RESEARCH

Stakeholder Perspectives on Outcome Expectations of Pharmacy Graduates From a Caribbean School of Pharmacy

Patricia Ingrid Sealy, PharmD, PhD,^a Stella Williams, MA, MEd,^b Bidyadhar Sa, PhD,^b
Diane N. Ignacio, PharmD,^a and Rian M. Extavour, MSc^a

^aSchool of Pharmacy, The University of the West Indies – St. Augustine Campus, St. Augustine, Trinidad and Tobago

^bCentre of Medical Sciences Education, The University of the West Indies – St. Augustine Campus, St. Augustine, Trinidad and Tobago

Submitted August 28, 2012; accepted December 13, 2012; published June 12, 2013.

Objectives. To explore stakeholders' views regarding the performance of pharmacy graduates upon entering the workforce and to identify curricular deficiencies and possible solutions.

Methods. Practicing pharmacists, many of whom were members of government and pharmacy organizations, were asked to complete a 40-item questionnaire to determine their views regarding the educational outcomes of pharmacy graduates from a Caribbean pharmacy school. In addition, the stakeholders participated in focus group discussions to capture feedback not gathered on the questionnaire.

Results. Ten stakeholders completed the questionnaire and 11 participated in the focus group discussions. Stakeholders rated graduates higher than average in 13 educational outcomes: application of knowledge and skills, patient care, communication skills, confidentiality, ethics, problem solving, and innovation. However, responses to open-ended questions and comments made during the focus group discussions identified deficiencies, which included a lack of clinical faculty members and qualified preceptors to teach pharmacy students, and the need to revise basic sciences courses.

Conclusion. Feedback from key stakeholders suggests that the quality of pharmacy graduates is above average for the most part; however, additional work is needed to address the deficiencies identified.

Keywords: competency, pharmacy graduates, stakeholders

INTRODUCTION

The School of Pharmacy in the Faculty of Medical Sciences at The University of the West Indies, St. Augustine Campus in Trinidad and Tobago, is the only school of higher education for pharmacists in the southern Caribbean. The pharmacy school, which is 1 of 5 schools (dentistry, medicine, pharmacy, advanced nursing education, and veterinary medicine) at the university, was mandated by the university's Quality Assurance Unit¹ to elicit feedback from stakeholders as part of a quality assurance review in 2012.

The university's quality assurance system consists of components such as surveys or feedback from stakeholders and other sources of opinions that ensure its programs are fit for purpose, relevant, and internationally benchmarked. The university's quality assurance system

has 2 primary aims: (1) to maintain and enhance the quality of the learning experience of university students and ensure the maintenance of appropriate output standards and (2) to provide assurance to stakeholders, (ie, the students, their parents, employers, and the regional governments) of the university's continuing high quality and standards.¹

Quality is a concept that is much talked-about but less understood, therefore defining quality in higher education can be a challenging task. Two working definitions that are relevant to this research are endorsed by the National Strategy for Quality Improvement and by the Quality Assurance Agency of the United States and United Kingdom, respectively.^{2,3} The former sees quality as value for investment made and the latter sees quality as "fitness for purpose." Furthermore, quality can be extended to include "fitness of purpose," a state/condition wherein an institution is capable of successfully fulfilling its mission and achieving its stated objectives.⁴ The American Association of Colleges of Pharmacy encourages "fitness of purpose" among educators at universities and colleges to improve the quality of delivery of

---

Corresponding Author: Patricia Ingrid Sealy, PharmD, PhD, School of Pharmacy, The University of the West Indies, Eric Williams Medical Sciences Complex, Bldg. 39, Champs Fleurs, Trinidad and Tobago. Tel: 868-863-2939. Fax: 868-662-1472. E-mail: patricia.sealy2@sta.uwi.edu

education through evidence-based practice, patient safety, patient-centeredness, and training of pharmacists as members of interprofessional teams.⁵ Additionally, the Australian Learning and Teaching Council noted that employer satisfaction and competencies of graduates represent 2 important (key) performance indicators for the accountability of higher education institutions in terms of quality.^{6,7}

In Trinidad and Tobago, universal health care is provided through a health care system that is organized into 5 regional health authorities, each of which has 1 tertiary teaching institution. Graduates of the pharmacy school's bachelor of science in pharmacy degree (BSc Pharm) program are eligible for employment in public (tertiary hospitals and health centers) and private (retail pharmacies, hospitals or clinics, etc) health sectors.

