



UIC Pharmacy Graduates' Competencies Towards Advanced Clinical Pharmacy Practice: A Perception Based Study

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Research Article

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Abstract

Objective: This study was conducted to identify and establish the UIC B.S. Pharmacy graduates' competencies for advanced clinical pharmacy practice and assess the UIC BS Pharmacy Program and Facilities under a Strengths and Weaknesses Analysis. That by testing their competency level on the following areas: effective communication, basic clinical skills, diagnosis, management, therapeutics and prevention, social and community contexts of health care, moral reasoning and ethical judgment, problem solving and professionalism as well as role recognition, this study may provide them support and guidance for their actual-based practice in clinical setting scenarios.

Methods: A total of 96 respondents were taken from UIC B.S. Pharmacy graduates under four and five year curriculum. The Likert - scaling technique was employed in this study. The average weighted means of the categories of data were computed in order to obtain their respective descriptive equivalents. Z-test posted a significant difference in the perceptual responses of the graduates from a four-year to a five-year curriculum.

Results: Majority of the respondents belonging to age bracket 31-45 years, are females and graduated from the four-year curriculum. Majority of them are currently employed in hospitals and community pharmacies. Findings revealed that the pharmacy graduates lacked the competencies required to perform advanced clinical pharmacy practice. Most of the respondents posted a descriptive equivalence of uncertainty as their competency level on the seven areas studied. This poses the challenge to a more intensified curriculum and comprehensive training programs relevant to hone the knowledge, skills, and expertise of its graduates.

Conclusion: The Strengths and Weaknesses analysis of B.S. Pharmacy Program and Facilities based on the following areas namely, Faculty, Instruction, Library, Laboratory, Research and Community Extension and Services, provided for the necessary recommendations for this study. Recommendations include only on the areas of faculty, library, laboratory and research.

Key words: Physical Pharmacy, laboratory, perception, curriculum, student survey.

Introduction

Many worldwide issues on healthcare system are pertaining to clinical pharmacy issues and deemed to be solved by developing clinical pharmacy education and practice in many settings. The administrator of the 47th World Health Assembly held on May 10, 1994, drew the attention of countries, aid agencies, nongovernmental organizations and the pharmaceutical industry to areas of concern in the pharmaceutical sector today, such as insufficiently coordinated international aid, lack of trained staff, inadequate information, inadequate education of prescribers and consumers, outdated or unenforceable legislation, and lack of knowledge about the viability and long-term impact of new financing and other strategies (edmwebadmin@who.int). Foremost, to its campaign is the call for action by all interested parties for the development and implementation of national drug policies aimed at improving the access to and the rational use of drugs. They drew attention to constraints on access to safe and effective essential drugs and the need for continued action by all interested parties to achieve all the objectives of a comprehensive national drug policy (edmwebadmin@who.int).

To address the problem of unsafe administration of medications, the assembly stressed the importance of collaboration between pharmacists and other health professionals involved in patient care and administration of medicines. The World Health Organization urges all member states, in collaboration with national organizations representing pharmacists to provide training facilities to equip pharmacists to assume responsibilities for all activities in pursuit of the goal of health for all. (Uy, 1996)

In addition to this, Uy (1996), in her research regarding the sectoral analysis of pharmacy practice in the Philippines, strongly recommends, review of methods of



curriculum planning and assessment in the light of the principles of curriculum management. The Philippines has made some changes in its own pharmacy curriculum. On May 30, 1984, the Pharmacy curriculum was reduced from five years to four years. Another change was felt in school year 1992-1993 when some changes were made in the 4-year curriculum. The Philippine Association of Colleges of Pharmacy (PACOP) is again working on some changes in the professional subjects in response to the Philippine Commission on Higher Education noted that entry requirements for the different collegiate health science courses in the country are non-uniform, especially in terms of curricular content.

