BAPA

Bangladeshi-American Pharmacists' Association

Annual Journal 2013 - Volume 22

Importance and Impacts of Medicinal Plant Cultivation in Bangladesh

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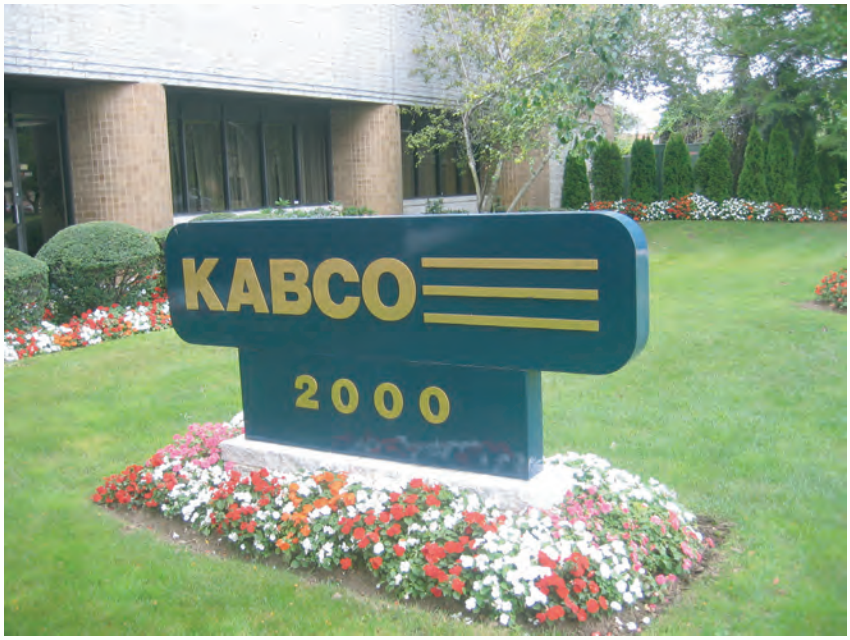

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Contributors:

Sitesh C Bachar, M Asadullah
Ananya De, Ph.D.
M. A. Mazid and M. A. Rashid

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30-12 36th Ave, Long Island City, NY 11106,
Telephone: 516 650 7937
Fax: 718 729 0165
email: bapapresident2012@gmail.com

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EDITORIAL

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BANGLADESHI-AMERICAN PHARMACISTS' ASSOCIATION

22nd Annual Convention Programs

August 23rd, 24th and 25th, 2013

Dolce Basking Ridge

300 North Maple Ave , Basking Ridge, NJ 07920, Phone # 908-953-3000

Day 1	Friday, August 23rd, 2013
10:00 am – 8:00 pm	**Registration, Hotel Lobby**
	CONTINUING EDUCATION
6:30 pm - 7:00 pm	**CE Registration**
7:00 pm – 9:00 pm	**Diabetes & Pregnancy: Management Guide** Speaker : Damian E. Peters, PharmD CEU: 2.0
9:00 pm – 10:00 pm	**Welcome and Dinner**
9:30 pm – 1:00 am	**Cultural Program**
Day 2	**Saturday, August 24th, 2013**
7:30 am – 9.00 am	**Breakfast**
8:00 am – 12:00 pm	**Registration [Hotel Lobby]**
	CONTINUING EDUCATION
8:00 am – 9:00 am	**CE Registration**
9:00 am – 10:30 am	**Management of the Older Adult with Type 2 Diabetes** Speaker: Damian Peters . CEU:1.5
10:30 am – 11:00 am	**Stretch Break**
11:00 am – 12:30 pm	**Challenging Situations for Patients with Type 2 Diabetes** Speaker: Doreen Small . CEU:1.5
1:00 pm – 2:00 pm	**Lunch Break**
02:15 Pm – 03:45 pm	**Reducing Chronic Complications of Diabetes** Speaker: Doreen Small . CEU:1.5
03:30 pm – 03:45 pm	**Stretch Break**

4.15 pm – 6:15 pm	**BANGLADESH PHARMACEUTICAL INDUSTRY REVOLUTION AND BAPA'S INPUT:** **Speakers :** **Prof. Dr. A K Azad Chowdhury.** Chairman (State Minister) University Grants Commission of Bangladesh Former Vice Chancellor, University of Dhaka,Bangladesh. **Prof. Dr. Choudhury Mahmood Hasan**. Vice Chancellor, Manarat International University Professor, Department of Pharmaceutical Chemistry & Former Dean,Faculty of Pharmacy,University of Dhaka,Bangladesh. **Mr. Md. Nasser Shahrear Zahedee,** President, Bangladesh Pharmaceutical Society Vice President, Pharmacy Council of Bangladesh **Moderator: Dr. Salah U. Ahmed** President & CEO ,Abon Pharmaceuticals, LLC. Ex. Senior VP. Teva Pharmaceuticals USA, Inc.
6.30 pm – 7:00 pm	**Roundtable discussion with Prof. Dr. A K Azad Chowdhury about pharmacy student from Bangladesh facing problem to correct their degree in USA.**

Day 3	**Sunday, August 25th, 2013**
7:30 am – 09:00 am	**Breakfast**
	CONTINUING EDUCATION
9:00 am – 12:00 pm	**Medication Safety .** **Speakers** : Dr. Maria Claudio-Saez, Dr.Elizabeth Agard CEU: 3.0 **Moderator: Mr. Qazi A. Halim,M.S.,R.Ph**. Director of Pharmacy Services, Brookdale University Hospital and Medical Center,NY. President ,New York State Council of Health-system Pharmacists.
12:30 pm	**Closing of Session**

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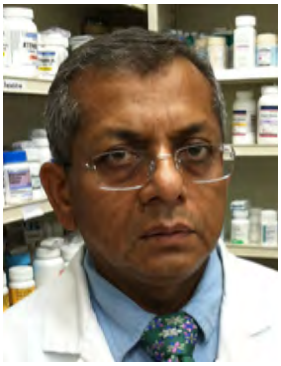
Message from the President



The Department of Pharmacy at the University of Dhaka was established 1964 by Dr. Abdul Jabbar. It was then located on the first floor of Curzon Hall. A few years after starting the program, this department produced wonderfully talented professionals that stated to show their potential in the varied fields of Pharmacy both at home and abroad.

