

Pharmacy Education and Career Opportunities for Pharmacists in Bangladesh

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Abstract

Pharmacy education in Bangladesh started its journey in 1964 after the establishment of Department of Pharmacy in the University of Dhaka. The first academic session (1964 -1965) of the department began with 24 students, including 4 female students. However, Pharmacy as a profession was recognized in Bangladesh after the promulgation of Pharmacy Ordinance 1976. Initially, the academic curriculum consisted of a 3-year Bachelor (Honors) and 1-year Master of Pharmacy programs. Later on, the undergraduate program was upgraded to 4-year Bachelor of Pharmacy (Honors) degree in 1996. In 2010, the undergraduate course was further upgraded to 5-year with internship in hospitals and pharmaceutical industries in order to cope with the international Pharm. D. (Doctor of Pharmacy) program. Pharmacy graduates in Bangladesh are mainly employed in different sectors of pharmaceutical industries. Very recently, a few pharmacists have been employed as hospital pharmacists in few highly reputed private hospitals. However, hospital, community and clinical pharmacy in Bangladesh have not been well developed due to lack of government policy and hence our people are partly deprived of proper health care services in Bangladesh.

Key words: Pharmacy education, Pharmacists, Career, Faculty, Bangladesh

Talk of the beginning

Pharmacy as a profession was recognized in Bangladesh after the promulgation of Bangladesh Pharmacy Ordinance-1976. Although, the pharmacy education started in Bangladesh (the then East Pakistan) in 1964 after the establishment of Department of Pharmacy in the University of Dhaka it is notable to mention here that the pharmacy education in the then West Pakistan (present Pakistan) was started in 1944 after the introduction of the pharmacy courses at the Punjab University in Lahore. This clearly indicates how the people of the then East Pakistan (present Bangladesh) were deprived to get pharmacy education.

The Department of Pharmacy at the University of Dhaka started its journey with 24 students (20 male and 4 female) from the academic year 1964-65. The journey was initiated with very poor infrastructure and laboratory facilities. At that time (from 1964-1966), the students of pharmacy used to share the classrooms and laboratories with the students of the Department of Biochemistry. Professor Kamal Uddin Ahmad was the first Head of the

Department of Pharmacy, while he was also serving as the Head of the Department of Biochemistry. In 1966, Dr. A. Jabbar (now Emeritus Professor) took charge of the Department of Pharmacy although he was in the core to initiate pharmacy education in Bangladesh (Annual Report, University of Dhaka, 2007-2008). At the beginning, Dr. Kamal Uddin Ahmad (late), Dr. A. Jabbar, Dr. N. H. Khan, Dr. Golam Haider, Dr. Atiqur Rahman, Dr. Akhter Hossain, Dr. Anwarul Azim Choudhury (late), and Mr. Parvez Ahmed were the faculty members. Later on, Dr. Abdur Rashid Purakaystha, Dr. S.A. Talukder, Dr. A. Ghani, and Mr Sukkur Khan joined the department. Prof. Jabbar is regarded and honored as the pioneer of pharmacy education in Bangladesh.

Chronology of pharmacy courses

The Department of Pharmacy, University of Dhaka started pharmacy education by offering a 3-year Bachelor of Pharmacy course (B. Pharm.). Later on, the degree was changed to B. Pharm. (Honors) due to heavy demand of the students. The first batch of students graduated in

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1969. Then, 1-year Master of Pharmacy (M. Pharm.) course was initiated for a limited number of students who opted for research. At the beginning, other students were not allowed to do M. Pharm. However, in 1970 the department decided to offer the 1-year M. Pharm. course to all the graduate students under two groups: thesis and non-thesis. From 1996, the 3-year B. Pharm. (Honors) program was upgraded to 4-year (Honors) program with an extensive change in the curriculum and syllabus. In 2003, the 4-year undergraduate program has been taken under the control of Dean of the Faculty of Pharmacy and 1-year postgraduate course (thesis and non-thesis group) has been started in three new departments under the Faculty of Pharmacy (Annual Report, Dhaka University, 2007-08; www.pharmadu.net; Chowdhury, 2007). At present, the faculty offers undergraduate course to 70 students each year (65 seats for native students and 5 seats for foreigners) whereas, each department under the faculty offers M. Pharm. course in respective subject to one third of the total graduates in each year.