Prior to Trinidad and Tobago's independence in 1960, the British Medical Council, established the Medical Board of Trinidad and Tobago, which was responsible for the registration and training of pharmacists, doctors, and nurses. The Pharmacy Board of Trinidad and Tobago (PBT) assumed responsibility for the training and registration of pharmacists under the PB Act 77 of 1960 through an apprenticeship diploma-/certificate-program in which pharmacy students worked under the direct supervision of a pharmacist at hospitals and clinics of the ministry of health (MoH), and attended formal classroom sessions 2 days per week, 3 hours each day. During the final year of the certificate program, students were required to attend classes on a full-time basis.

In 1995, the Faculty of Medical Sciences at the university assumed responsibility for training pharmacists. Enrollment has gradually increased from 14 candidates in 1995 to an average of 60 to 90 per year. While the majority of students attending the School of Pharmacy originate from Trinidad and Tobago, students from other Caribbean (such as Barbados, Bahamas, and Grenada) and extra-regional countries (such as Botswana, Canada, England, and the United States) have also graduated from the program.

Students undertake 4 years of training to earn the BSc Pharm degree, after which they undergo a mandatory pre-registration 6-month internship (at which point the students are called "temporary pharmacists") with the PBT. Upon completion of the preregistration internship, the temporary pharmacists are eligible for full registration. The transition from preregistered to registered pharmacists is based on satisfactory completion of an internship as determined by the preceptor rather than by a standardized licensure examination. Further, the newly registered pharmacists are required to practice for at least 1 year under the direct supervision of a pharmacist before being

eligible for independent practice (without supervision). Consequently, training to become an independent practicing pharmacist in Trinidad and Tobago takes a total of 5.5 years.

Experiential training in prescription dispensing and drug information begins in the third year of the BS Pharm program and is intended as a transition from classroom-based coursework (such as pharmacology, applied therapeutics, medicinal chemistry, microbiology, pharmaceuticals, etc) to application of the knowledge they have learned. By shadowing qualified pharmacists, the experiential training cultivates in students the ability to problem solve, correctly fill and dispense prescriptions, and communicate effectively and confidently. Consequently, it enables students to gain a rudimentary understanding of the operations of a computerized community pharmacy, understand the intricacies associated with filling a prescription, and learn the extended services (blood pressure testing, blood glucose monitoring, pregnancy testing, etc) offered by most pharmacies.

Practice experiences are scheduled in the fourth year of the curriculum. The practice experiences ensure that the integration of classroom knowledge gained in the first 3 years is transferred effectively to "hands-on" clinical skills in the various pharmacy practice sites (retail pharmacies, hospitals, and health centers). The practice experiences are designed to allow students to develop skills in pharmacy practice by working alongside experienced practitioners at all levels of health care. This fosters a team approach to pharmacy practice among faculty members and health care practitioners in the training of pharmacy students in clinical pharmacy and pharmaceutical care (Table 1).⁸ The School of Pharmacy aims to prepare graduates to function consistent with international standards.⁹

The primary objective of this study was to examine stakeholders' assessment of the educational outcomes (pharmaceutical knowledge, patient care, technical skill, information resources, professionalism and ethics, communication skills, and curriculum content) of pharmacy graduates from The University of the West Indies. Secondary objectives were to identify what stakeholders' perceived as challenges to the successful delivery of the pharmacy curriculum and to examine their perceptions of the ability of graduates to function effectively in the workplace as entry-level pharmacists, possessing the skills, understanding, and personal attributes needed for a successful pharmacy career.

METHODS

Ethical approval for the study was not necessary as it was part of the quality assurance review of the curriculum mandated by the university. The stakeholders were

Table 1. Background Information of Focus Group Participants

Professional Position(s) Held by Participants	Qualifications
Focus Group 1	
Pharmacist III at the Ministry of Health/RPh	Diploma
Drug Inspectorate	
Pharmacy Manager/RPh	BSc Graduate/Diploma
RPh	BSc Graduate
RPh	BSc Graduate
Regional Manager/RPh and TPSTT President	Diploma
Focus Group 2	
Pharmacy Chain Manager/RPh	BSc. Graduate
Member of Pharmacy Board Council/RPh	BSc Graduate/Diploma
Pharmacy laws/regulations Registration of Pharmacist	
Preregistered Pharmacist	BSc Graduate
Regional Manager/RPh	Diploma
RPh	BSc Graduate
RPh	BSc Graduate

BSc = Bachelor of Science, RPh = Registered Pharmacist, TPSTT = The Pharmaceutical Society of Trinidad and Tobago.

selected by virtue of membership in the PBTT council and The Pharmaceutical Society of Trinidad and Tobago (TPSTT) executive, the MoH, and the Public/Private Health Sectors (Table 1).