Uy (1996) further stressed the need to maintain the relevance of the undergraduate education to changing patterns of practice. She therefore recommends that curriculum should be kept under regular review by academic pharmacists, and together with pharmacists from all aspects of practice and other concerned parties, such as health administrators and specialists in curriculum management and evaluation. She mentions and defines the role of clinical pharmacists as individuals engaged in activities closely related to hospitalized patients. She believes that these individuals are more directly and continuously engaged in the process of patient care. She adds that the clinical pharmacists' responsibilities include among other things, the rational selection, monitoring, dosing and control of the patient's overall drug therapy program.

The concept of clinical or patient-oriented pharmacy services has gained tremendous acceptance in hospital pharmacy. The hospital environment offers the hospital pharmacist a multitude of opportunities to develop meaningful clinical roles in the safe and rational use of drugs in hospitalized as well as ambulatory patients (Gennaro et al., 2000).

The various service functions of a clinical pharmacist are described in the American Society of Health System Pharmacists (ASHP) Statement on Patient-Focused Care, 1995.

In the US, as these roles emerged, various third party agencies are recognizing the value of the services and specifically are reimbursing the hospital pharmacy department for providing activities not necessarily associated with dispensing a product. Areas of practice in which reimbursements have been made include pharmacokinetic dosing service, patient education services for home self administration of growth hormone, total parenteral nutrition solution service, steroid administration, factor VIII (anti-hemophilic factor) administration, cytarabine administration, and injectable analgesic services. In addition, pharmacists are being reimbursed for managing patient therapy for certain disease states such as asthma, diabetes, and

hyperlipidemia (Gennaro et al., 2000). As increased emphasis is being placed on cost containment in hospitals and improved drug therapy utilization, the clinical pharmacist has been valuable in monitoring drug therapy and in promoting rational drug therapy. The clinical pharmacist can best carry out the mandates of the pharmacy and therapeutics committee relative to appropriate drug therapy. An evolution of clinical pharmacy practice is occurring in that pharmacists are embracing the concept of pharmaceutical care. In essence the pharmacist is becoming a drug-therapy manager (Gennaro et al., 2000).

In 1994, the American Association of Colleges of Pharmacy (AACCP) developed the Center for the Advancement of Pharmaceutical Education (CAPE) Guidelines to assist colleges of Pharmacy in their assessment /evaluation activities. The CAPE advisory panel on Educational Outcomes updated the guidelines in 1998. Most colleges of pharmacy have adopted the CAPE Guidelines for their assessment programs.

The CAPE guidelines are intended to serve several purposes. However the most important is to guide pharmacy faculty and administrators in assessing and revising the curriculum. These practice-based and general ability based outcomes are intended to be the endpoint, the target towards which the evolving pharmacy curriculum should be aimed.

One means of obtaining measures of these outcomes for curricular assessment, evaluation and revision is to ask students their opinion regarding their preparation to perform these important pharmacy practice outcomes. One can then examine whether students' belief of their own preparedness vary in concordance with the different educational objectives being met in the various years of their pharmacy curriculum. (Am.J.Pharm.Educ, 66,347-356 (2002). It is for all above reasons, that the proponent was inspired to conduct a study relevant to these issues, especially on the problem of unsafe administration of medications. With the thrust of the World Health Organization, it repeatedly stressed the importance of collaboration between pharmacists and other health professionals involved in patient care and administration of medicines. With this study, baseline information may be provided to give an idea on how well-equipped the B.S. Pharmacy graduates are of today in attaining this competency. This study will further seek the pharmacist's perceptions regarding the preparedness to practice as clinical pharmacist, and make recommendations as well for the improvement of the pharmacy education program.

Methodology

This study made use of the descriptive survey method. A questionnaire was utilized as an instrument for collecting data needed in the study. Descriptive method is collection of data in order to test hypotheses or to answer questions



concerning the current status of the subject of the study (Sevilla, 1996).

Participants of the Study

A convenient sample of respondents was taken for satisfaction of the survey for the length of the study. Included in the study were 68 respondents who graduated from a four (4) year curriculum and 28 respondents who graduated from a five-year curriculum. A total of 96 respondents from the entire BS Pharmacy graduates of UIC working in Davao City were purposively surveyed through a prepared questionnaire.