Department to Faculty

Pharmacy is a multidisciplinary subject which comprises many subjects of different disciplines. Here, all the subjects are categorized mainly into three major disciplines: (i) pharmaceutical chemistry, medicinal chemistry and drug discovery, pharmaceutical analysis, etc (ii) pharmaceutical technology, biopharmaceutics, etc and (iii) pharmacology, clinical pharmacy, hospital pharmacy, etc. All these subjects are taught in the undergraduate program. However, to further upgrade the teaching and learning in order to meet the increasing demand of pharmacists both nationally and internationally, the Faculty of Pharmacy started its journey in 1995. Professor Dr. Nurun Nahar Rahman was appointed as the first acting Dean of the Faculty.

As per the decision of the Syndicate meeting of the University of Dhaka (Highest decision making body) in 2003, the 4-year B. Pharm (Hons.) program was taken under the Faculty of Pharmacy. From then, the Dean of the Faculty of Pharmacy has been controlling and coordinating the undergraduate program. At the same time, to provide specialization in specific discipline at postgraduate level, three new departments were established: (i) Department of Pharmaceutical Chemistry,

(ii) Department of Pharmaceutics and Pharmaceutical Technology (now Department of Pharmaceutical Technology) and (iii) Department of Clinical Pharmacy and Pharmacology. Professor Dr. A. K. Azad Chowdhury (19.08.1995 to 24.09.1995 and 12.12.1995 to 29.09.1996), Professor Dr. Munir Uddin Ahmed (27.08.1997 to 06.12.1997 and 08.03.1998 to 30.09.1999) and Professor Dr. Choudhury Mahmood Hasan (01.10.1999 to 20.12.2003) served as the elected Dean of the faculty. As a Dean, Professor Choudhury Mahmood Hasan played premier role to establish three new departments at postgraduate levels under the Faculty. Unfortunately, it took almost 8 years after the establishment of the faculty in 1995 to open any new department and make them functional and effective both administratively and academically. Professor Dr. Md. Abdur Rashid served as elected Dean of the Faculty from December 2003-October 2010. During this period, the Faculty of Pharmacy turned to a new dimension in terms of academic and research activities and development of infrastructures and laboratory facilities due to coordinated, dynamic and untiring efforts of the learned faculty members. To enhance the academic activity of the new departments of the faculty, Mr. Khondokar Mirazur Rahman, Mr. Rasheduzzaman Chowdhury, Mr. Mohiuddin Abdul Quadir and Mr. Md. Abdul Mazid joined as the new faculty members of the Department of Pharmaceutical Chemistry in 2003. Later on, more than 20 new teachers were appointed to the faculty to further enhance and improve the teaching and learning. As a result of the hard work and coordinated efforts of the teachers of different departments, the Faculty of Pharmacy has been able to run the Bachelor and Masters programs according to the academic calendar without any session jam. From 12 October 2010, Professor Dr. Md. Habibur Rahman took over the charge as the newly elected Dean of the Faculty of Pharmacy.

Expansion of pharmacy education in Bangladesh

(a) *Pharmacy education in other public universities:* Bangladesh is a densely populated country, and the literacy rate is still very poor. It is unfortunate to mention here that, after 1971, the University of Dhaka had been the only institution offering pharmacy education in Bangladesh and it took almost 14 years to establish the

second Department of Pharmacy in Jahangirnagar University in 1985. To promote pharmacy education, new pharmacy departments have been established in other public universities (Table 1). However, all these

departments are suffering from lack of space, class rooms, laboratory facilities and specialized equipments and more importantly qualified faculty members.

Faculty of Pharmacy University of Dhaka



The old building in Curzon Hall area of the University of Dhaka, where the Department of Pharmacy started its journey in 1964. Presently, the office of the Dean of the faculty is situated in the ground floor of this building.