Data relevant to pharmacy school graduates' job performance and employers' level of satisfaction were sought from stakeholders using a questionnaire and focus group discussions. A validated existing questionnaire used previously by the school was modified by the authors for use in this study. The 40-item questionnaire was designed based on the desired competency outcomes of graduates of the program (Table 2) as well as on the pharmacy and healthcare education literature.^{1,2,5,7,10} The questionnaire focused on critical curriculum areas: pharmaceutical knowledge, patient care, technical skills, drug information resources, professionalism and ethics, communication skills, and curricular content. Themes generated from the listed competencies guided the focus group discussions.¹¹⁻¹⁴ Responses to questionnaire items were based on a 5-point Likert scale ranging from 1 = poor to 5 = excellent.

The questionnaire also included open-ended questions to gather details that participants might not disclose in an open forum. The 4 open-ended questions asked stakeholders about: the best/least-likable qualities of graduates; suggestions about ways and means to instill competencies; and views for improving experiential learning and graduate employability skills. The maximum total score on the

Table 2. Outcomes Expectations and Professional Competencies of the School of Pharmacy

Evaluate drug orders or prescriptions and compound, package, and dispense drugs in appropriate dosage forms;
Manage systems for storage, preparation, and dispensing of medicines, and supervise technical personnel who may be involved in such processes;
Manage a pharmacy and administer pharmacy services;
Apply computer skills and technological advancements to practice;
Communicate with health care professionals and patients regarding rational drug therapy, wellness, and health promotion;
Design, implement, monitor, evaluate, and modify or recommend modifications in drug therapy to ensure effective, safe, and economical patient care;
Identify, assess, and solve medication-related problems, and provide clinical judgment as to the continuing effectiveness of individualized therapeutic plans and intended therapeutic outcomes;
Evaluate patient problems and triage patients for other health professionals as appropriate;
Understand relevant diet, nutrition, and non-drug therapies;
Recommend, counsel, and monitor patient use of non-prescription drugs;
Provide emergency first care;
Retrieve, evaluate, and manage professional information and literature;
Use clinical data to optimize therapeutic drug regimens;
Collaborate with other health professionals; and
Evaluate and document interventions and pharmaceutical care outcomes.

questionnaire was 200, reflecting a rating of "excellent" on all of the 40 items; the minimum possible score was 40, and reflected a rating of "poor" on each of the items.

Because the investigators were concerned that some stakeholders' responses might not be captured in the questionnaire, 2 focus group sessions were planned in which stakeholders could verbalize their opinions. The identified stakeholders were invited by telephone to participate in the study. If they agreed to participate, they were informed that a questionnaire (sent by e-mail) should be completed and returned in person when they attended the focus group discussion session. Participation in the study was voluntary and completion of the questionnaire was anonymous. The stakeholders indicated their availability to participate in the focus group when contacted and the focus group sessions were scheduled accordingly. The recruitment method was purposive as all participants (or a representative, identified by the organization) were invited for the specific exercise. It is possible that the person who filled out the questionnaire is not the same person who attended the focus group session.

The focus group discussions were conducted on December 1, 2011 (group 1) and January 19, 2012 (group 2), and facilitated by one of the authors, a lecturer in Communication Skills from the Faculty of Medical Sciences. Each participant was given a copy of the guided questions to be used. At the start of each meeting, participants were encouraged to speak frankly so that feedback could be used to initiate curriculum modification if necessary. The focus group discussions were videotaped and transcribed verbatim.

After the questionnaires were submitted and the focus group discussions were completed, the data were analyzed. One-sample *t* tests were conducted to determine whether stakeholder assessment of the students' performance met the minimum mean score of 2.5 out of 5 per item on a 40-item instrument (see Table 3). This was subsequent to testing the data for normality (using the Kolmogorov-Smirnov test). All quantitative data analyses were performed using Statistical Package for Social Sciences, version 16.0 (SPSS Inc., Chicago IL). Summary of findings of the focus group discussions were determined by consensus and not quantitatively.

