

# Pharmacy Education in Trinidad and Tobago

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## ABSTRACT

As with many countries across the globe, professional pharmacy in Trinidad and Tobago is moving from a product orientated (dispensing medications) to patient centered practice. Such a transformation faces many challenges especially for a developing nation. To alter the roles and responsibilities of pharmacists, Trinidad and Tobago is beginning to enhance existing practice settings, first with upgrading its educational programs. The main change is the introduction of pharmaceutical care as the professional practice mode. The curriculum's experiential training now includes increased focused on providing students with the new knowledge, skills, and abilities required for pharmaceutical care. Using national data and the most recent figures from the School of Pharmacy at the University of the West Indies (UWI) and the Trinidad and Tobago Pharmacy Board, this assessment of its health care and its new pharmacy model notes the transformations being carried out in the pharmacy services, along with improvements in pharmacy education. Recommendations and barriers in the context of the Trinbagonian pharmacy health system is also provided.

**Key words:** B.Sc in Pharmacy, Pharmacist, Pharmacy Education, Trinidad and Tobago, West Indies.

## INTRODUCTION

Trinidad and Tobago is a cosmopolitan Caribbean island with a population of approximately 1.3 million individuals.<sup>1</sup> Education and healthcare are two entities that are offered freely. For a number of years there was a shortage of pharmacists and as a result, it is forced to import pharmacy professionals from other countries. This shortage however, has coincided with an increased enrollment in the UWI School of Pharmacy over the past few years. Over the years there has been an increase in enrollment from 14 students in 1995 to a current average of 60-90 students a year.<sup>2</sup>

Internationally, the role of the pharmacist has undergone dramatic changes as they are now regarded as essential members of the primary health care team and continue to assume more duties and responsibilities.<sup>3,4</sup> This expanded role of the pharmacist is slowly gaining acceptance in Trinidad

and Tobago by its health professionals. To accommodate the shifting demands in the pharmaceutical environment the University of the West Indies, School of Pharmacy has adjusted their curriculum to fit the needs of its environment with one of its main aims being the integration of the pharmacists into the primary health care team.

## METHODOLOGY

This paper is a research project conducted as part of the Pharmacy Administration course in the B.Sc. Pharmacy degree at UWI. It discusses ways in which pharmacy education has changed over the years and how it can be improved in developing countries using the University of the West Indies, School of Pharmacy, St. Augustine campus as a model. Data was collected using Faculty of Medical Sciences booklets over a span of a decade (2004-2014), the Pharmacy Board

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of Trinidad and Tobago, pharmacy education and practice research conducted in the Caribbean. An analysis of barriers in the context of its health system is provided in an overview of current trends that have linked a national network of pharmacies. To analyze such barriers, the domains presented by the Pan American Health Organization (PAHO) in studies on implementing pharmaceutical care in Caribbean were used, namely, barriers to resources, barriers related to attitudes and opinions, and barriers related to education and skills. Recent materials published by the World Health Organization (WHO) about the role of the pharmacists: "The seven- star pharmacist" was reviewed. The analysis here shares the pharmaceutical care emergence in Trinidad and Tobago and assesses its barriers, for learning by other developing nations.

### Pharmacy Education over the Years

Pharmacy education in Trinidad has undergone a number of changes throughout the years. Prior to the introduction of the degree program pharmacists were trained under a diploma/certificate level apprenticeship program.<sup>2,5</sup> Initially, the Medical Board of Trinidad and Tobago was responsible for the registration and training of pharmacists, however in 1960, the pharmacy Board of Trinidad and Tobago undertook this responsibility. This program required students to work under the direct supervision of a pharmacist at hospitals and clinics of the Ministry Of Health (MoH), whilst attending formal 3 hour classroom sessions 2 days per week. During the final year of the certificate program, students attended classes on a full-time basis. The degree program saw a reversal of the system where students attended classes on a full time basis for the first three years of the program after which they were introduced to the professional environment.

### UWI School of Pharmacy

UWI School of pharmacy aims to produce competent pharmacists capable of meeting the needs of society in pharmaceutical care and services whilst promoting the concept of the healthcare team.<sup>6</sup> its degree program is accredited by the ACTT (Accreditation Council of Trinidad and Tobago) and undergoes Quality Assurance audits every five years.