It's been fifty years since then, and we are seeing those professionals leaving their mark here in USA as we know them. Yet there are many that we are not in touch with who are contributing equally to this vast field of healthcare and academia.

This year one of our members and ex-president of BAPA, Pharmacist Quazi Halim , Director of Pharmacy at Brookdale Hospital and Medical Center is the first Asian who became the President of New York State Council of Health-System Pharmacists. We congratulate him for his tremendous success and leadership.

The pharmacy profession is getting more and more clinically oriented, and we the pharmacists who are working in retail and hospital settings could show our expertise by working with other healthcare professionals. At this year's convention we are focusing on management of older adults with type 2 diabetes and other chronic complications of diabetes. With the rise of healthcare costs, the providers of healthcare are getting squeezed by the PBM and HMO's. We need to work with our local and national organizations for improving our reimbursement and stop PBM's unnecessary overburdens.

We are very proud for our teachers Professor Azad Chowdhury, Chairman , UGC and also Professor Choudhury Mahmood Hasan, Vice- -Chancellor Manarat International University , who came all way from Bangladesh to attend our convention.

This year we lost a long time member and a good friend, Muzzamel H Khan. We also have some of our fellow friends and colleagues who are suffering through some health issues. I would like to request all of your prayers and well wishes for them and their families.

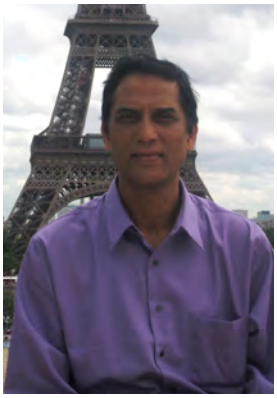
BAPA has been very fortunate to get the strong support of our partners and sponsors, and this year has not been any different than others. We like to recognize them for their strong commitment for our cause.

I thank my family and executive members and their family for sacrificing their time for making this convention successful.

Shahab Ahmed

President

Message from the Vice President



Dear BAPA members, guests and participants,

Welcome to the 22nd Annual BAPA Convention. It has been a great pleasure and honor to serve you all as Vice President of the 2012-2013 Executive Committee. I sincerely thank you for your confidence and trust in bringing our visionary plans to fruition.

In my time with this organization, I have seen it grow tremendously from our strengthening constituency to our innovative visions. The growth of BAPA has been consistent with the evolution of the pharmaceutical profession and industry. It is my hope that BAPA can serve as a platform to discuss new developments, exchange ideas, and encourage advancements in clinical and industrial pharmacy.

Let us embrace new concepts and ideas with open minds and a fresh focus. I encourage you to challenge existing ideals to make way for change in new technologies and research opportunities. Let us become an association of pharmacists and pharmaceutical scientists that lead the way in health promotion and disease prevention. I encourage you to work together in building upon our existing expertise. Most importantly, let us help BAPA continue to grow with new talent from young professionals. I encourage you to reach out to pharmacy students, interns and professionals to provide guidance and mentorship. We especially encourage the younger generation of pharmaceutical graduates and working professionals to engage and participate in our programs. After all, they are the faces of this generation and we hope that they carry on our legacy in the future.

BAPA is truly a unique organization that provides the opportunity to progress in our working professions while paying respect to our cultural heritage. Our annual gatherings allow us to connect as contributing citizens of the American society and to celebrate our colorful, historical Bangladeshi roots. I hope you are inspired both professionally and culturally through our array of seminars and programs.

I would like to extend my gratitude for giving our executive committee the opportunity and privilege to serve you all. We welcome constructive criticism and suggestions so that we can better serve you and work hard to carry the organization to the next level.

In closing, let me thank the executive committee members for their hard work in hosting this convention for us to learn and network with one another. I would also like to extend my profound thanks to the editor for his splendid work in publishing this journal.

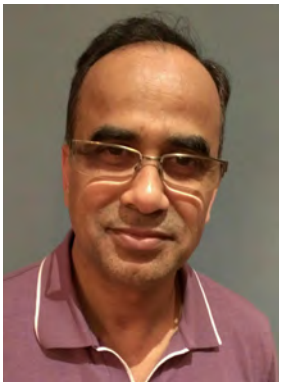
I wish you all an enjoyable, meaningful and enlightening time together at this convention.

Thank you,

Qamrul Ahsan (Kanchan)

Vice President

Message from the General Secretary



Dear BAPA Members,

It's amazing how fast time passes. It feels like yesterday that I was appointed as General Secretary and now I am almost done with my tenure. I hope that I was able to not only meet but exceed your expectations over these past two years.

It is my honor to invite you all at our 22nd Annual Convention at the exquisite Dolce Basking Ridge. The weekend will feature a wide range of events, making the experience enjoyable both socially and educationally. Like every year, we get together and exchange our views professionally and personally. Please enjoy all the events our Executive Committee has set up.

As stated last year, we have become an organization which has not only helped us professionally but has made us into a family. My closest friends are in this organization and I hope the same can be said for the rest of our members. Since its inauguration in 1991 we are maintaining its integrity by implementing constructive suggestions to improve BAPA to its best level. Feel free to leave us tips and suggestions on how to run this organization the way you see fit. This is YOUR organization and your feedback is valuable to us.

I've been a member of BAPA since its inception. I've seen it grow from a group of Pharmacists to what it is today; a large network of Bangladeshi American Pharmacists who use our resources to better their own careers. BAPA has grown to be more than a professional network. Our families have become heavily involved in this organization. The entire social aspect of our organization would not be the same without them. Consequently, we need to extend these advantages to the next generation. We highly encourage recent pharmacists to become active in the BAPA Community.

This Convention, I encourage further participation by our families so BAPA can be as strong as ever.

I would like to thank all of our executive committee members for their dedication toward the successful organization of this Convention. I would also like to thank the sponsors for their continuous support as without you, we would be nowhere near as successful as we are today.

I also wish the best of luck to the next Executive Committee. I know that the future is bright for BAPA and trust that they will make this organization bigger and better than ever.

Sincerely,

Enamul Kabir

Articles

Articles

Importance and Impacts of Medicinal Plant Cultivation in Bangladesh

Sitesh C Bachar[1*] and M Asadullah[2]
[1]Department of Pharmaceutical Technology, Faculty of Pharmacy, University of Dhaka, Dhaka-1000.
[2]Square Pharmaceuticals Ltd., square Center, 48, Mahakhali C/A, Dhaka -1212, Bangladesh.