RESULTS

Ten stakeholders completed the questionnaire for a response rate of 90.9%. The one-sample *t* tests (Table 3) identified significantly higher mean scores than the hypothesized mean value of 2.5 for the following: knowledge of disease states/pharmacotherapy ($p=0.05$) in the pharmaceutical knowledge subscale; commitment to patient care ($p=0.01$) in the patient care subscale; prescription screening & filling ($p=0.05$) in the technical skills subscale; ability to effectively use drug information resources ($p=0.05$) in the drug information subscale; awareness of confidentiality issues and maintaining confidentiality ($p=0.05$) and ability to demonstrate ethical practices ($p=0.01$) in professionalism and ethics subscale; demonstrates clear, confident verbal expression with appropriate language and style to fit the purpose while communicating with clients ($p=0.05$); inter-personal skills ($p=0.05$); appreciates gender, cultural and religious differences while communicating ($p=0.01$); and speaks scientifically while communicating with colleagues and health professionals ($p=0.01$) in the communication skills subscale; ability to apply logical and rational processes to analyse the problems ($p=0.05$) in the curricular content subscale; level of self-motivation and initiative for new endeavour ($p=0.05$) and adaptation of technologies & use them effectively in workplace to enhance job output ($p=0.01$) in the miscellaneous subscale.

As presented in Table 4, in their responses to open-ended questions, stakeholders mentioned graduates having

a sound theoretical knowledge base, application of knowledge, technological competence, and positive attitudes in areas such as adaptability, and were praised for their willingness to learn as evidenced in their relationships with preceptors. However, stakeholders identified deficiencies in clinical skills, empathy, leadership and team-building skills, practical experience, knowledge of pharmacy laws, and diminished ambition to further the profession.

Stakeholders' suggestions for improving experiential learning and clinical practice experiences included: have approved preceptors assigned to practice experience sites to impart skills and ethics to the graduate; train preceptors to enhance their ability to facilitate learning on clinical sites; have students shadow experienced pharmacists; start experiential learning in year 1; use nurses and/or physicians as preceptors; instil a good foundational knowledge in the classroom; and challenge students to think more clinically while on practice experiences. Additionally, stakeholders felt that more emphasis could be placed on important employability skills such as: knowledge and application of pharmacy laws, counseling, team-building, and business. Students having pharmaceutical knowledge; a commitment to patient care; confidence, empathy, and integrity in practice; the ability to manage crises effectively and efficiently; and a holistic knowledge of the profession with an emphasis on "best practices" were areas noted by participants as needing further attention.^{15,16}

The focus group consisted of 11 stakeholders. The 5 pharmacists who attended the first session in December included representatives from the MoH, TPSTT, and personnel (inclusive of managers) in the retail/public health sectors (chain pharmacies, regional health authorities, and tertiary teaching institutions (Table 1). The 6 pharmacists who attended the second session in January represented the PBTT, and included pharmacy managers in retail/public health sectors, personnel at tertiary teaching institutions, and a preregistration pharmacist (Table 1). Their years of experience ranged from 2 to 38 years, with the exception of the preregistration (temporary) pharmacist. These select stakeholders collaborated with the school of pharmacy as they served adjunctively as preceptors for experiential training; in addition they represented key decision makers in professional pharmacy organizations (TPSTT, PBTT) and/or employers of pharmacists (MoH, regional health authorities and chain pharmacies). Given the cumulative years of practice experience of the 4 participants who were managers/employers, the investigators believed that the stakeholders were in a position to make pronouncements on the ability of graduates to function efficiently in the workplace as entry-level pharmacists possessing the skills, understandings, and personal attributes for a pharmacy career.