Trinidad and Tobago nationals make up 75 % of the class with 23 % being regional and international students from areas such as Barbados, Bahamas, USA, and Canada. The average male to female ratio is 1 to 4. Some graduates have moved from Trinidad and now practice in the UK, USA and Canada. The school was formally recognized in 2007 and prior to that a new curriculum

was introduced in 2005 in an attempt to meet the needs of students and the healthcare system.<sup>6,7</sup>

### The Degree Curriculum

The curriculum aims to equip students with the knowledge and skill sets necessary to serve many functions in the pharmacy environment including designing and modifying drug therapy as well as identifying and solving medication related problems to allow for the rational use of drugs.<sup>7</sup>

Its core areas revolve around basic health sciences, pharmaceutical, behavioral, social and administrative sciences, pharmacy practice and professional experience. Basic Health sciences are studied within the first two years of the degree and include subjects such as: Human Anatomy, Physiology and Biochemistry, General Pathology Immunology and Microbiology. Problem Based Learning is implemented in first year of study to foster students' critical thinking skills. Specialized communication skills courses geared towards health professionals are also included in first year study as foundational courses.

Pharmaceutical Sciences are studied within the first three years of the degree and includes subjects such as pharmaceutical and Medicinal Chemistry, Pharmacology, Pharmacokinetics and Biopharmaceutics. Pharmacy practice based courses are aimed to prepare students for professional practice and focuses on functions such as prescription processing, compounding, intravenous preparations and disease state management. Professional Experience is gained in the third and fourth years of the degree where students are introduced to a variety of practice settings.

### Pharmacy Practice in Trinidad and Tobago:

The role of the pharmacist has undergone major transformations globally over the years as a result of their integration into the primary health care team. Pharmacists have expanded their role beyond simply dispensing medications to disseminating drug/disease information to other health care professionals, patients and general public, taking a more patient centered approach to improving healthcare.<sup>3</sup>

The Pharmaceutical Care Concept is a patient centered, outcomes oriented form of pharmacy practice adopted by various countries; with different organizational bodies and governments establishing various means of achieving pharmaceutical care goals.<sup>8</sup>

Trinidad and Tobago and its Caribbean neighbors are slowly adapting to these changes and bodies such as the Caribbean Association of Pharmacists are trying to expand their role in the region. In the Caribbean pharmacists are encountering difficulty in becoming

properly integrated into the primary healthcare team. Implementation of pharmaceutical care is quite difficult due to lack of physical and human resources.<sup>9</sup> Limited access of information available to pharmacists as well as a restricted amount of information systems in place to adequately meet the needs of the pharmacist. Insufficiency of financial support, improper drug therapy guidelines, and poor documentation processes as well as opposition from physicians and other primary health care providers all pose major difficulties for the improvement of Pharmacy education

Approximately 60-90 students graduate yearly and enter the practice of pharmacy both in community and institutional pharmacies. This reflects almost half the number of Bachelors of Medicine and Surgery (MBBS) graduates which is currently estimated to be 100. Within the hospital setting, pharmacists' roles vary from in-patient pharmacy to out-patient pharmacy practice, interacting with physicians, dispensing, compounding and counseling of hospitalized patients. They also form part of drug and therapeutics committees to formulate, plan and implement procedures relating to drug therapy and drug formulary.

On the other side of the spectrum, even though community pharmacists share a similar role to hospital pharmacists in compounding, dispensing and counseling they also show more of a focus on over the counter medication counseling and primary health care. Community pharmacies are now keeping patient profiles and educating patients on the importance of maintaining a healthy lifestyle. Both forms of pharmacist are also involved in the education of third and final year pharmacy intern students. A small proportion of pharmacist pursue higher education either locally or internationally and advance in the academic field or even to upgrade to a Doctor of pharmacy (PharmD). Some may also enter in the field of sales and marketing with drug distribution companies.

### **Regional Integration of Pharmacy Practice and Education**

Attempts to homogenize pharmacy practice and education are being made in the Caribbean region through various bodies and initiatives.<sup>10,11</sup> CARICOM is one such body which aims to integrate the Caribbean region through the free movement of capital, skills and labor through its member states. The Health sectors of member countries are no exception to this goal. CARICOM has cooperated with the WHO and PAHO to produce the Caribbean Pharmaceutical policy as a way of standardizing pharmaceutical practice in the region. It aims at promoting pharmaceutical care in particular the rational use of drugs, collaborating with major stakeholders

in the Ministries of Health in the CARICOM member states.