Abstract

Bangladesh has a long tradition of indigenous herbal medicinal systems based on the rich local plant diversity which is considered as a very important component of the primary health care system. And more than 75% of its population is getting their primary health care through Ayurved, Unani, Homeopath, Herbal and other traditional medicine systems. A good number of such traditional manufacturers are using about 550 medicinal plants from various sources. And only 10 percent of these are available in Bangladesh and rest 90 percent is being imported from abroad. A medicinal plants cultivation in the rural area of northern part of Bangladesh at Monga affected areas especially in the small strips of land in the homestead or village road side of marginal or low income people which made them economically self sufficiency creating impacts in environment and increasing social values and integrity.

Key words: Traditional medicine, herbal medicine, cultivation of medicinal plants, importance and impact, social, economical, environmental.

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*Corresponding author: bacharsc63@gmail.com; scbachar@gmail.com

Introduction

Traditional medicine is the sum total of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health, as well as to prevent, diagnose, improve or treat physical and mental illnesses. Traditional medicine that has been adopted by other populations (outside its indigenous culture) is often termed alternative or complementary medicine. This traditional medicine includes herbs, herbal materials, herbal preparations, finished herbal products and others that contain parts of plant materials or other as active ingredients.

The practice of traditional medicine is deeply rooted in the cultural heritage of Bangladesh and constitutes an integral part of the culture of the people of this country. Different forms of traditional medicines have been used in this country as an essential means of treatment of diseases and management of various health problems from time immemorial. This practice of traditional medicine in the country has flourished tremendously at the beginning of this twenty first century along with that of modern medicine. However, the concept, practice, type and method of application of traditional medicine vary widely among the different ethnic groups living in different parts of the country according to their culture, living standard, economic status, religious belief and level of education. Thus traditional medicine practice in Bangladesh includes both the most primitive forms of folk medicine (based on cultural habits, superstitions, religious customs and spiritualism) as well as the highly modernized Unani and Ayurvedic systems. (Ghani 1998)

Bangladesh possesses a rich flora of medicinal plants. It has been estimated about 5000 species of different

plants are growing in this country, among them more than 550 are regarded having medicinal properties. Use of these plants for therapeutic purposes has been in practice in this country since time immemorial. But only 10 percent of these are available in Bangladesh and rest 90 percent is being imported from abroad. Continuous use of these plants as active component of traditional medicine in the treatment and management of various health problems has made traditional medicine an integral part of the culture of the people of this country generation after generation. As a result, even at this age of highly advanced allopathic medicine, a large majority (75-80%) of the population of this country still prefer using traditional medicine in the treatment of most of their diseases even though modern medical facilities may be available in the neighbourhood. (Ghani 2003)

Although the use of traditional medicine is so deeply rooted in the cultural heritage of Bangladesh the concept, practice, type and method of application of traditional medicine vary widely among the different ethnic groups. Traditional medical practice among the tribal people is guided by their culture and life style and is mainly based on the use of plant and animal parts and their various products as items of medicine. (Ghani 2000).

Due to increased demand of the medicinal plant material in the country, it is mandatory to create an opportunity for cultivation of medicinal plants with sustainable supplies satisfying the needs of the herbal or traditional manufacturers. The present study has been designed to evaluate the importance and impacts of cultivation of medicinal plants in Bangladesh through the marginal or low income people in their small strips of land in the homestead or village road side in Bogra and Rajshai district.

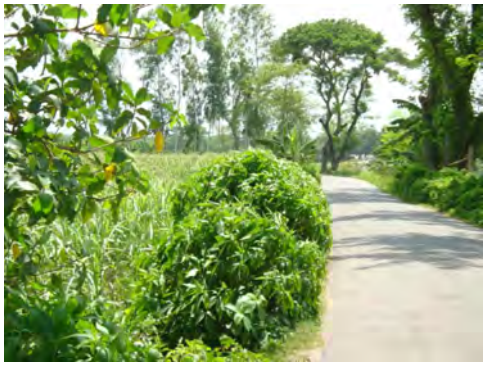
Materials and Method

A survey was conducted in the north-eastern part of Bangladesh by the invitation of Bangladesh Herbal Products Manufacturing Association of Bangladesh, especially in the Bogra and Rajshai district to assess the importance and impacts of cultivation of Medicinal plants in these Mogna affected areas. The poor and extreme poor peoples in these areas are involved in cultivation, collection and distribution of medicinal plants. An international organization named Helvetas Swiss Inter Cooperation, a Switzerland based NGO, is providing the technical support in organizing the marginal farmers of these areas for sustainable growth and supplies of such important plant materials for the manufacturers. Total activities in the areas were exhibited and the peoples involved in this profession are interviewed.

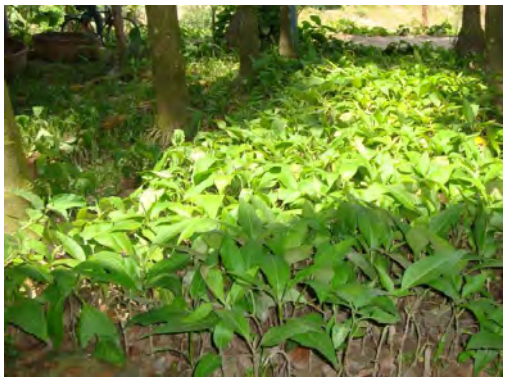
Results and Discussion

To evaluate the importance and impacts of cultivation of medicinal plants in Borga and Rajshahi districts a survey was conducted organized by Bangladesh Herbal Product Manufacturing Association (BHPMA) and Hevetas Swiss Inter Cooperation.

From the survey it was observed that about 60,000 peoples are involved in the production of medicinal plant raw materials as cultivator, collector, local service provider, seed and seedling suppliers etc., among them 48,000 are female and rest 12,000 are male. The Hevetas Swiss Inter Cooperation is organizing and motivating these peoples of three divisions including eleven districts, thirty upazilla and sixty two unions in the north-eastern part of Bangladesh. They are using 450 KM village road side, 85 acre unfertile cultivable land, 150 acre homestead and other fellow lands. As per demand of the manufacturers they are cultivating mainly five medicinal plants like Basak (*Adhatoda vasica* L), Ashwagandha (*Withania somnifera*), Satamuli (Asparagus recemosus), Kalomegh (*Andrographis paniculata*) and Tulsi (*Ocimum sanctum*).