Table 1. List of public universities offering pharmacy courses in Bangladesh

Sl.	Name of University	Location	Year of Establishment	No. of seats/year	Accreditation by PCB
1.	University of Dhaka	Dhaka	1964	70	Permanent
2.	Jahangirnagar University	Savar	1985	55	Permanent
3.	Rajshahi University	Rajshahi	1990	45	Permanent
4.	Khulna University	Khulna	1997	37	Temporary
5.	Noakhali Science and Technology University	Noakhali	2006	50	Temporary
6.	Jagannath University	Dhaka	2009	20	N/A
7.	Jessore University	Jessore	2010	--	N/A

PCB: Pharmacy Council of Bangladesh. After the promulgation of Pharmacy Ordinance 1976, the PCB became the official authority of the government to regulate and accreditate the pharmacy education in Bangladesh.

(b) *Pharmacy education in private universities:* The establishment of private university in Bangladesh was initiated through the Private University Act 1992. Until 2010, 22 private universities (Table 2) out of 54 are

offering pharmacy courses. The universities conducting pharmacy courses are not homogenously distributed throughout the country. For instance, out of the 22 universities, 18 are located in the capital city Dhaka and

the rest of them are located in Chittagong. There is no private university in Rajshahi, Khulna, Sylhet, Barisal, Rangpur, Maymensingh, and Comilla regions to offer pharmacy courses. However, most of the private universities offering pharmacy courses do not have their own campuses. Moreover, the number of trained and qualified faculty members is also scarce in those universities as per UGC (University Grants Commission) guidelines. Although the UGC and PCB have been trying to upgrade the pharmacy education in Bangladesh, there are still a lot to be accomplished.

Introduction of 5-year pharmacy program in the University of Dhaka

In Bangladesh, more than 95% opportunities for pharmacists are prevailing in pharmaceutical industries. However, in USA, Australia, Canada and the Middle East, pharmacy profession is highly patient care oriented, and they have much more opportunities in hospitals, clinics and community pharmacy sectors (Ghilzai and Dutta, 2007; Babar, 2005; www.bapibd.com). Those who have only Pharm. D. [Doctor of Pharmacy, which is actually a graduate program like MD (Doctor of Medicine), DVM (Doctor of Veterinary Medicine), etc] or equivalent degrees, are now eligible to practice in hospitals and clinics in USA and other developed countries as well as in the Middle East. It is to be mentioned here that, after 2003, our graduates with the 4-year B. Pharm. (Honors) degree are not allowed to sit for the pharmacy registration examination in the USA. Therefore, to improve the undergraduate courses to global standards and to prepare our students for the changing trends so that they can work in global environment, introduction of Pharm. D. program is highly essential and a prime need.

Several Indian universities, under the guidance of Pharmacy Council of India, have already introduced Pharm. D. program from the academic year 2008 (Ghilzai and Dutta, 2007). In Pakistan, Pharm. D. course has been introduced from 2005 after the recommendation of Higher Education Commission of Pakistan (Babar, 2005). Thailand and Singapore have also introduced Pharm. D. course recently. In Japan, Pharm. D. course has been introduced from 2006. Similarly, the universities in KSA, Qatar, UAE have also introduced Pharm. D. programs

(Babar, 2005; www.bapibd.com; Ahmed and Hassali, 2008; Jamshed *et al.*, 2007).