The Caribbean Network on Pharmacy Education (CNPE) is another initiative working together with the WHO, Caribbean Association of Pharmacists and CARICOM which aims at harmonizing pharmacy education in the Caribbean region and strengthening pharmaceutical policies.<sup>11</sup>

The PAHO Basic Pharmaceutical Education Plan is another effort at curriculum harmonization.<sup>12</sup> It proposes an educational model with a vision centered on services, needs, education and competencies. It can be applicable to UWI School of pharmacy and its CARICOM neighbors in producing pharmacists who are capable of working within the region and overall providing better healthcare for the Caribbean in a unified approach. These integrative mechanisms/initiatives may have a great influence on the UWI School of pharmacy degree program in the near future.

### **Discussing Pharmacy Education**

The mission of UWI pharmacy school centers on promoting the concept of the healthcare team as it caters for needs of pharmaceutical care in society. Its curriculum aims at producing competent professionals who can properly apply therapeutic knowledge allowing for rational use of drugs.<sup>7</sup>

In an attempt to aid in the integration of the primary health care team its core curriculum is based on basic health sciences, pharmaceutical health sciences and pharmacy practice (Table 1). The school uses a hybrid system of teaching and learning with an emphasis on problem based learning in an attempt to produce competent lifelong learners.

It aspires to produce pharmacists who are capable of performing up to par with international standards and has designed its curriculum to be pertinent to global trends in pharmacy. Due to globalization, gaps between countries and regions are decreasing and pharmacy schools should aim to homogenize their curriculums to allow for easy exchange/flow of labor within the region.<sup>10</sup>

The curriculum has changed over the years to adjust to trends in the global environment with increased focus on pharmaceutical care and attempts to increase clinical content the inclusion of the pharmacokinetics in the mid 2000's helped in expanding students therapeutic knowledge and ability to enforce proper drug use in practice in a clinical context. Inclusion of Microbiology, General Pathology and Immunology helped to expand student's knowledge of basic health sciences.<sup>2,10</sup>

Some of the strengths of the curriculum are reflected in certain courses.<sup>2,7,10</sup> Problem Based learning for instance acts a foundation for critical thinking which students can draw and expand out throughout the program. In addition to this it also helps to boost student's abilities in team work and presentation of medical cases. There is an intense focus on pharmaceutical care in the curriculum with a strong focus on patient counseling and drug therapy monitoring to ensure the rational use of drugs. The hybrid system of teaching and learning promotes self-directed learning amongst students which helps to produce pharmacists who are lifelong learners. Currently there are not much post graduate pharmacy related courses offered in Trinidad which can be somewhat of a hindrance to the holistic development of pharmacy in the country.

The curriculum covers a wide range subjects from health sciences to pharmaceutical sciences and pharmacy practice which may help to equip students with skill sets to venture into a broad range of fields in pharmacy. In addition to this the curriculum is structured to allow for the development of synthesis and evaluation skills at later stages subsequent to the acquisition of basic and specialized knowledge.

A study conducted<sup>2</sup> assessing stakeholder's perspectives on pharmacy graduates, suggested that there might be gaps in theoretical knowledge and practical application due to the dilution of basic health sciences. The study recommended that certain important courses be reviewed such as Pharmacy Practice III and IV as well as pharmacy Law and Ethics and Applied Therapeutics. Gaps in students' therapeutic knowledge maybe attributed to lack of sufficient staff and preceptors with a clinical practice background. Difficulty in application of theoretical knowledge may also be as a result of lack of practical experience throughout the program.

To amend short comings of the curriculum some adjustments can be made. One major modification can be the commencement of experiential training from the first year of study (as is norm with its educational counterparts in the US and the UK) in order to obtain a more practical experience where students can possibly link practical and theoretical knowledge.<sup>4</sup> Inclusion of doctors and nurses as preceptors or at least increased interaction with such professionals during clinical rotations can help in developing collaboration and enhanced quality of care, as well as ensure better integration of the pharmacy profession into the Trinidad and Tobago. Proper training of preceptors can also benefit the program to enhance student learning in the pharmacy practice disciplines. A staff with a more clinical academic background can help students to develop critical thinking skills in clinical practice.