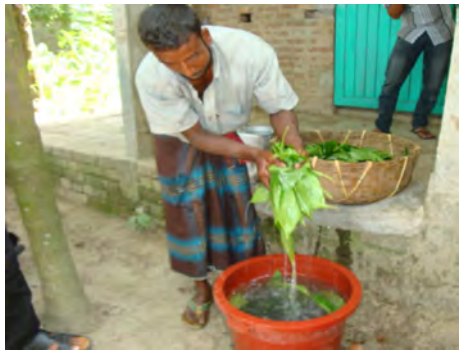


Medicinal plant seedlings



Cultivation at village road side

Primary washing of Basak leaves



Drying of Basak leaves under shadow

Before involving in this profession most these marginal farmers were unemployed, less access to education, poor or extremely poor and less social recognition. Most of the days they would search for local government help through the members of union council. But now the farmers are earning taka 5,000 to 15,000 per month, the local service providers are earning taka 20,000 to 60,000 per month.

According to the Directorate General of Drug Administration (DGDA) the current status of Herbal and Traditional industries is Unani 266, Ayurvedic 204, Herbal 25 and Homeopathic & Biochemic 79 in Bangladesh. It has been estimated that Bangladesh has a market of about 330-core taka worth Traditional and Herbal products annually. Bangladesh has near about 550 medical plants. More than 300 of such medicinal plants are now in common use in the preparation of traditional medicines in Bangladesh.

A recent study on Medicinal Plants Marketing in Bangladesh sponsored by South Asia Enterprise Development Facility (SEDF) and Inter Cooperation (IC) conducted in October 2003, reviewed the current status and estimated the quantity and value of medicinal plants used as raw materials in large companies, small companies, herbal practitioners and spent annually on approximately 17,500 tones medicinal plant materials accounting Tk. 81 Cr. (http://www.bpc.org.bd/mphpbpc_bridge_overview.php)

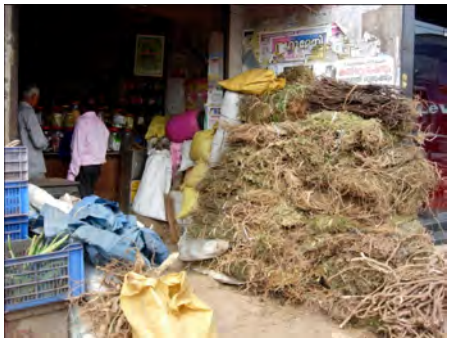
Sector	Local (Cr Tk)	Imported (Cr Tk)	Total (Cr. Tk)
Unani	12.7	12.7	25.4
Ayurverdic	8.2	10	18.2
Herbal Doctors	4.5	5.4	9.9
Self Treatment	7.6	20	27.6
Sub Total	33	48.1	81.1

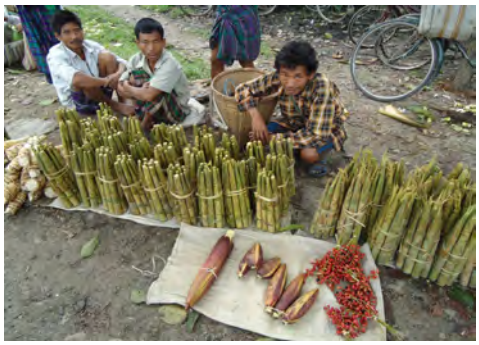
According to a report of WHO about 80% of the world population rely on traditional medicine for their Primary Health Care needs. Even in the developed countries, complementary or alternative medicine (CAM) is gaining more popularity and is being developed ie. In Europe 33%, Asia 26%, North America 20%, Japan 11% and others 10% (Laird 2002, Laird and Pierce 2002)

Currently the total global market of Herbal Products and Medicinal Plants is US$ 60 billion with a double digit growth. The diversified use of plant derived products and its acceptance worldwide made the sector very promising one. According to the World Bank Report 1998, world trade in medicinal plants and related products is expected to be US$ 5 trillion by 2050 (http://dbtindia.nic.in/uniquepage.asp?id_pk=340).

The export of medicinal plant is in a rising state. But considering the huge export market globally, Bangladesh is still in a rudimentary stage. In terms of consumption volume, only about 10% of the medicinal plants used as raw materials, come from local Bangladesh source and the remaining part is imported from India, Pakistan, Sri Lanka, China, Vietnam, Iran for production of Traditional and Herbal medicines.

Most of this local plant materials are available in Moulavi bazaar and Chittagong hill tract markets. The cultivation, collection, preservation, distribution and identification systems are not up to the mark.





Markets of Traditional and Herbal Medicines in Moulavi Bazar and Chittagong Hill Tracks

The WHO, European Medicine Agency, United States Pharmacopoeia have recommended the following tests for quality checking like microscopic evaluation, macroscopic evaluation, identification of principal active constituents in the raw herbs, determination of foreign matter, determination of Ash (total ash & acid insoluble ash), determination of heavy metals, determination of microbial contaminants and aflatoxins, determination of pesticide residues, determination of radioactive contaminants and assay of active components in the finished products. Very few Ayurvedic and Unani manufacturers are practicing the good manufacturing practice (GMP) following the above quality tools. Presently the modern or allopathic medicine manufacturers are getting license from the regulatory authority through opening their herbal wing and practicing the GMP as a part of their routine activities as that of allopathic medicine. And have created good impacts among the medical and herbal practitioners as well as to the consumers or patients. In Bangladesh such herbal products are being prescribed by the medical practitioners with good therapeutic benefits especially in primary health care needs of patients.

So a coordinated and planned cultivation of medicinal plants as per demand of the manufacturers like ACME Herbal and Square Herbal and Nutraceuticals has created a positive impact in the economy, society and environment of the locality. Among the 60,000 peoples 48,000 are female contributing their family by earning a sufficient amount of money for their family alleviating poverty, are sending their children to the school, physical and mental health is improved and getting social recognition according to their status. Some areas they are developing cooperative society through saving money.