However, until now there has not been any initiative from the governmental authority which regulates the pharmacy profession in Bangladesh. Hence, keeping these in mind, the Faculty of Pharmacy in the University of Dhaka took the initiative to upgrade the pharmacy curriculum. On 6 November 2007, an Academic Committee Meeting of the Faculty presided by Professor M. A. Rashid, form a sub-committee to review the Pharm. D. courses of different universities in USA, Japan, India etc. The sub-committee comprising of Professor Dr. Monira Ahsan (convenor), Dr. Md. Selim Reza, Dr. Abdul Hasnat, Dr. Md. Abdul Mazid, Mr. Elias Al-Mamun, Mr. Jakir Ahmed Chowdhury, and Mr. Abul Kalam Azad reviewed the syllabi of the Pharm. D. program of different universities around the world and submitted a proposal on 8 April 2008 to the Dean of the Faculty to upgrade the present 4-year B. Pharm. program to 5-year Pharm. D. program with internship in hospitals. The proposal was approved by the academic committee meeting and subsequently faculty meeting and was sent to the highest authority of the university of Dhaka for approval. On 25 August 2010, the Academic Council of the University of Dhaka approved a 5-year B. Pharm. program from the academic session 2010-2011 instead of the Pharm. D. program. We hope the learned members of the Academic Council will reconsider our proposal soon and approve the name of the 5-year B. Pharm. program to Pharm. D. as per the international standard. Although, University of Dhaka has introduced the 5-year B. Pharm. program, neither the PCB nor the other university authorities has taken the initiative to upgrade the existing 4-year B. Pharm. (Honors) program.

Regulation of pharmacy education in Bangladesh

Bangladeshi universities are affiliated with the University Grants Commission (UGC), a commission created according to the Presidential Order (P.O. No 10 of 1973) of the Government of the Peoples' Republic of Bangladesh. However, since pharmacy is a professional subject, the Government of the People's Republic of Bangladesh promulgated Pharmacy Ordinance (No. X111) in 1976 and set up Pharmacy Council of Bangladesh (PCB) under the Ministry of Health and Family Welfare.

From then the pharmacy courses are designed and controlled by the PCB. To ensure quality teaching and to meet the high professional standard of the pharmacists, PCB initiated 'A grade' registration examination system for the pharmacy graduates of different universities in 2005. Pharmacists having 'A' grade registration are eligible to practice pharmacy in Bangladesh. It is to be mentioned here that in USA, UK or other European

countries, and in most of the developed and developing countries, all the graduates in pharmacy must qualify in the Pharmacy Licensing Examination. Those who pass the pharmacy licensing examination are allowed to practice pharmacy. This licensing examination is very essential to maintain and improve the standard and quality in pharmacy practice and to develop professionalism among the pharmacists.

Table 2. List of private universities offering pharmacy courses in Bangladesh

Sl.	Name	Location	Year of Est.	Accreditation by PCB
1.	University of Science and Technology, Chittagong	Chittagong	1994	PA*
2.	The University of Asia Pacific	Dhanmondi, Dhaka	1996	PA
3.	Gono Biswabidyalay	Savar	1998	PA
4.	Manarat International University	Mirpur, Dhaka	2003	PA
5.	State University of Bangladesh	Dhanmondi, Dhaka	2003	PA
6.	East-West University	Mohakhali, Dhaka	2003	PA
7.	Southeast University	Banani, Dhaka	2003	PA
8.	Northern University	Mohammadpur, Dhaka	2003	PA
9.	Primeasia University	Banani, Dhaka	2003	PA
10.	Stamford University Bangladesh	Siddeshwari, Dhaka	2003	PA
11.	University of Development Alternative	Dhanmondi, Dhaka	2002	PA
12.	North South University	Basundhara, Dhaka	2005	PA
13.	Dhaka International University	Banani, Dhaka	2006	PA
14.	Southern University Bangladesh	Chittagong	2006	PA
15.	International Islamic University, Chittagong	Chittagong	2006	PA
16.	BGC Trust University of Bangladesh	Chittagong	2006	PA
17.	Bangladesh University	Dhaka	--	PA
18.	Atish Dipankar University of Science and Technology	Gulshan, Dhaka	--	PA
19.	Daffodil International University	Dhanmondi, Dhaka	--	PA
20.	World University of Bangladesh	Dhanmondi, Dhaka	--	PA
21.	Brac University	Banani, Dhaka	--	--
22.	ASA University	Shyamoli, Dhaka	--	--

