in making the drug therapy and health care more safe, cost-effective and user friendly. In hospitals, the practicing pharmacists, including pharmacy practice teachers, have to work in tandem with other health care professionals. They have to acquire knowledge about other health care professions through interactions, discussions and team work.

In spite of the deficiencies and weaknesses pointed out, the experiences of the first 4 or 5 years of Pharm.D in India show that it is a sought after pharmacy course in the country, though currently limited to certain south Indian states. Students with brilliant academic background and visions are joining the course. The educated classes of people including the NRIs and internet information from across the world help students to choose Pharm.D course . It is the responsibility of the profession and the professionals to help them materialise their dreams and lead them to a better tomorrow.

They need the leadership by teachers who are good and capable guides, influential mentors and skilled preceptors.

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