Collection of Basak leaves

Social gathering and self training program

The environmental impact is that the huge cultivation of medicinal plant in the abundant land has enhanced forest development (450 KM road side), use of natural pesticides and organic fertilizer enhance the caring for environment and roadside basak cultivation decreasing the soil erosion.

Besides these the herbal manufacturers they are exporting their products in Canada, Europe, Hong Kong, Myanmar, Kenya and targeting next 15 to 20 countries including America. An independent and autonomous council named Medicinal Plant & Herbal Product Business Promotion Council formed under Ministry of Commerce and this council is working as public-private partnership for export diversification and overall business development.

To promote this sector in achieving competency the local and global context as well as to help the industry, building capacities in the fields of human resources and acquiring technologies is essential. It is also need to

develop linkage with different institutions/enterprises at home and abroad for the improvement of the medicinal plants and herbal product sector. Need to set up common facility center/institute of international level for grading or laying down the standards of quality and packing, undertaking testing and standardization of the medicinal plants and herbal products, training entrepreneurs along with a design for upgrading the technology.

Conclusion

It is concluded that cultivation of medicinal plant in Bangladesh in very important supplying quality herbs from reliable sources gaining economical self sufficiency of the poor and extreme poor farmers creating sustainable economical, social and environmental development.

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AMACR - A Better Biomarker for Prostate Cancer?

Ananya De, Ph.D.
Freelance Medical Writer

Prostate — the male exocrine gland that surrounds the urethra and contributes to the seminal fluid — is a common health issue for older men. In addition to the existence of several benign prostate problems (e.g. benign prostatic hyperplasia, prostatitis, etc.), **prostate cancer is the most common cause of cancer in men**. Prostate cancer claims more lives than any other cancers and is second only to lung cancer in the number of deaths caused (1). Thus prostate health is a matter of significant importance. **PSA** or prostate-specific antigen, is a protein found in the prostate, and its elevated levels in the serum is commonly used as one of the diagnostic tests for detecting prostate cancer. Although confirmation of prostate cancer can only be done through prostate biopsy, there is a pressing need for simpler non-invasive tests to detect prostate cancer.

The measurement of PSA levels serves as a good indicator of prostate health; however, **PSA test alone is not a selective marker for prostate cancer**. Men with benign prostate enlargement or inflammation may have elevated PSA levels. In addition, depending upon the stage of prostate cancer, PSA levels tend to differ. Thus the search for better biomarkers of prostate cancer is on the way.

Biomarkers are biologic characteristics that may serve following roles (2):

- the screening and detection of cancer
- the identification of disease progression
- the prediction of disease prognosis
- suggestions for therapeutic interventions that might work
- facilitation of the process of drug development.

Biomarkers can range from DNA, RNA or protein markers. A host of protein markers have been researched for prostate cancer, and more recently microRNA profiling as well as protein imaging techniques are being developed to study the disease.

Alpha-methylacyl-CoA-racemase (AMACR) is an enzyme involved in the metabolism of certain fatty acids. **AMACR over-expression has been linked in several recent studies to prostate cancer** (3) (4) (5). Fatty acids have been linked by epidemiological studies to the risk of cancers, and the fact that AMACR is over-expressed in prostatic cancer cells, is a pointer to the importance of fatty acid metabolism in the development and progression of prostatic cancers. According to recent research, **AMACR may be a more specific biomarker for prostate cancer than PSA**, with a 71% specificity of detection compared to 45% specificity with only PSA testing (6). Men suffering from prostate cancer were found to have increased levels of AMACR in their urine. Thus with a simple urine test, it may be possible to diagnose prostate cancer, making an invasive biopsy

unnecessary. This would be a big improvement from current diagnostic practices. Moreover, the early detection of cancer leads to better prognosis. Hence the application of better biomarkers such as AMACR, will have great significance on the likelihood of survival.

There are however some limitations to AMACR detection of prostate cancer that have to be addressed. For example, AMACR expression levels have been found to be elevated in other urological disorders. In fact, AMACR antibody levels could be elevated in several other types of cancer (7). Thus using a combination of biomarkers for the detection of prostate cancer may be the way to go for the future. A combination of biomarkers with high specificity and those with high sensitivity for detection, might lead to better prostate cancer diagnosis in the future.

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History of Pharmacy Education and Evolution of Pharmacy Profession in Bangladesh

M. A. Mazid and M. A. Rashid
Department of Pharmaceutical Chemistry, Faculty of Pharmacy
University of Dhaka, Dhaka-1000, Bangladesh

Summary

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, consisting of 20 male and 4 female students. However, Pharmacy as a profession was recognized in Bangladesh after the promulgation of Pharmacy Ordinance–1976, by the then President of the People's Republic of Bangladesh, Shaheed Ziaur Rahman. Due to this visionary ordinance, Pharmacy Council of Bangladesh (PCB) was formed, the B. Pharm. (Hons.) degree holders got recognition as pharmacy professionals and the revolutions in pharmaceutical sectors started in Bangladesh.

Initially, the academic curriculum comprised of 3–year Bachelor of Pharmacy (Hons.) and 1–year Master of Pharmacy programs. Later on, the undergraduate program was upgraded to 4–year Bachelor of Pharmacy (Hons.) degree in 1996. In 2010, the undergraduate course was further upgraded to 5–year with internship in hospitals and pharmaceuticals industries in order to keep pace with the international Pharm. D. (Doctor of Pharmacy) program. Pharmacy graduates in Bangladesh are mainly employed in different sectors of pharmaceutical industry. Recently, a few pharmacists have been employed as hospital pharmacists in some highly reputed private hospitals. However, hospital, community and clinical pharmacy in Bangladesh have not been well developed due to lack of government policy. Hence our people are partially deprived of proper health care services in Bangladesh in comparison to developed countries.

Corresponding author:

Dr. M. A. Rashid, Tel: +880-2-966190-73 ext. 8137; Fax: +880-2-8615583,
E-mail: rashidma@du.ac.bd, rashidma@univdhaka.edu

The start of journey

Pharmacy as a profession was recognized in Bangladesh after the promulgation of Pharmacy Ordinance, 1976 an ordinance to establish a Pharmacy Council to regulate the practice of pharmacy (ORDINANCE NO. XIII OF 1976) [4th March, 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, 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 of pharmacy education[1].