*PA means provisional accreditation

Other pharmacy courses in Bangladesh

The PCB also regulates 3-year diploma of pharmacy courses. Three public Institutes: Institute of Health Technology, Mohakhali, Dhaka, Institute of Health technology, Rajshahi; and Armed Forces Medical Institute (AFMI) under the Ministry of Defense are offering the 3-year Pharmacy courses. A number of private institutes are also offering 3-year diploma in pharmacy courses (Table 3). Those who have completed secondary school

certificate (SSC) in science group are eligible to get admission into 3-year diploma in pharmacy course. The PCB provides 'B' grade registration to the students who have passed the 3-year diploma in pharmacy course. Since, PCB directly regulates the curriculum and examinations of this course, no separate examination is arranged to provide registration. Moreover, PCB also regulates pharmacy certificate course. Those, who have passed SSC in any group can take 3-month special courses

designed and jointly conducted by Bangladesh Pharmaceutical Society (BPS) (www.bps-bd.org) and Bangladesh Chemists and Druggists Society (BCDS) and can sit for the examination. Those who pass this certificate course are categorized as 'C' grade pharmacists by PCB and they usually work in community pharmacy or run their own pharmacies.

Pharmacists in pharmaceutical industry

Since 1976 to 2010, about 3000 graduate pharmacists have got 'A' grade registration from the PCB and are eligible to do practice pharmacy in Bangladesh. After the promulgation of Drug Control Ordinance in 1982, the employment of 'A' grade registered pharmacists became

mandatory for each pharmaceutical industry and since then the development of this sector has been accelerated. The professional knowledge, innovative ideas, and efforts of the pharmacists working in these areas are the key factors for flourishing the pharmaceutical sector in Bangladesh. As a result, local pharmaceutical industries are fulfilling over 97% of the local demands of quality medicines. Moreover, the finished and formulated medicines are also being exported to more than 70 developed and developing countries (www.bapibd.com). Very recently, local companies have also initiated to produce biopharmaceuticals, anticancer drugs, hormonal products, etc. In all these areas, the pharmacists are playing the pivotal roles for the development of the sector.

Table 3. List of public and private health institutes offering 3-year Diploma in Pharmacy

a) Public					
Sl.	Name	Location	Sl.	Name	Location
1.	Institute of Health Technology	Dhaka	15.	Rumdu Institute of Health Technology	Maymensingh
2.	Institute of Health Technology	Rajshahi	16.	Greenview Institute of Health Technology	Dhaka
3.	Armed Forces Medical Institutes	Dhaka	17.	Shaheed SA Memorial Medical Institute	Dhaka
b) Private					
1.	Bangladesh Institute of Medical and Dental Technology	Dhaka	18.	Institute of Medical and Dental Technology	Tangail
2.	National Institute of Medical and Dental Technology	Dhaka	19.	Fortune Institute of Health Technology	Dhaka
3.	International Institute of Health Science	Dhaka	20.	Newlab Institute of Medical Technology	Dhaka
4.	Psyche Institute of Medical Technology	Dhaka	21.	Rajshahi Institute of Medical Technology	Rajshahi
5.	Marks Institute of Medical Technology	Dhaka	22.	Prime Institute of Medical Technology	Rajshahi
6.	National Institute of Medical Technology	Dhaka	23.	Dhaka Institute of Health Technology	Dhaka
7.	Institute of Medical Technology	Dhaka	24.	Prince Institute of Medical Technology	Dhaka
8.	Chittagong Institute of Medical Technology	Chittagong	25.	Islami Bank Institute of Health Technology	Rajshahi
9.	Healthways Institute of Medical Technology	Bogra	26.	Psyche Institute of Health Technology	Bogra
10.	Professor Sohrab Uddin Institute of Medical Technology	Tangail	27.	Institute of British Colombia Medical Technology	Dhaka
11.	Prime Institute of Science and Medical Technology	Rangpur	28.	Jaypurhat Institute of Medical Technology	Jaypurhat
12.	Trauma Institute of Medical Technology	Dhaka	29.	Institute of Medical Technology	Rajbari
13.	Bangladesh Institute of Medical Technology	Pabna	30.	CSSR Institute of Medical Technology	Chittagong
14.	TMSS Medical Technology Institute	Bogra	31.	Institute of Medical Technology	Faridpur

Among the Bangladeshi pharmacy graduates, about 1000 pharmacists are working in pharmaceutical

industries. A number of pharmacists have also started their own entrepreneurship and have been working as

administrator such as Managing Director (MD), Chief Executive Officer (CEO) of the industries. The major areas of pharmaceutical industries where the graduate pharmacists have been serving include: research and development, production, quality control and quality assurance, inventory control, product management, pharmaceutical marketing and sales, and regulatory affairs.