## Improvements and Recommendations for Pharmacy Education

The University of the West Indies, St Augustine Campus, has created very competent and responsible pharmacist prior to 1995 till this date. However there have been certain setbacks on the Pharmaceutical Education which have influenced the roles of the pharmacist today. There are many ways in which the curriculum and pharmacy education can be improved, as listed below:

### Strengthening education

The Bachelors program (4 years) should be upgraded to a Doctor of Pharmacy (Pharm-D) program to allow students to be more academically advanced in being up to date globally. The program should also include more Clinical experiences during the program rather than only in Year 3 and Year 4 of the Bachelors Program. Similarly, new areas of medicine has opened which has forced pharmacist to have an active role in the medical team, therefore new postgraduate programs should be offered at the UWI for clinical specialization in pharmacist. Some examples of new or current fields that require pharmacist interventions are: Critical Care; Oncology, Ambulatory, Infectious; Pediatric; Administration; Internal Medicine; Psychiatric; Cardiology; Solid Organ Transplant; Pharmacotherapy; Geriatric; Emergency Medicine; Drug Information; Pharmacy Informatics; Medication Use Safety; Palliative Care/ Pain Management; HIV; Nutrition Support; Managed Care Pharmacy Systems, Pharmacogenetics/Biologics; Nephrology and Pharmacoeconomics/Outcomes.<sup>13</sup>

### Technology

This has played a major role today in the extensive use of automation robotics, smart infusion devices, computerized order entry (CPOE), bar coding and clinical decision support. This has created an issue since they are very new and yet to be implemented because technology is always changing. Pharmacy Schools should have compulsory courses which include information technology since writing labels are seen as out dated and time consuming. Therefore, proper training should be a top priority in the Pharmacy Program.

### Facilities

Pharmacy School UWI is currently located at Eric Williams Medical Sciences Complex Mt Hope, building 39. The facilities for the past years can only accommodate 60-90 students that graduate yearly. There are not proper infrastructure for proper research and development by both undergraduate and postgraduate students in terms of laboratories. Therefore suitable and proper infrastructure should be put into place to increase stu-



**Table 1: Table showing current courses offered at school of pharmacy University of the West Indies<sup>7</sup>**

Year in Programme	Course offered	Credits
1	Integrated Basic Health Science I, II, III & IV (Anatomy and Physiology, Introductory Biochemistry, Anatomy and Physiology II and Community Health)	12
	Pharmacy Practice I (Orientation to Profession of Pharmacy, Introduction to Dosage Forms)	5
	Pharmaceutical Chemistry	6
	The Health Professional and Society	3
	Communication Skills in Health Sciences	3
	Professionalism, Ethics and Communication in Health Practicum	2
2	Microbiology, Immunology and General Pathology	3
	Medicinal Chemistry I& II	6
	Pharmacology I& II	6
	Pharmacy Practice II: Compounding Lab and IV Admixture	3
	Pharmaceutics I, II	6
3	Pharmacy Law & Ethics	2
	Biostatistics and Research Methodology	3
	Complementary/ Alternative Medicine, Non-Prescription Drugs	3
	Applied Therapeutics I& II	12
	Pharmacokinetics (Basic & Clinical)	6
	Pharmacy Practice III (Prescription dispensing; Site Visits; Drug Information/ Literature Evaluation)	5
4	Pharmacy Administration	4
	Pharmacy Seminars	2
	Pharmacy Practice IV (Patient Counselling, Clinical Skills Lab, Introduction to Clerkship rotations)	20
	Community Pharmacy Practice Management	2
	Institutional Pharmacy Practice Management	2
	Pharmacoeconomics	2
	Clinical Toxicology	2

dent intake and further development of the pharmacy education.

### Communication

Currently in the School of Pharmacy, there is an organization called the Trinidad and Tobago Organization of Pharmacy Students (TTOPS) which represents and caters for the needs of pharmacy students locally, whilst internationally, there is the International Pharmaceutical Students Federation (IPSF). They are responsible for promoting improved public health through the provision of information, education, networking and a range of publications and professional initiatives. The IPSF also encourages and promotes international visits and exchanges of pharmacy students internationally. The Trinidad and Tobago Organization of Pharmacy Students (TTOPS) should aim to gain membership in this federation in order to increase communication and

encourage more interactions between pharmacy students both locally and internationally. This would increase the exchange of ideas by international correspondence and cooperation with other international organizations on a scientific, educational and cultural plane.

### CONCLUSION

In conclusion, pharmacy education in Trinidad and Tobago still has a long way to go in obtaining integration of the pharmacist into the primary health care team and helping pharmacists assuming more clinical roles. Proposals such as the PAHO Basic pharmaceutical plan and bodies such as the Caribbean Network of Pharmacists can help to improve healthcare in Trinidad and Tobago, CARICOM member states and the wider Caribbean by producing pharmacists with similar skills sets.

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