The Department of Pharmacy at the University of Dhaka started its journey with 24 students (20 male and 4 female) from the academic session1964–65. 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 class rooms 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[1,2]. Emeritus Professor A. Jabbar is recognized as the pioneer of pharmacy education in Bangladesh. We salute him for his outstanding contribution. At the beginning Dr. Kamal Uddin Ahmad (late), Dr. A. Jabber, 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.

Chronology of pharmacy courses and curricula

The Department of Pharmacy, University of Dhaka started pharmacy education by introducing a 3–year Bachelor of Pharmacy (B. Pharm.) program. Later on, the degree was changed to B. Pharm. (Hons.) due to heavy demand of the students. The first batch of students graduated in 1969. Then, 1–year Master of Pharmacy (M. Pharm.) course was initiated for a limited number of students who opted for M. Pharm. by research. At the beginning, the remaining students were not allowed to enroll to the M. Pharm. program. However, in 1970, the department decided

to offer the 1–year M. Pharm. course to all the pharmacy graduates under two groups: thesis and non-thesis. From 1996, the 3–year B. Pharm. (Hons.) program was further upgraded to 4–year (Hons.) program with an extensive change in the curriculum and syllabus. From 2003, the 4–year undergraduate program has been taken under the control of Dean of the Faculty of Pharmacy and the 1–year postgraduate course (thesis and non-thesis) was started in three new departments under the Faculty of Pharmacy [1-4]. 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 postgraduate course to one third of the total graduates each year.

From department to faculty

Pharmacy is a multidisciplinary science 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, formulation science, biopharmaceutics, etc and (iii) pharmacology, clinical pharmacy, hospital & community pharmacy, etc. All these subjects are taught in the undergraduate program. However, to further upgrade teaching and learning environment and to meet the increased demand of pharmacists both nationally and internationally, the Faculty of Pharmacy started its journey from July 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 University of Dhaka in 2003, the 4–years 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 the specialization in specific discipline at postgraduate level, three new departments were established: (i) Department of Pharmaceutical Chemistry, (ii) Department of Pharmaceutics and Pharmaceutical Technology (later on re-named to 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 Dr. Hasan played very important role to establish three new departments at the postgraduate level. Unfortunately, it took almost 8 years after the establishment of the Faculty in 1995 to open any new departments and make them functional and effective in terms of academics and administration. Professor Dr. Md. Abdur Rashid has served as the elected Dean of the faculty from December 2003-October 2010. During this period, the Faculty of Pharmacy has turned to a new dimension in terms of academic and research activities and development of infrastructures and laboratory facilities due to dynamic, untiring and dedicated efforts and whole hearted participation of all faculty members. To enhance the academic activity of the 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, about 20 new teachers were appointed to the faculty to further strengthen and improve the teaching and learning environment. Due to his hard work and coordinated efforts with the teachers of different departments, the Faculty of Pharmacy has been able to run the programs strictly according 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 but unfortunately died on February 18, 2011 at the age of 50. Later on, Professor A.B.M. Faroque served the elected Dean for few months. Currently, Professor Dr. Md. Saiful Islam, Department of Clinical Pharmacy and Pharmacology has been serving as the elected Dean from December 15, 2012.

Expansion of pharmacy education in Bangladesh

a) Pharmacy education in other public universities

Bangladesh is a heavily and densely populated country, and the literacy rate is still very poor. To promote pharmacy education, new pharmacy departments have been established in other public universities (Table 1). However, all these departments are suffering due to lack of space, class rooms, laboratory facilities and specialized equipments and more importantly qualified faculty members. Unfortunately after 1971, the University of Dhaka was the only institution offering pharmacy education in Bangladesh and it took nearly 14 years to establish the second Department of Pharmacy in Jahangirnagar University in 1985. Now, we have a total of 9 public universities (Table 1) offering pharmacy education.

Figure: The old building in Curzon Hall area of the University of Dhaka where the Department of Pharmacy started its journey in 1964.

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

Sl.	Name of University	Location	Year of est.	Number 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 Science and Technology University	Jessore	2010	30	N/A
8.	University of Chittagong	Chittagong	2012	20	N/A
9.	Bangabandhu Sheikh Mujibur Rahman Science & Technology University	Gopalgonj	2012	40	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 initiated through the Private University Act 1992. As of 2010, 22 private universities (Table 2) out of 71 private universities are offering pharmacy courses. The homogeneity in pharmacy education in Bangladesh is very poor, because out of the 22 universities, 18 universities are located in the capital city Dhaka and 4 are located in Chittagong. There are no private universities in Rajshahi, Khulna, Sylhet, Barisal, Rangpur, Mymensingh, and Comilla regions to offer pharmacy courses. However, most of the private universities that are offering pharmacy courses do not have their own campuses. Moreover, there are serious lacks of laboratory and research facilities as well as trained and qualified faculty members as per UGC (University Grants Commission) guidelines of Bangladesh[1,5].

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[5-7]. 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. Several Indian universities under the guidelines of Pharmacy Council of India have already introduced Pharm.D. program from the academic year 2008[6]. In Pakistan, Pharm.D. course has been introduced from 2005 in few universities after the recommendation of the Higher Education Commission of Pakistan[7]. Thailand and Singapore have also introduced Pharm.D. course recently. The Pharm.D. course has been introduced in Japan from 2006. Similarly, the universities in KSA, Qatar, UAE have also introduced Pharm.D. program[9-10]. The introduction of Pharm.D. program is a prime need to upgrade our undergraduate courses to the international standards as well as to prepare our graduates for the changing trends of the global environments. But in the context of Bangladesh, we also need to continue the existing B. Pharm. program to produce graduate pharmacists for our pharmaceutical industries, the second largest foreign currency earning sector.

Until now there has not been any initiative from the governmental regulatory authority to upgrade the pharmacy profession in Bangladesh. Hence, the Faculty of Pharmacy in the University of Dhaka took the first initiative to upgrade the pharmacy curriculum. On 6th November 2007, an Academic Committee Meeting of the Faculty presided by Professor M. A. Rashid, formed 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 Hossain Chowdhury, and Mr. Abul Kalam Azad reviewed the syllabi of the Pharm. D. program of different universities around the globe and submitted a proposal to the Dean of the faculty on 8th April 2008 to upgrade the existing 4–year B. Pharm. program to a 5–year Pharm.D. program with internship in pharmaceutical industry and hospital residency. The proposal was approved by the academic committee meeting and subsequently faculty meeting and was sent to the highest authority of for necessary approval. On 25th August 2010, the Academic Council of the University of Dhaka approved the 5-year B. Pharm. program from the academic session 2010-2011 instead of the proposed Pharm. D. program. We hope the learned members of the Academic Council will soon approve the name of the 5–year professional B. Pharm. program to Pharm.D. as per the international standard. Although, University of Dhaka has introduced the 5–year B. Pharm. program other public and private universities have not yet upgraded their existing 4–year B. Pharm. to the 5-year program.