Pharmacists in government hospitals

After almost 4 decades of independence, the health service management in the government sector of Bangladesh is still very poor. Only the physicians and nurses are working in the hospitals as health care providers. However, in the developed countries, a health care provider team consists of a physician, a pharmacist and a nurse. In Bangladesh, no graduate pharmacists are serving in the government hospitals as health care providers for proper drugs and diseases management. In each hospital, there is a pharmacy department that is run by diploma pharmacists. They just dispense and distribute the medicines. Due to the poor and incomplete health management system in Bangladesh, prescription errors are very common and many patients suffer from severe complications and even die. There is no clinical pharmacist in any governmental hospital in Bangladesh who can study to rationalize the individual dosage regimen for the patients suffering from either liver or kidney diseases.

Pharmacists in private hospitals

Recently, a good number of world class private hospitals have been set up in Dhaka, Bangladesh. Among them, Apollo Hospital, Square Hospital, United Hospital and Lab Aid Hospital have gained a very good reputation due to quality services and excellent health care management. They have employed several graduate pharmacists in their out-patients pharmacy departments. But no pharmacists are working in the in-patient department for proper monitoring and management of drugs. At present, about 30-40 pharmacists are working in private hospitals and retail pharmacy in Bangladesh. It is notable here that in a tertiary level hospital of a developed country, usually 40-50 pharmacists work in out-patient, in-

patient, and emergency/ambulatory, and in clinical departments.

Pharmacists in administrative services

The Directorate General of Drug Administration - a government organization, under the Ministry of Health and Family Welfare, Govt. of the People's Republic of Bangladesh, is the licensing and regulatory authority of drugs and medicines. About 27 graduate pharmacists are working there as Superintendent of Drug, Assistant Director and Deputy Director. Actually the personnel who have sound knowledge about Good Manufacturing Practice (GMP), cGMP and ICH (International Conference on Harmonization) guidelines, validation and quality assurance of pharmaceutical products, pharmaceutical plant layout, manufacturing and engineering, etc should be appointed at different levels of Directorate General of Drug Administration. Due to the lack of adequate manpower, proper monitoring and development of the pharmaceutical sector as the country's second largest industrial sector is suffering seriously.

Pharmacists in research

In Bangladesh, proper infrastructure has not been developed for pharmaceutical research in the major research institutes such as Bangladesh Council for Scientific and Industrial Research (BCSIR), International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR'B) etc. Moreover, due to lack of proper initiation in collaborative research between pharmaceutical industries and research institutions and academicians, pharmaceutical research trends have not been developed like UK, USA or even India. Only 3 pharmacists are working in BCSIR, few pharmacists are working at the Drug Testing Laboratories (own by govt.) in Chittagong; and few are in the Centre for Advanced Research in Sciences (CARS), a recently established world class research facility at the University of Dhaka and Biomedical Research Center, University of Dhaka.

Pharmacists in community pharmacy

The concept and services provided by community pharmacy in Bangladesh is far different from the developed countries. Most of the retail and community pharmacies in Bangladesh are run by the people who have

not even completed the 3-month pharmacy registration certificate course. Until now, there is lack of proper government monitoring to upgrade the nature and services of the retail and community pharmacies. That's why, sales of essential and life saving drugs without prescription is a common practice here in Bangladesh. Very recently, few graduate pharmacists have started to establish chain community pharmacy in Bangladesh to provide better health services to community people. Among these, Quick Prescription Services (QPS) in Chittagong and Rx Pharma in Dhaka have initiated their journey as pilot projects. However, due to lack of financial and governmental support they are not able to spread their noble concept and services throughout the country for mass population.

Need of Pharm. D. courses and challenges

For proper drug and disease management and to improve pharmaceutical care, many developed and developing countries such as USA, Japan, India, etc have implemented and upgraded their pharmacy course curriculum to Pharm. D. (Ahmed and Hassali, 2008; Jamshed *et al.*, 2007). The Pharm. D. program is more disease and patient care oriented than that of industrial aspect. Moreover, in many countries the pharmacists are authorized to prescribe limited number of drugs. However, in our country, the pharmacy courses were designed solely to meet the demand of qualified pharmacists in pharmaceutical industries. Until now, no initiative has been undertaken from the respective authorities of the government to upgrade pharmaceutical education.

Although, very recently, the Faculty of Pharmacy, University of Dhaka took the initiative to upgrade its pharmacy courses from 4-year undergraduate B. Pharm. to 5-year B. Pharm. course giving limited emphasize on internship in hospitals and clinics. To generate more qualified pharmacists for proper pharmaceutical services in hospitals, our neighboring countries, India and Pakistan have already implemented Pharm. D. program with internship in hospitals for the pharmacy students. Although, PCB regulates the pharmacy courses and curriculum in both the public and private universities, no initiative has been taken by this autonomous body of the government of Bangladesh to upgrade the 4-year B. Pharm. program to a 5-year Pharm. D. program in all public and private universities.

The UGC should allocate proper funds to further develop laboratories of the universities and to promote hospital and clinical research. The Ministry of Health and Family Welfare should also take immediate measures to arrange the internship for the pharmacy graduate students in tertiary level government hospitals. During internship, graduate pharmacists may serve as resident pharmacist of the hospitals. To promote and to encourage the interneer pharmacists in their training and services, efforts should be taken to give some remuneration to the trainee pharmacists for the training period.

Conclusion

Bangladesh is a country with about 160 million people. For proper development of the country, our prime need is to ensure healthier and educated manpower. A healthier nation is only possible when everyone should have equal access to health care providers, and proper and rational management of drugs and diseases are ensured. A health care team consisting of physician, pharmacist and nurse can only ensure the drugs and diseases management in judicious and rational way. Pharmacists have the expertise in drug management and dispensing, monitoring of drug-drug interactions, and clinical research. Moreover, reschedule of dosage regimen to individual patient can only ensure the rational prescribing and use of medicines and this is the prime task of clinical pharmacists. It is really unfortunate to mention that no pharmacists at present are doing these jobs, because there is no position for hospital pharmacists in Bangladesh. Therefore, in every year huge number of patients are suffering from different abnormalities and toxicities due to irrational use of drugs and medicines and even many patients are dying due to drug intoxications.

There are more than 1600 hospitals in Bangladesh. Among these more than 650 are government hospitals which includes specialized hospitals, general hospitals (tertiary level) and upazilla hospitals (secondary level) etc. To improve and ensure the total health care system in those hospitals, government should immediately take necessary measures to create posts for hospital pharmacists. To fulfill the demand of health care services in our country in proper and rational way, government should appoint pharmacists in all specialized hospitals, medical college hospitals and district level general

hospitals. In these hospitals, pharmacists can work in both in-patient and out-patient departments, emergency and ambulatory services department, and may become involved in clinical research and drug-drug interaction monitoring, extemporaneous compounding and manufacturing department, etc. In a tertiary level hospital, at least tens of pharmacists are required to provide the services properly, although, we don't have any concrete statistics how many pharmacists do we need to cover the health services for all the people. Simultaneously, the concerned authority of the government should update and revise the present rules and regulations for monitoring the retail and community pharmacies, so that no one can sale drugs and medicines without a C-grade registration certificate. However, 3-year diploma holders or graduate pharmacists having registration from the PCB should be employed slowly. Moreover, due emphasis should be given on regular updating of curriculum of pharmacy and continuing education program should be implemented to provide quality education and training to produce qualified pharmacists.

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