Table 3. Stakeholders' Questionnaire Responses (N = 10)^a

Item	Mean (SD)	P ^b
Pharmaceutical Knowledge	15.5 (4.9)	NS
Knowledge of disease states/ Pharmacotherapy	3.2 (0.9)	0.05
Knowledge of complexity of disease management	3.0 (1.2)	NS
Identification of drug related problems	3.2 (1.3)	NS
Ability to resolve drug related problems	3.1 (1.2)	NS
Ability to apply knowledge, principles and concepts in the work place	3.0 (0.8)	NS
Patient Care	12.7 (4.5)	NS
Patient Counselling/ Education	3.3 (1.3)	NS
Commitment to patient care	3.6 (0.9)	0.01
Concerns for Patient safety	3.1 (1.1)	NS
Demonstrates empathy when dealing with clients/patients	3.1(1.1)	NS
Technical Skills	10.4 (5.2)	NS
Prescription Screening & Filling	3.7 (1.1)	0.05
Extemporaneous Compounding	3.3 (1.0)	NS
Inventory Management	2.4 (1.2)	NS
Record Keeping	2.9 (1.5)	NS
Drug Information (DI) Resources	5.3 (2.8)	NS
Ability to effectively use DI resources	3.4 (1.1)	0.05
Provides accurate DI to clients (ie, patients/ other members of health team)	3.1 (1.1)	NS
Professionalism and Ethics	22.2 (12.4)	NS
Ability to apply international standards and practices within a discipline/ professional area	2.6 (1.2)	NS
Ability to demonstrate leadership skills	2.9 (1.0)	NS
Awareness of medico-legal issues	2.4 (1.2)	NS
Awareness of confidentiality issues and maintaining confidentiality	3.5 (0.9)	0.05
Acts with confidence and integrity	3.1 (1.5)	NS
Ability to demonstrate ethical practices	3.9 (1.0)	0.01
Team skills	3.1 (1.1)	NS
Time Management skills	2.9 (0.7)	NS
Accepts responsibility for own actions	3.0 (0.9)	NS
Communication Skills	19.0 (8.4)	NS
Demonstrates clear, confident verbal expression with appropriate language and style to fit the purpose while communicating with clients	3.2 (0.7)	0.05
Written communication ability	2.8 (1.8)	NS
Inter-Personal skills	3.3 (0.7)	0.05
Appreciates gender, cultural and religious differences while communicating	3.6 (0.5)	0.01
Speaks scientifically while communicating with colleagues and health professionals	3.6 (0.5)	0.01
Demonstrates empathic concern	3.0 (0.7)	NS
Demonstrates knowledge of ethical issues in the profession	3.1 (1.1)	NS
Curricular Content	10.0 (4.9)	NS
Ability to critically examine knowledge in the light of theory vs practice	2.9 (0.9)	NS
Interdisciplinary knowledge base	2.9 (0.6)	NS
Ability to apply logical and rational processes to analyse the problems	3.0 (0.5)	0.05
Ability to think creatively to generate solutions	3.0 (0.9)	NS
Miscellaneous	14.2 (5.1)	NS
Level of self-motivation and initiative for new endeavour	3.4 (0.9)	0.05
Ability to take responsibility of self-learning & development through continuing education	3.0 (0.9)	NS
Ability to set priorities, outcomes and objectives in line with organizational needs	2.8 (1.3)	NS
Adaptation of technologies & use them effectively in workplace to enhance job output	3.9 (0.8)	0.01
Overall competence of our graduates	3.1 (0.9)	NS
	109.3 (37.9)	NS

^a The number of responses to each item varied from 7-10 because not all respondents answered all items.

^b The P value was a measure of the difference between the actual mean score and the hypothesized mean. The hypothesized mean was determined by dividing the highest possible score for each item in half.

Table 4. Stakeholders' Best- and Least-Liked Qualities About the Pharmacy Program and Graduates

Best-Liked Qualities	Least-Liked Qualities
Theoretical knowledge	Lacked knowledge of pharmacy laws
Application of pharmaceutical knowledge and effectively utilising drug information resources	Not enough practical experience and knowledge of disease states
Adaptability to modern world and technologies	Inability to apply theoretical knowledge to practice
Show promise confidence with practical experience	Lacked empathy when interacting with clients/patients
Academic training	Limited knowledge base
Positive attitude towards work/challenges	Lacked on the job experience
Good team work skills	Insufficient leadership and team-based skills
Ability and willingness to adapt to changes situations	Lacked ambition to further the profession
Ability to utilise computerised systems	Limited clinical prowess
Willing to provide feedback to clients	The students need to increase their awareness of the anatomical and physiological competences to effectively understand the pathogenesis of disease states and by extension the treatment of such diseases
Willingness to learn more	
Open to learning	
Ability to connect or interact with patients	

Many of the stakeholder responses to the open-ended questions on the questionnaire were reinforced during the focus group discussions. Comments arising from group 1 alluded to: graduates' limited knowledge of disease states and therapeutic indications, dilution of basic health sciences courses within the curriculum, and omission of a required research project from the curriculum. Stakeholders also noted graduates' inability to understand a clinical scenario, take a proper history from patients, counsel and empathize with patients, engage prescribers, and query medication errors. Group 1 participants who were trained under the apprenticeship program believed that those who graduated from that program were: better prepared for entry into the profession, more informed of currently available medications, generally confident, and "fit for practice" on the first day of licensure. Group 2 participants felt that although graduates were familiar with theoretical knowledge, they were unable to apply that knowledge in the clinical setting. The stakeholders, however, felt that with experience the graduates' confidence would increase.

In addition, participants felt that graduates were not aware of the availability of products in the retail setting; hence the suggestion that students be exposed to the actual pharmacy practice setting earlier in the curriculum. Recommendations also included increased focus on compounding and on the preparation of admixtures, and increased student supervision by preceptors at practice experience sites. Unlike group 1, group 2 participants suggested that graduates were well trained overall. Participants from both focus groups asserted that graduates were disillusioned with the profession after graduating and this dissatisfaction accounted for the migration from institutional practice to other settings such as retail pharmacy

and the pharmaceutical industry, and to other professions such as medicine.

DISCUSSION

The feedback provided by the stakeholders who participated in this study raised numerous important points regarding communication skills, pharmaceutical care, professional skills, and ethics that deserve further discussion. At The University of the West Indies Faculty of Medical Sciences, a comprehensive program in communication skills is mandatory for all first year students. Therefore, not surprisingly, the most significant results from this review highlighted students' verbal and non-verbal communicative abilities.¹⁷⁻¹⁹

Among the stakeholders surveyed, those pharmacists trained in a BS Pharm program had different perspectives from those trained in the apprenticeship program previously offered by the university. Three of the 5 pharmacists who participated in focus group 1 were trained in the apprenticeship diploma-/certificate-program. These pharmacists commented that The University of the West Indies graduates should elevate the profession by practicing as pharmacists do in the developed world. Pharmacists in developed countries are mandated to practice pharmaceutical care that is patient centered and outcomes oriented.^{18,20} Pharmacists should work in a clinical capacity with patients and health care providers (primarily physicians) to assess, monitor, initiate, and modify therapy to ensure safe and cost-effective drug therapy. One pharmacist in focus group 2 who initially trained under the apprenticeship program and later upgraded to the BSc Pharm degree program, vociferously pointed out deficiencies that stymied pharmacists from that program from delivering clinical pharmacy. Overall, group 2 participants were more inclined

to allow for inexperience. Participants felt that the failure of graduates to perform in a clinical capacity could be attributed to problems of the health care system and that their transition to clinical roles eventually might be achieved if managers at the MoH and regional health authorities created a more enabling clinical environment. Admittedly, staff shortages at institutions also relegate graduates to work as dispensers (fill prescriptions) rather than as part of a clinical team engaged in patient care. This could explain the graduates' disillusionment as they are not afforded the opportunity to practice in a clinical environment using the knowledge and skills learned from the curriculum.²¹ The graduates aspire to practice in a similar fashion as pharmacists do in developed countries. However, clinical roles for pharmacists are not the norm in the healthcare system of Trinidad and Tobago. The pharmacy profession in Trinidad and Tobago (and the rest of the Caribbean) is in transition. The students may need to realize that change will only come gradually, particularly given that many of the apprenticeship-trained pharmacists (the current managers of the pharmacy profession) do not have clinical expertise.

In the focus group discussions, stakeholders identified specific courses in the curriculum for review. They advised that the basic health sciences course content should revert to that which was previously delivered to students of the Faculty of Medical Sciences prior to 2006. In that arrangement, the first 2 years of the pharmacy program were dedicated to the basic health sciences. One respondent, reflecting on the prevailing sentiment at the time, recalled with regret students' discontent with respect to the course content, finding that it was designed to favor medical students. Consequently, after the quality assurance review in 2003, changes were made to the basic health sciences course content. However, these alterations to the course may now account for deficiencies in interdisciplinary knowledge and pharmacists' inability to critically assess information. Additionally, stakeholders agreed that "research" should be reintroduced as a mandatory course in the curriculum and that graduates should become familiar with commonly used pharmaceutical agents to treat diverse conditions.

The School of Pharmacy could consider starting experiential training in year 1, as is the norm in UK and US pharmacy colleges and schools.²² It might also be instructive to have other members of the healthcare team interact with pharmacy students who are on clinical practice experiences. This synergy may address gaps such as the need to enhance critical-thinking skills and to experience/be exposed to case presentations in a "grand rounds" format. Not only would this improve students' interprofessional skills, it would also help to develop collaboration and enhanced quality of care, as well as ensure that

graduates can successfully function to succeed as members of patient-centered health professions teams.⁵

Many of the views expressed by the stakeholders were congruent with those from the Health & Community Human Resource Sector study.²³ Employers felt that the pharmacy graduates were competent in clinical knowledge, skills, and direct patient care activities, but that a gap existed in clinical pharmacy specialization and clinical experience. Relevant courses in the curriculum such as pharmacy law/ethics, applied therapeutics, and pharmacy practice III and IV may need to be reviewed to address perceived deficiencies in knowledge, students' technical skills, leadership, professionalism, and ethics.

The stakeholders suggested that qualified preceptors (consultant physicians) should be assigned to clerkship sites because of the dire need for experienced preceptors to supervise pharmacy students while on practice experiences. The pharmacy faculty also identified the need for additional clinical academic staff members for teaching clinical pharmacy in the quality assurance review self-assessment report, and to be engaged in preceptor training. Although preceptor training has begun, it takes time for preceptors' skills to be honed.^{9,24} Moreover, this shortage of qualified clinical pharmacy preceptors is common to the region and has been known to exist for a number of years. Exposure to clinical expertise in the profession is needed to raise the level of performance in the Caribbean region where clinical pharmacy practice is novel.

While major gaps in the school's pharmacy curriculum were not identified in the responses to the questionnaire, we were able to capture a substantial amount of information from the thematic analysis of the focus group discussions. Specific areas of concern included professionalism, the application of ethics in clinical decision making, speaking confidently with healthcare professionals, appreciating gender differences, being sensitive to cultural and religious differences, and adapting to and effectively using technological devices in the workplace. The school acknowledges the critical comments of stakeholders as constructive criticism to guide modifications to the revised curriculum. Graduates usually possess the minimum level of qualification to practice upon entry into the profession, yet it should be their prerogative to engage in continuous professional development for the rest of their careers.

In spite of the identified deficiencies, the mean scores on most of the 40-item questionnaire were in excess of the hypothetical mean, which suggests that graduates have achieved at least minimum competencies required for entry to the profession. Stakeholders felt that graduates should be exposed to different work experiences, which would ultimately enhance professional responsibilities and competencies to achieve "best practice." Key

components of monitoring and evaluation from a clinical perspective have not been implemented; therefore, these competencies cannot be measured at this time. Addressing the gaps (inexperienced preceptors, limited number of adjunct faculty to interact with students on clinical practice experiences, and deficiencies in the core curriculum) would have the potential of creating a superior cadre of students who are capable of achieving a higher percent of educational outcomes and competencies. We also recommend that graduates complete postgraduate certificate programs in specialized areas of pharmacy practice until the school establishes a postgraduate program.

The authors recognize that although the sample size of stakeholders is representative of pharmacy personnel involved with the experiential training program, it does not represent the total population of pharmacy employers and graduates. Therefore, caution should be used in drawing conclusions from the results of this report.

Because this research study gathered information directly from stakeholders, the results helped the investigators to identify gaps in the curriculum. Indeed some improvements (earlier exposure to practice sites, making research mandatory, additional preceptor training, etc) can be recommended for immediate action. Other recommendations, such as the need for students to develop clinical expertise and pharmacy specialization, require more careful study to ensure fitness of purpose, and if implemented, more planning and resources. The school endeavors to produce graduates who are capable, entry-level generalist pharmacists with ability-based competencies that allow them to integrate and apply knowledge, skills, and attitudes learned in the curriculum to specific pharmacy-related situations.

CONCLUSION

Pharmacy stakeholders who were surveyed and interviewed shared the prevailing sentiments of other practicing pharmacists in Trinidad and Tobago concerning the competence and professionalism of pharmacy graduates. Pharmacy students could be required to complete a series of studies and training workshops to address the shortcomings and to narrow the gaps identified in this study. The results of this study will be instrumental in identifying and addressing gaps in the pharmacy curriculum to ensure that the school's aims are realized as we seek to enhance pharmacy education in Trinidad and Tobago, and by extension, throughout the Caribbean.