Research Instrument

Data were collected through a questionnaire and the perception assessment used the Likert - 5 point scale. It made used of the competency items listed by the American Association of Colleges of Pharmacy (AACP) Center for the Advancement of Pharmaceutical Education (CAPE) Guidelines. These guidelines are intended to assist colleges of Pharmacy in their assessment /evaluation of curricular activities. Percentage responses for each individual guideline were indicated. The Likert scaling technique assigns a scale value to each of the five responses. Thus the instrument yielded a total score for each respondent and a discussion of each individual item was made possible. Starting with a particular point of view, all statements favoring this position were scored.

Research Procedure

Step 1. Preparation Phase

The proponent of this study deliberated with the necessary information for the study. Then, a careful analysis and assessment of the data at hand, facilitated the proponent in conceptualizing the framework for this study. Before the proponent carried out this study, a letter of consent addressed to the president of University of the Immaculate Conception was made, seeking approval to conduct the study among its BS Pharmacy Graduates working in Davao City.

Step 2. Questionnaires were purposively distributed in Davao City Hospitals, community pharmacies, government agencies, academes, and manufacturing firms. The researcher stressed the importance of the study to respondents through a focused - group discussion.

Step 3. Questionnaires were retrieved after a week.

Step 4. Data were tabulated through the MS -EXCEL program.

Step 5. Data were analyzed and interpreted.

Statistical Treatment

The Average Weighted Mean (AWM) was utilized by summing up the weight of each subject category and

dividing it by the total number of respondents. The proponent used the z-test, to test the hypothesis whether there is a significant difference in the perceptions of pharmacy graduates in a four or five year curriculum program. All interpretations were based on $\alpha = 0.05$ level of significance using the two-tailed test.

Results and Discussion:

This study was purposely conducted to identify and to establish the UIC B.S. Pharmacy graduates' competencies for advanced clinical pharmacy practice and to assess the UIC BS Pharmacy Program and Facilities under a Strength and Weaknesses analysis.

A competency evaluation of BS Pharmacy graduates' perceptions on the competency areas of a clinical pharmacist would enable them to develop and elevate competencies in all aspects of pharmaceutical care, thus promoting quality patient care. That by testing their competency level on the following areas: effective communication, basic clinical skills, diagnosis, management, therapeutics and prevention, social and community contexts of health care, moral reasoning and ethical judgment, problem solving and professionalism as well as role recognition, this would provide them support and guidance for their actual-based practice in clinical setting scenarios.

The study was conducted to examine the B.S. pharmacy graduates' perceptions of their preparedness to perform advanced clinical pharmacy practice competencies. Competency items include those listed by the American Association of Colleges of Pharmacy (AACP) Center for the Advancement of Pharmaceutical Education (CAPE) Guidelines. These guidelines are intended to assist colleges of Pharmacy in their assessment and evaluation of curricular activities.

There was a total of 96 respondents and were taken from UIC B.S. Pharmacy graduates under four and five year curriculum. Findings of the study pertaining to the B.S. Pharmacy graduates' perceptions about their competencies and preparedness in performing advanced clinical pharmacy practice, generally posted an "undecided" mark. In this category, an over-all mark for the seven competency areas, namely: effective communication, basic clinical skills, diagnosis, management, therapeutic and prevention, social and community contexts of health care, moral reasoning and ethical judgment, problem solving and professionalism and role recognition have been obtained.

A mark of 2.92 indicates that the respondents over-all assessment is that they are unable to decide or hesitant to confirm if they indeed have acquired the competencies under study.