Table 2: List of private universities offering pharmacy programs in Bangladesh.

Sl.	Name	Location	Year of est.	Approved seats/semester	Accreditationby PCB*
1.	University of Science and Technology, Chittagong	Chittagong	1994	50	PA
2.	The University of Asia Pacific	Dhanmondi, Dhaka	1996	50	PA
3.	Gono Biswabiddyalay	Savar	1998	50	PA
4.	State University of Bangladesh	Dhanmondi, Dhaka	2003	50	PA
5.	Manarat International University	Mirpur, Dhaka	2003	50	PA
6.	East-West University	Mohakhali, Dhaka	2003	50	PA
7.	Southeast University	Banani, Dhaka	2003	50	PA

8.	Northern University	Mohammadpur, Dhaka	2003	50	PA
9.	Primeasia University	Banani, Dhaka	2003	50	PA
10.	Stamford University Bangladesh	Siddeshwwari, Dhaka	2003	50	PA
11.	University of Development Alternative	Dhanmondi, Dhaka	2002	50	PA
12.	North South University	Basundhara, Dhaka	2005	50	PA
13.	Dhaka International University	Banani, Dhaka	2006	50	PA
14.	Southern University Bangladesh	Chittagong	2006	50	PA
15.	International Islamic University, Chittagong	Chittagong	2006	50	PA
16.	BGC Trust University of Bangladesh	Chittagong	2006	50	PA
17.	Bangladesh University	Dhaka	--	50	PA
18.	Atish Dipankar University of Science and Technology	Gulshan, Dhaka	--	50	PA
19.	Daffodil International University	Dhanmondi, Dhaka	--	50	PA
20	World University of Bangladesh	Dhanmondi, Dhaka	--	50	PA
21.	Brac University	Banani, Dhaka	--	50	--
22.	ASA University	Shyamoli, Dhaka	--	50	--

**PA means provisional accreditation*

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. Since Pharmacy is a professional subject, the Government of the People's Republic of Bangladesh promulgated Pharmacy Ordinance (No. XIII) in 1976 and set up Pharmacy Council of Bangladesh (PCB) under the Ministry of Health and Family Welfare. 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 in 2005 introduced 'A grade' registration examination system for the pharmacy graduates of different

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

Other pharmacy courses in Bangladesh

The PCB also regulates 3–year Diploma in Pharmacy courses. Several public institutes such as Institute of Health Technology (IHT), Mohakhali, Dhaka; IHT, Rajshahi; IHT, Bogura; Armed Forces Medical Institute (AFMI) under the Ministry of Defense, etc are offering the 3–year Diploma in Pharmacy course[1]. Few private institutes are also offering 3–year Diploma in Pharmacy course. Those who have passed the Secondary School Certificate (SSC) examination in science group are eligible for admission in this diploma course. The PCB provides 'B' grade registration to the students who have successfully completed the 3-year Diploma in Pharmacy program. PCB directly regulates the curriculum and examinations of this course and no separate examination is required for their registration. In addition, PCB also regulates pharmacy certificate course. Those, who have passed the SSC examination from any disciplines can enroll to this 3–month special course designed and jointly conducted by Bangladesh Pharmaceutical Society (BPS)[5] and Bangladesh Chemists & Druggists' Samity (BCDS) and can appear at the examination. The successful candidates are categorized as 'C' grade pharmacists by PCB and 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 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 the growth and development of pharmaceutical sectors in Bangladesh. As a result, local pharmaceutical industries are fulfilling over 97% of the local demands. Moreover, the finished and formulated medicines are also being exported to more than 70 developed and developing countries[8]. Recently, local companies have also initiated the production of biopharmaceuticals, anticancer drugs, hormonal products, vaccines, etc. In all these areas, the pharmacists are carrying out pivotal roles for the development.

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 Managing Director (MD) and /or CEO of the industries. The major areas of pharmaceutical industries where the graduate pharmacists are serving include research and development, production, quality control, quality assurance, inventory control, product management, pharmaceutical sales & marketing, 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 drug and disease 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 systems in Bangladesh, prescription errors are common and many patients suffer from severe complications and even die. There are no clinical pharmacists in any government hospitals in Bangladesh to ensure individual dosage regimen for the patients suffering from liver or kidney diseases.

Pharmacists in private hospitals

A good number of world class private hospitals have been set up in Dhaka, Bangladesh. Among them, Apollo Hospital, Square Hospital, United Hospital and Labaid Hospital have gained

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 important to mention here that usually 40-50 pharmacists work in out-patient, in-patient, emergency/ambulatory, and in clinical departments in tertiary level hospitals of a developed country.

Pharmacists in administrative services

The Directorate General of Drug Administration (DGDA), a government organization, under the Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh, is the licensing and regulatory authority of drugs and medicines. Until now only a handful of graduate pharmacists have been working there as Director, Deputy Director, Assistant Director and Superintendent of Drug. Unfortunately, graduates without pharmacy background have been appointed several times as the head of this organization, whose academic curricula do not allow to acquire knowledge about Good Manufacturing Practices (GMP), cGMP and ICH (International Conference on Harmonization) guidelines, quality control & quality assurance of pharmaceutical products, pharmaceutical plant layout design, formulation & manufacturing of pharmaceutical products, etc. Therefore, proper monitoring and regulation of the pharmaceutical products as well as to suggest the higher authority to further boost up the pharmaceutical sector as the country's second largest foreign currency earning sector in Bangladesh 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 Diarrheal 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. Few pharmacists are working in BCSIR, Drug Testing Laboratories (DTL) in Chittagong and 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-months pharmacy registration certificate course. Until now, there is a lack of proper government monitoring to upgrade the nature and services of the retail and community pharmacies. That's why sale of essential and life saving drugs without prescription is a very common practice in Bangladesh. Recently, few graduate pharmacists have started to establish chain community pharmacies in Bangladesh to ensure better supply of medicines and related devices to the community. Among these, Quick Prescription Service (QPS) in Chittagong has initiated its journey as pilot project. However, due to lack to funding and government support they are not been able to spread their noble concept and services throughout the country for mass population.

Introduction of Pharm.D. program its challenges

For proper drug and disease management and to improve pharmaceutical care, many developed and developing countries such as USA, Japan, India, etc have upgraded their Bachelor of Pharmacy course curriculum and implemented the Pharm. D. program[9-10]. Pharm.D. course is more disease and patient care oriented than that of the industrial aspects. Moreover, in many countries the pharmacists have the right to prescribe limited number of drugs. However, in our country, the pharmacy courses were designed solely to meet the demand of qualified pharmacists for pharmaceutical industries.

The Faculty of Pharmacy, University of Dhaka took the initiative to upgrade its pharmacy courses from 4-year undergraduate B. Pharm. to 5-years B. Pharm. program giving emphasis to topics on pharmacy practices as well as internship in hospitals and clinics. Although, PCB regulates the pharmacy courses and curricula in both the public and private universities, no initiatives have been taken by this autonomous body of the government to upgrade the 4-year B. Pharm. program to a 5-year Pharm. D. program in any public and private universities.

The UGC should allocate proper funds to further develop laboratories in public universities and to promote hospital and clinical research. The Ministry of Health and Family Welfare should also take immediate measures to facilitate our initiatives for internship of the graduating pharmacy students in tertiary level government hospitals. During hospital residency, the internee pharmacists may serve as resident pharmacists of the hospitals. To promote and encourage the internee pharmacists, efforts should be taken to provide some remuneration to the pharmacists during the training period.

Conclusion

Bangladesh is a country with about 160 millions population. For proper development of the country, our prime need is to ensure healthy 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 nurse and other allied health care professionals can only ensure the drugs and diseases management in a judicious and rational way. Pharmacists have the expertise in dispensing, drug management, monitoring of drug-drug/ drug-food interactions, and clinical research. Moreover, reschedule of dosage regimen to individual patient can only ensure the rational prescribing and use of medicines, which are performed by 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 large number of patients suffers from different complications and toxicities due to irrational use of drugs and medicines and even many patients are dye due to drug intoxications.

There are over 1600 hospitals in Bangladesh. Among these more than 650 are government hospitals which includes specialized hospitals, general hospitals (tertiary level) and upa-zilla 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 40-60 pharmacists are required to provide the services properly, although, we don't have any concrete statistics of how many pharmacists 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 sell drugs and medicines without a registration from the PCB. Due emphasis should be given on regular updating of curriculum of pharmacy and implementation of continuing education program to ensure quality education as well as to produce qualified pharmacists.

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Myth of Pharmacy Profession In Bangladesh

Mohammed Nurul Haque M.Pharm.RPH

The practice of pharmacy as a profession in Bangladesh and other third world countries remained as elusive as ever. Ever since the inception of pharmacy department at Dhaka University by pioneer Dr. Abdul Jabber Professor Emeritus, now it is expanded in to a Faculty. At present, we see so many public and private Universities opened pharmacy departments to cater Pharmacists to meet the demand of emerging pharmaceutical market. But unfortunately the perception of pharmacy as a profession did not change much, so the status quo remained as it is.

When we first got admitted into pharmacy department of Dhaka University, we found this subject a heterogeneous cocktail of different medical science and chemistry with a very dedicated teaching staff of same discipline. So, with this academic background when embarked into practical field of pharmaceutical manufacturing, we met stiff challenges from all sides but eventually we overcame.

After the independence of Bangladesh, when we migrated to USA in professional category on a mass scale, a whole new chapter unfolded. We had to start virtually from the scratch to compete for pharmacy licensure exam. For the first time, we got the glimpse of pharmacy as a profession. Today in Bangladesh, the pharmaceutical industries made a remarkable progress in manufacturing. They are not only catering basic and life saving pharmaceuticals to the whole nation but are exporting abroad. This is indeed a tremendous achievement we can feel proud of. As a matter of fact, pharmaceutical industry is considered only second to garment industry regarding foreign currency earning for Bangladesh. Pharmacists are also continuously absorbed by these industries.

But what about the professional practice? Here the situation remained as bleak as ever. As far as the safe drug delivery system by appropriate professional to patient. Is concerned, the whole population is virtually at the mercy of God Almighty. Few Hospitals in Bangladesh might have a skeleton structure of pharmacy department but that is vastly inadequate to provide patient safety. Considering the existing scenario prevailing in Bangladesh today we may argue that it is simply mission impossible to cater grad pharmacists to thousands of pharmacies around the country. Well, that is another story beyond any reasonable comprehension where all hell breaks loose. But we can focus on larger establishment and gradually move forward.

We can not calibrate the advancement of pharmacy as a profession by exporting pharmaceuticals abroad only. It has to be tailored to be an integral part of the comprehensive health policy of the nation. But again, perception dictates outcome. Under the existing

circumstances and fiscal limitation, at least the hospitals should have full fledged pharmacy department. I would like to further emphasize that Defense department might consider opening Pharmacy Core along with existing Medical Core in the commissioned branches of Armed services. This will not only enhance the safety parameter in patient caring, but will save unnecessary cost by professional counseling. The present pharmacy curriculum should be upgraded to make it competitive to contemporary global market. A serious thought should be given for six year Doctor of Pharmacy course, at least as an optional choice who wants to pursue it. I am not sure whether any change will come in foreseeable future, but I am cautiously optimistic.

After all, we have a shared dream and vision that in spite of the lengthy legacy of bureaucratic dilly dally, One day Bangladesh will emerge as a nation of affordable and excellent healthcare system.

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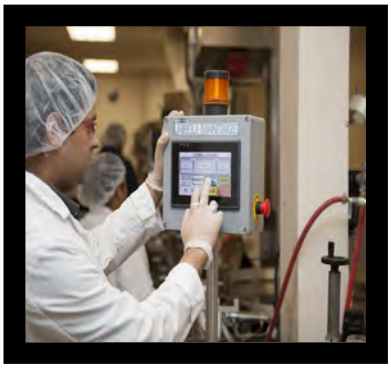

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