REFERENCES

1. Report of the quality assurance unit: review of the school of pharmacy. The University of the West Indies, St. Augustine Campus, Trinidad and Tobago; 2012.
2. Department of Health and Human Services. National strategy for quality improvement in health care. www.hhs.gov/news/press/2011pres/03/20110321a.html. Accessed August 22, 2012.
3. European Association for Quality Assurance in Higher Education. Standards and guidelines for quality assurance in the European higher education area. [http://www.enqa.eu/files/ESG_3edition%20\(2\).pdf](http://www.enqa.eu/files/ESG_3edition%20(2).pdf). Accessed August 22, 2012.
4. Department for Business Innovation and Skills. Higher education: students at the heart of the system. Presented to Parliament by the Secretary of State for Business, Innovation and Skills By Command of Her Majesty. <http://www.bis.gov.uk/assets/biscore/higher-education/docs/h/11-944-higher-education-students-at-heart-of-system.pdf>. Accessed August 22, 2012.
5. Kroboth P, Crismon LM, Daniels C, et al. Getting to solutions in interprofessional education: report of the 2006-2007 professional affairs committee. *Am J Pharm Educ*. 2007;71(6):Article S19.
6. University of South Australia. UniSA employer feedback survey external report. www.unisa.edu.au/gradquals/EmployerReport.pdf. Accessed August 28, 2012.
7. Pharmaceutical Society of Australia. National competency standards framework for pharmacists in Australia. http://cpd.shpa.org.au/lib/pdf/Competency_standards_2010.pdf. Accessed August 28, 2012.
8. The University of the West Indies. Undergraduate regulations and syllabuses 2012-2013 of the faculty of Medical Sciences. School of Pharmacy: BSc Pharmacy. <http://sta.uwi.edu/fms/pharmacy/documents/BScPharmacy.pdf>. Accessed July 18, 2012.
9. Kairuz T, Noble C, Shaw J. Preceptors, interns, and newly registered pharmacists' Perceptions of New Zealand pharmacy graduates' preparedness to practice. *Am J Pharm Educ*. 2010;74(6):Article 108.
10. Black N, Brazier J, Fitzpatrick R, Reeves B. Designing and using patient and staff questionnaires. In: *Health Services Research Method: A Guide to Best Practice*. London: BMJ Books; 1998.
11. Bowling A. Unstructured interviewing and focus groups. In: *Research Methods in Health*. Buckingham: Open University Press; 1997.
12. Krueger RA, Casey MA. *Focus Groups: A Practical Guide for Applied Research*, 3rd ed. Thousand Oaks, CA: Sage Publications; 2000.
13. Merton RK, Fiske M, Kendall PL. *The Focused Interview: A Manual of Problems and Procedures*. 2nd ed. New York: Free Press; 1990.
14. Morgan DL. *Focus Groups as Qualitative Research*, 2nd ed. Newbury Park, Thousand Oaks, CA: Sage Publications; 1997.
15. Accreditation Council for Pharmacy Education. APhA-ASP/AACP/ACPE open forum on the quality of pharmacy education. APhA Annual Meeting and Exposition. March 2012. https://www.acpe-accredit.org/pdf/ACPE_APhAASP%20Open%20Forum%20March%202012%20FINAL.pdf. Accessed July 18, 2012.
16. International Pharmaceutical Federation (FIP). FIP statement of policy quality assurance of pharmacy education. http://fip.org/www/uploads/database_file.php?id=302&table_id=-. Accessed September 27, 2012.
17. Roter DL, Hall JA, Kern DE, Barker LR, Cole KA, Roca RP. Improving physicians' interviewing skills and reducing patients' emotional distress. *Arch Intern Med*. 1995;155(17):1877-1884.
18. McDonough RP, Bennet MS. Community pharmacy improving communication skills of pharmacy students through effective precepting. *Am J Pharm Educ*. 2006;70(3):Article 58.

19. Kripalani S, Jacobson KL. Strategies to improve communication between pharmacy staff and patients: a training program for pharmacy staff. AHRQ Publication No. 07(08)-0051-1-EF. 2007.
20. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm.* 1990;47(3):533-543.
21. Joyne PA, Thomason TE, Blalock SJ. Practice settings, job responsibilities, and job satisfaction of nontraditional pharmd and bs pharmacy graduates. *Am J Pharm Educ.* 2009;73(2): Article 33.
22. Stupans I. Qualitative interviews of pharmacy interns: determining curricular preparedness for work life. *Pharmacy Practice (Online).* 2012;10(1):52-56.
23. Noseworthy T, Harnett L. Perceptions of graduate preparedness in the health sector Newfoundland and Labrador. Health & Community Human Resource Sector Study. 2002.
24. Assemi M, Corelli RL, Ambrose PJ. Development needs of volunteer pharmacy practice preceptors. *Am J Pharm Educ.* 2011; 75(1):Article 10.