Table 1

Demographic Profile of the Respondents (B.S. Pharmacy Graduates)

Respondents	Frequency	Percentage	Respondents	Frequency	Percentage
Gender:			Curriculum:		
Male	3	3.0 %	Four-year	68	71.0%
Female	93	97.0 %	Five-year	28	29.0%
Total	96	100.00%	Total	96	100.00%
Age Bracket:			Present Employment:		
20-25	12	12.5%	Community	33	35.0%
26-30	12	12.5%	Hospital	47	49.0%
31-35	26	27.0%	Government	3	3.0%
36-40	18	19.0%	Academe	6	6.0%
41-45	18	19.0%	Others	4	4.0%
46-50	10	10.0%	None	3	3.0%

The collated data for the areas of concern regarding the UIC B.S. Pharmacy program include: faculty, instruction, library, laboratory, research and community extension and services. Guidelines for this evaluation were based on the guidelines of the Philippine Accreditation Association of Schools, Colleges and Universities (PAASCU). In this category a mark of 3.40 indicates that the respondents' over-all assessment is that they were "undecided " or hesitant to conclude on what rating their evaluation lies on the respective competency areas for B.S. Pharmacy program and facilities.

Therefore, the competency level of BS Pharmacy graduates, have been rated undecided level of competence and as such, provide awareness and challenge to improve their knowledge and expertise in order for them to practice as a clinical pharmacist. The knowledge that they have earned under the B.S. Pharmacy Curriculum needs enhancement for them to be able to practice clinical pharmacy. Improvement of the present B.S. Pharmacy curriculum need not only be in the subjects to be included in the curriculum but as well as the need to increase the credit earned units of subjects of concern.

Table 2

B.S. Pharmacy Graduates Perception on their Competency in Effective Communication

Item	Mean	Descriptive Equivalent
1.1 Communicates health record information to patient	2.58	Undecided
1.2 Communicates health record information to health professionals	2.06	Incompetent
Overall Mean	2.32	Incompetent

Table 3 The Matrix of the Perceptual Responses on the Competency Areas of a Clinical Pharmacist (Set A)

Item Description	Total Rating	Descriptive Equivalent
<i>I. Effective Communication</i>	2.8541	<i>Undecided</i>
<i>II. Basic Clinical Skills</i>	3.0107	<i>Undecided</i>
<i>III. Diagnosis, Management, Therapeutics and Prevention</i>	2.8025	<i>Undecided</i>
<i>IV. Social and Community Contexts of Health Care</i>	2.9198	<i>Undecided</i>
<i>V. Moral Reasoning and Ethical Judgment</i>	3.1061	<i>Undecided</i>
<i>VI. Problem Solving</i>	2.8750	<i>Undecided</i>
<i>VII. Professionalism and Role Recognition</i>	2.9059	<i>Undecided</i>
	2.9249	<i>Undecided</i>

Table 4

The Matrix of the Assessment of the B.S. Pharmacy Program and facilities specifically on the following areas: faculty, instruction, library, laboratory, research and community extension and services. (Set B)

Item Description	Mean	Descriptive Equivalent
<i>I. Faculty</i>	3.3956	<i>Undecided</i>
<i>II. Instruction</i>	3.5536	<i>Competent</i>
<i>III. Library</i>	3.0729	<i>Undecided</i>
<i>IV. Laboratory</i>	3.5392	<i>Competent</i>
<i>V. Research</i>	3.3625	<i>Undecided</i>
<i>VI. Community Extension and Service</i>	3.5102	<i>Competent</i>
AVERAGE	3.41	<i>Undecided</i>

The z-test results at 0.05 level of significance, showed a significant difference in the perceptual responses of the graduates from a four-year to a five-year curriculum. Hence, the null hypothesis which states that there is no significant difference between the perceptions of the fourth year curriculum from the five year curriculum graduates is hereby rejected. This disparity may be attributed to certain programs which may have been omitted if not absent to either curricula and require a more intensified curriculum base, incorporating both curricula for a wider and comprehensive training, to necessarily hone the knowledge and skills of the BS Pharmacy graduates.



The Strength and Weaknesses analysis of B.S. Pharmacy Program and Facilities provided recommendations only on the areas of faculty, library, laboratory and research as tabulated in table 6.

Table 5
Perceptions of B.S. Pharmacy Graduates from a 4-year Curriculum Towards Clinical Pharmacy Practice

Competency Areas	Mean	Descriptive Equivalent
I. Effective Communication Skills	2.89	Undecided
II. Basic Clinical Skills	2.38	Undecided
III. Diagnosis, Management, Therapeutics /Prevention	2.41	Undecided
IV. Social / Community Contexts of Health Care	2.60	Undecided
V. Moral Reasoning and Ethical Judgment	2.79	Undecided
VI. Problem Solving	2.76	Undecided
VII. Professionalism and Role Recognition	2.50	Undecided
<i>Average Mean</i>	2.62	Undecided

Conclusion

First, this study has provided for the perceptions of the BS Pharmacy graduates on the competency areas of a clinical pharmacist posing an undecided level of competence, which would posit the need for a more intensified and comprehensive training relevant to hone knowledge and expertise for its graduates to practice clinical pharmacy. The communication skills area is proven to be in need of improvement.

On the second competency area, the perception on basic clinical skills, shows that the knowledge, skills and training gained by a B.S. Pharmacy graduate do not suffice for them to perform advanced clinical pharmacy.

On the area of diagnosis, management, therapeutics and prevention, perceptions show that graduates of B.S. Pharmacy are not confident whether they have gained the knowledge, skills and abilities to contribute to diagnosis, therapeutics and prevention of diseases in patient care.

On the fourth competency area which is the social and community contexts of health care, this received the lowest percentage marks. This means that the

respondents fail to contribute to decision making among health care team and failure to disseminating information for public awareness of health. It can be concluded that the B.S. Pharmacy curriculum does not suffice to cater to the competencies expected of a clinical pharmacist. Therefore, clinical pharmacy curriculum’s implementation is of crucial importance.

On the area of Moral Reasoning and Ethical Judgment, the lowest mark was noted in the category of decision-making integrating cultural, social, and ethical dimensions. Therefore, the current B.S. Pharmacy curriculum is inadequate and an intensified pharmacy jurisprudence and health ethics should be adopted.

In the area of problem solving, the respondents of this study rated this area unfavorably. Again, it can be inferred that a graduate of B.S. Pharmacy does not possess the knowledge, skills and capabilities needed to solve problems related to clinical pharmacy practice. Therefore it is imperative that this skill be enhanced.

Table 6
Perceptions of B.S. Pharmacy Graduates from a 5-year Curriculum Towards Clinical Pharmacy Practice

Competency Areas	MEAN	Descriptive Equivalent
I. Effective Communication Skills	2.714	Undecided
II. Basic Clinical Skills	3.357	Undecided
III. Diagnosis, Management, Therapeutics/ Prevention	3.035	Undecided
IV. Social / Community Contexts of Health Care	3.107	Undecided
V. Moral Reasoning and Ethical Judgment	3.25	Undecided
VI. Problem Solving	2.64	Undecided
VII. Professionalism and Role Recognition	3.32	Undecided
<i>Mean</i>	3.06	Undecided

Lastly, on the area of professionalism and role recognition, the respondents did not fare favorably. Results showed that graduates of a B.S. Pharmacy curriculum do not have the capability of providing counsel to their patients. Therefore, B.S. Pharmacy graduates lack the knowledge and training for clinical pharmacy practice.



This study has provided for the perceptions of the BS Pharmacy graduates on the competency areas of a clinical pharmacy curriculum posited an undecided level of competence, which posit the need for a more comprehensive training programs, demonstrations, exposures and facilities. The Strengths and Weaknesses analyses of B.S. Pharmacy Program and Facilities based on the following competency areas were likewise achieved.

Based on the findings of the study, strengths were found most high in the areas like the faculty, instruction, library, laboratory, research, community extension as depicted in table .

On the area of Faculty, the UIC College of Pharmacy Faculty are academically qualified to teach, has extensive educational and professional experiences, has provisions and policies for selection of faculty and are experts in their taught subjects. However, it marked unfavorably in its continuing developmental activities and proper consultation of salaries and fringe benefits.

On the area of Instruction, all items scored favorably, these being that the UIC College of Pharmacy has a complete program of studies, has a complete instructional procedures, has provisions and policies for classroom management, has guidelines for internship program, has review programs for academic performance of students, has co-curricular activities to support classroom instruction and lastly the pharmacy program provides for students' academic counseling.

On the area of Library, the UIC College of Pharmacy has adequate collection of books in physical sciences like math and chemistry and biological sciences like biology, zoology and botany. However, there is a need to add collection of books in pharmaceutical /professional sciences and a need to update collection of journals in pharmacy. On the area of Laboratory, the UIC College of Pharmacy provides adequate rooms for laboratory work and provides for maintenance and improvement of laboratory. However, there is a need to update its equipment and laboratory supplies for laboratory subjects. Also, it lacks a clinical pharmacy room for the problem based learning and practical role-playing activities for B.S. Clinical pharmacy students. On the area of Research, the Faculty and Students of the UIC College of Pharmacy advocates a research culture, conducts researches and undertakes researches and have collections of students' researches. However, the UIC College of Pharmacy lacks an official journal for students and faculty researches. Lastly on the area of community extension and services, all items scored favorably, these being that the faculty and students of the UIC College of Pharmacy advocates the culture of community service and undertakes community extension and services.

There are necessary recommendations needed to improve the current B.S. Pharmacy curriculum, program and facilities in order for UIC to provide competent B.S. Clinical Pharmacy graduates.

Recommendations

The researcher would like to recommend the following:

1. Especially needed is patient- centered communication in which the patient plays a key role in the over-all management of the therapy plan. Definition of commonly used scientific terms should also be undertaken. Therefore, the pharmacy curriculum on area of speech communication should be intensified. Supplemental English 4- Intensified Speech Communication should be included in the curriculum in the senior year of pharmacy students; (See Appendix F)
2. In order to intensify clinical pharmacy skills, the subjects PhBioSci 5, PhBioSci 6 and PhBioSci should be incorporated into the curriculum;
3. To effectively contribute to diagnosis, management, therapeutics, and prevention of diseases, supplemental subjects such as Clin Pharm 1, Clin Pharm 2, Clin Pharm 3, Clin Pharm 4, Clin Pharm 5, Clin Pharm 6 and Clin Pharm , all comprising lecture and related learning units as reflected in Appendix F be incorporated in the current B.S. Clinical Pharmacy Curriculum;
4. That an additional unit for Pharm Jurisprudence and Health Ethics be incorporated in the B.S. Clinical Pharmacy curriculum;
5. That in the area of Faculty, the school must send representatives to continuing developmental activities, such as conventions, symposiums, seminars and workshops, especially in clinical pharmacy;
6. Also, there is a need to look into the salary scheme and fringe benefits of the faculty;
7. That in the area of Library, collections of books be updated in Pharmaceutical and Physical Sciences especially in clinical pharmacy as well as the collection of journals in clinical pharmacy;
8. That in the area of Laboratory, there is a need to complete the necessary equipment and supplies for laboratory subjects and experimentations;
9. Furthermore, there is a need to add a clinical pharmacy laboratory, where students can role-play actual clinical pharmacy practice;
10. That in the area of Research, there is a need to publish and provide official record of journal of researches, for immediate reference and documentation;
11. That a more intensified and comprehensive B. S. Clinical pharmacy curriculum be adopted to arrest the problem of uncertainty with regard to acquisition of skills, thereby recommending the proposed clinical pharmacy curriculum incorporating the necessary supplemental subjects and revisions to arrest the need for producing globally competitive pharmacists.



12. Lastly, that an evaluation be also made on the graduates of the B.S. Clinical Pharmacy program, to find out whether the graduates have acquired the suggested competencies of a Clinical Pharmacist by American Association of Colleges of Pharmacy (AACCP) Center for the Advancement of Pharmaceutical Education (CAPE) Guidelines.

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AUTHORS' CONTRIBUTIONS

Authors contributed equally to all aspects of the study.

PEER REVIEW

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests