

A Comparative Study of Pharmacy Practices between the United States and Ecuador

by

Stellar Yi

A THESIS

Submitted to

Oregon State University

In partial fulfillment of the requirements for the
Degree of

Bachelor of Arts in International Studies in General Science

Presented on May 7, 2010
Commencement June 2010

AN ABSTRACT OF THE THESIS OF

Stellar Yi for the degree of Bachelor of Arts in International Studies in General Science presented on May 7, 2010. Title: A Comparative Study of Pharmacy Practices between the United States and Ecuador.

Abstract approved: _____
Ann Zweber B.S., Rph.

The pharmacy practices in Ecuador and the United States are different on three different levels: culturally, educationally and governmentally. Research was conducted to compare and contrast the differences of community pharmacy practices between the United States and Ecuador. Eight different pharmacists in Quito were interviewed with a series of questions. For a period of nine weeks, observations were collected during an internship at Fybeca pharmacy in Quito, Ecuador. The results are presented in a table with the number of responses, the responses of pharmacists and any additional comments. Responses varied at different pharmacies, which created inconsistent results. Differences in pharmacy practices include how pharmacists were perceived culturally in both Ecuador and the United States, educational requirements, and the use of generic drugs. Although there are similarities between practices, there are significant differences between community pharmacy practices between the United States and Ecuador.

© by Stellar Yi
(May 28, 2010)
All Rights Reserved

Bachelor of Arts in International Studies in General Science
Thesis of Stellar Yi
Presented on May 7, 2010

Approved:

Thesis Advisor (College of Pharmacy)

Head or Chair (College of Science)

Director, International Degree Program

I understand that my thesis will become part of the collection of Oregon State University. My signature below authorizes release of my thesis to any reader upon request. I also affirm that the work represented in this thesis is my own work.

Stellar Yi, Author

ACKNOWLEDGEMENTS

I acknowledge all those who have helped make this research possible, my thesis advisor, Ann Zweber, advisors in the International Degree office and the College of Science at Oregon State University, Dra. Maria Del Carmen and Dra. Sacoto De Rivera from the Ministry of Health of Ecuador, Dra. Henry Medrano González at C.A.A. Cotocollao of Ecuador and all scholarships provided by the Ray A. Verzasconi, Mary Alice Wartman Memorial Fund and the Nicodemus Scholarship. Thank you.

TABLE OF CONTENTS

Section	Page
Abstract	1
Signature Page	3
Acknowledgements	4
List of Figures and Tables	6
1.0 Background/Literature Survey.....	8
1.1 Demographics	8
1.2 Health Care Systems	8
1.3 Perspectives on Generic Drugs	9
1.4 Government Regulation	9
1.5 Education of Pharmacists	11
1.6 Licensing	11
1.7 Culture	12
2.0 Methods.....	14
3.0 Results.....	16
4.0 Analysis.....	21
4.1 Cultural Component	21
4.2 Education and Licensing	24
4.3 Government and Generic Drugs	28
5.0 Bibliography.....	30
6.0 Appendices.....	33
6.1 Interview Questions (English Version)	33
6.2 Interview Questions (Spanish Version)	35
6.3 Informed Consent Document (English Version)	37
6.4 Informed Consent Document (Spanish Version)	39

LIST OF FIGURES AND TABLES

<u>Figure Number</u>	<u>Title</u>	<u>Page</u>
1	A Prescription Drug in Ecuador	27
2	A Prescription Drug in the United States	27

<u>Table Number</u>	<u>Title</u>	<u>Page</u>
1	Cultural Questions	16
1a	Cultural Questions Continued	17
2	Subset of Cultural differences, education and Licensing	18
3	Perspective on Generic Drugs and Government Regulation	19
3a	Perspective on Generic Drugs and Government Regulation Continued	20

LIST OF APPENDICES

<u>Table</u>	<u>Title</u>	<u>Page</u>
Appendix A	Survey (English Version)	33
Appendix B	Survey (Spanish Version)	35
Appendix C	Informed Consent Document (English Version)	37
Appendix D	Informed Consent Document (Spanish Version)	39

1.0 BACKGROUND/LITERATURE SURVEY:

The United States and Ecuador have similarities, but also have contributing differences. Demographically, the countries have many similar characteristics. Ecuador has a population of 14,573,101 with a life expectancy of 75 years, as the United States has 307,212,123 people with a life expectancy of 78 years. Additionally, 99% of the population in the United States over the age 15 knows how to read and write while 91% of Ecuadorians over the age 15 knows how to read and write.¹

Age and health differences between these two countries affect political and economic perspectives. Ecuador's median age is 25 years and the median age in the United States is 38 years. People in the 20s tend to work more and/or are still in school. However when people start to get older, past 40 or 50 years old, people tend to prepare for retirement. In addition, 0.6% of the people in the United States are HIV positive and 0.3% of the people in Ecuador are HIV positive, but the risk of major infectious diseases, such as bacterial diarrhea, hepatitis A and typhoid are high in Ecuador. In contrast, people living in the United States have a much lower risk of major infectious diseases, but a variety of major infectious diseases exist in both countries.¹

The United States and Ecuador consist of health care systems that follow the capitalistic models.² There are many Ecuadorian citizens who do not prioritize insurance because many drugs are very low in cost and are not difficult to afford.³ However, there are instances where some Ecuadorians cannot afford certain drugs such as Xanax, a medication for patients diagnosed with anxiety disorders, panic disorders or anxiety caused by depression.⁴ Thus, pharmacists recommend generic drugs when patients are not able to afford certain medications.

According to the Center on Budget and Priority Policies, the amount of uninsured people in Ecuador is unknown. Since 2008, 15.7 million citizens of United States are uninsured and the rates of uninsured people are still growing. Unlike in Ecuador, the prices of drugs in the United States are costly, thus without insurance many people in the United States suffer from the lack of certain medications. Even with generic drugs, there are still many U.S. citizens that need financial assistance to purchase prescribed medications.⁵

Generic drugs can provide alternatives to some patients when financial assistance is needed. Generic drugs in the United States are used much more widely and with fewer stigmas than generic drugs in Ecuador. This is due to the fact that all generic drugs are composed and approved to have the same “identity, strength, quality, purity and potency” than the brand named drug.⁶ However, according to reports, many compositions of generic drugs and their standards of strength, quality, purity and potency have been stated to be less or greater than the brand name in Ecuador.⁷ Therefore, many patients and pharmacists in Ecuador hesitate to use generic drugs, or substitute them for a lower cost.⁸ Due to the reputation of generic drugs, pharmacists and other health providers in Ecuador do not recommend using them unless a patient requests them.⁷ The law states that pharmacists should always ask the patients if they would prefer generic drugs, however, many patients and pharmacists do not abide to this in Ecuador.⁸

Ecuador’s drug approvals are processed through the Department of Public Health, but are specifically regulated through the Government of Ecuador’s Sanitary Registration (GESR) and the Ministry of Public Health.³ Likewise, the United States have a similar governmental organization called the Food and Drug Administration (FDA). GESR is structurally focused on many aspects of the well-being of Ecuadorians such as sanitation in the cities, water and the environment, while the FDA focuses efforts towards “emergency preparedness, drug approvals,

drug safety, drug availability, development of drugs and guidance for the pharmacy industry, guidance and compliance.”^{8,9} Additionally, GESR is regulated under the Ministry of Public Health, which is “responsible for regulating, supervising and controlling the sector and has a local office in every province, and, within each one, they have specific sections that provide service in terms of geography and population and which largely coincide with the political and administrative divisions of the canton or municipality.”¹

These different goals and regulatory guidelines determine the varying ways drugs are distributed into the countries. Ecuador’s “One Pharmacist per Pharmacy Law” limits the amount of pharmacists available to patients, dissimilar to the Federal Pharmacy Practice Act where it constricts and limits pharmacists to form breaches of confidentiality to misbranded drugs or devices, but does not limit one pharmacist per pharmacy in the United States.^{10,11} Another difference between the two countries is that the United States have boards of pharmacy and Ecuador does not have provincial boards.^{12,13} State Boards of Pharmacy address issues, laws, certain drugs and certification requirements per state, but in Ecuador, there are no provincial laws or pharmacy boards to pertain to each individual province.¹¹

Educational requirements for becoming a pharmacist vary between Ecuador and the United States. To work in a clinical setting in Ecuador, which is “an area of pharmacy concerned with the science and practice of rational medication use,” one must be a certified pharmacist through a traditional Doctor of Pharmacy program.^{2, 10} This degree is given to people who have received the title of free science in pharmacy and wants to further their studies and careers. This often takes the form of completing a pharmacy program to receive a degree to become a pharmacist. The degree typically takes four years university level training and work in the field of pharmaceuticals. Depending on how long a person can invest in their education, one may

choose to apply for a nontraditional Doctor of Pharmacy program, which is a processed online course. In addition, there are no standards that a pharmacy school has to meet, therefore making it difficult to establish a minimal standard of educated pharmacists in Ecuador.⁷

Thus, to be a pharmacist in Ecuador, one does not have to take a test, but must finish a thesis to certify with the *Licenciatura en Ciencias en Farmacia* or a License in the Science of Pharmacy. In comparison, the United States has standards for accreditation through the Accredited Council of Pharmacy Education (ACPE).¹¹ Additionally, like Ecuador, for a student to be accepted into a traditional Doctor of Pharmacy program, a student must have pre-requisites done with their undergraduate education in order to apply for the program.⁵ A commitment of three to four years is required in pharmacy school to be certified with a Doctor of Pharmacy in the United States.

According to Skledar, “pharmacy student internships are completed outside the doctor of pharmacy curriculum, which gives students the opportunity to gain experience in the community or hospital settings, as well as in specialized environments such as care, home health, or compounding pharmacies.”¹⁴ These internships are provided in the United States, thus “some students may work as trainee pharmacists during their internship; however some function as a pharmacy technician, with their experience heavily weighted toward preparing and dispensing medications.”¹⁵ As students in the United States are learning through experience, many Ecuadorian pharmacy students are currently learning how to be a pharmacist without conducting any rotations or having any field experience.⁸

The dispensing of medications was how pharmacies functioned in the 1970s to 1980s in the United States and Ecuador. Adding hospital based clinical internships has been said to

improve pharmacies by providing “operational and clinical training throughout pharmacy school, a hiring and beneficial infrastructure focused on student retention after graduation and to build relationships with the interns to foster their interest in seeking employment.” Therefore the United States and Ecuador are always striving for improvement.¹⁶ The United States is trying to improve the educational goals for future pharmacists, while Ecuador is determined to implement patient care into their clinical settings and change their dependence on the dispensing model that pharmacies used in the 1970s and 1980s.

Improvements in both countries have resulted in positive changes, although the final step to certify a pharmacist differs between the United States and Ecuador. The United States has an exam a pharmacy student must take that was created by the National Association of Boards of Pharmacy (NABP) called the North American Pharmacist Licensure Examination (NAPLEX) to test a student’s ability and knowledge of pharmacy issues as well as general pharmacy related medical issues.¹⁷ When an individual graduates from an accredited pharmacy program, one is eligible to take the NAPLEX exam. Each individual state of the United States has exams to certify future pharmacists, but Ecuador can license pharmacists without an exam as long as they fulfill their responsibilities for a thesis.⁸ After graduating from an accredited pharmacy program, one is temporarily hired from province to province in Ecuador as a *farmacéutico de la provincia*, a province pharmacist where one can work and gain more experience.⁸

The different cultures that exist in both the United States and Ecuador influence the practice of pharmacy today. During the 1960s, the United States had a specific area of pharmacy, which was referred to as a “the center of drugs.” However, Ecuadorian pharmacies are known as the “the center of drugs” today. During the 1970s and 1980s, the United States, had a “growing number of drug information centers in operation owing to a variety of factors including the

acceptance of the clinical pharmacist's role in patient care.”^{18, 19} Patient care may not implemented in Ecuadorian pharmacies due to cultural influences.¹⁰ Thus, pharmacies are not perceived equally as drug informational centers in both countries.

Religious practices may influence pharmacy practice. Since 95% of Ecuadorians are Catholic, birth control and emergency contraceptives are not generally discussed by anyone except a doctor, minimizing the role of the pharmacist.⁸ The United States has much more religious diversity; 51.3% are Protestant, 23.9% are Roman Catholic, 1.7% are Mormon, 1.6% are Christian, 1.7% are Jewish, 0.7% are Buddhist, 0.6% are Muslim, and 12.1% are unaffiliated. Therefore, the United States is more acceptable to include contraception in the realm of pharmacy. The rates of sexually transmitted diseases (STD) are higher in Ecuador in comparison to the population in the United States, which may be influenced by the high percentage of Catholics as well as other cultural aspects.¹

Ethnic groups can influence how both countries regulate pharmacy practice. Due to Ecuador's history of colonization, 65% are mestizo (mixed Amerindian and white), 25% are Amerindian, 7% are Spanish and others and 3% are blacks. The United States, 79.96% are white, 12.85% are black, 4.43% are Asian, 0.97% are Amerindian and Alaska native, 0.18% are native Hawaiian and other Pacific islander.¹ With much diversity in ethnic groups, the way pharmacy practice is perceived and the way pharmacists are assumed vary among ethnic groups.

The type of government can influence health care systems and governmental regulations about certain medications and drugs. The United States governs the people through a democracy, where the government is directed by the people or has representatives that represent the majority. However, Ecuador is governed through a republic democracy, “a representative democracy in

which the people elected deputies (representatives), not the people themselves, vote on legislation.” If one had to complain about a certain drug in a government like the United States, freedom of speech is unrestricted, and the possibility for opinions to be heard exists. In contrast, freedom of speech can be restricted in a republic democracy, so if a patient had a comment about misconduct of a pharmacist, and the government was offended, then they could constrain the patient if they thought it was necessary.¹

A comparison of pharmacy practices between Ecuador and the United States must take into account the demographics, health care systems, government regulations, perspective on generic drugs, education of pharmacists, licensing and the different cultures of both the United States and Ecuador.

2.0 METHODS:

Pharmacies were recruited based on their proximity to a residence in Quito, Ecuador. A list of locations and the hours of operation were created. The researcher entered a pharmacy during normal business hours and observed how busy the pharmacy staff appeared. If the pharmacy did not appear to be busy (lines are formed, people crowding and no pharmacists are available to talk), the researcher introduced herself as a student studying abroad and was researching pharmacy practice. If there was no pharmacist to be seen, the researcher went to the service desk to retrieve the pharmacist’s office hours. The pharmacist was identified by the staff at the customer service desk. The researcher then asked if the pharmacist had time to speak with her. If the answer was yes, she provided a consent form that outlined the purpose of the study and the rights of the participants. Pharmacists younger than 18 or over 65 years of age were excluded from the study.

When consent was obtained, the researcher conducted the interview in an area of the pharmacy that had less traffic (no lines, no crowding, and private enough that people cannot over hear the interview) and was most comfortable for the pharmacist. Once the pharmacist understood the purpose of the study, the researcher conducted an interview using the interview questions. Responses were documented in writing. When the interview was complete the researcher asked the pharmacist if she had any questions about the process, and reminded her to contact the researcher if there were any concerns. Notes about the layout and atmosphere of the pharmacy were made along with notes on non-prescription medication available at the pharmacy. The interview questions and consent documents can be seen in 6.0 Appendix.

3.0 RESULTS:

Table 1: Cultural Questions

Questions	Number of responses	Response	Comment
Who provides the products? Are they wholesale or independent companies?	3	Wholesale companies	5 of the interviewees were pharmacists at a family owned pharmacy called Fybeca
	5	Independent labs	3 of the interviewees were of independent, corporate or other family owned pharmacies
How often do you contact prescribers?	2	Not often	
	2	Every month	
	3	When needed or when there is a question about the prescription	
Are you collaborative, independent or how would you describe your relationship with your collaborators?	4	Collaborative	
	4	Independent	
What other health workers do you work with?	3	Assistants	Pharmacy technicians have much more liberty to provide medications to the patient and can fill certain prescribed medications (anything that does not have a relationship with the head or brain is ok to fill without a pharmacist)
	4	Alone	There is usually only one pharmacist per pharmacy, without set hours or without a set schedule. They come in whenever they feel like they should.
	1	Bosses, orthodontists, social workers doctors and nurses	Many clients confuse the boss with the pharmacist when they come into a pharmacy
Do you sell any drugs that are specifically natural medicine?	7	Yes	The natural medication has gone through factory machinery and been analyzed before it is put on the counter
	1	No	

Table 1a: Cultural Questions Continued

Questions	Number of responses	Response	Comment
How important is it that patients are provided private areas?	8	It is not a priority	There are no areas of privacy, no space where patients may talk privately
Why is the pharmacy set up this way? Is there a specific set up?	4	It is set up to sell drugs	There are no windows like in the U.S.
	4	It is set up for convenience	Set up like a convenient store
Do you have pharmacy technician or assistant? Do you do everything on your own?	6	There are pharmacy assistants, but I do everything on my own	There are two types of Pharmacy technicians: one educated for medication and another educated for cosmetics, but both need to complete a 6 month program to be certified
	2	There are pharmacy assistant and I do work with them	
How many patients do you see a day (approximately)?	3	About 250 patients every day	This is at a family owned pharmacy, such as Fybeca
	5	200 patients every day	This is at non family owned pharmacies, such as Fybeca
How does a typical day go for a pharmacist?	4	They receive prescriptions that day to fill, do some inventory and dispatch the medications	They do not give any advice to the clients and even if they do they are not recognized because they are not the prescribers and are only pharmacists
	4	They receive 3-5 prescriptions that they had to fill that day, do some inventory and dispatch the medications	There were many over the counter drugs that are prescribed in the United States, such as Penicillin and Vicodin

Table 2: Subset of cultural differences, education and licensing

Questions	Number of responses	Response	Comment
What is the educational requirement to become a pharmacist?	8	6 years in a university and a thesis at the end of two years	Some interviewees commented that the educational system is changing and that there is a focus on the need for longer schooling in pharmacy
How do they maintain knowledge about drugs and how are you informed about new drugs?	5	A doctor comes to visit to talk to them or they use the internet	In some pharmacies, some expired drugs were mixed in with non expired drugs
	5	Internet	Some depend on unreliable internet sources of .com
Once you become a pharmacist, is your certification valid throughout everywhere in Ecuador?	8	Yes	Even if a pharmacist is valid to work in retail, some work in the lab, and pharmacists that work in labs work in retail. Some pharmacists do not know where they should work, and often go to retail just because they can, even though they are not certified as a retail pharmacists

Table 3: Perspective on Generic Drugs and Government Regulation

Questions	Number of responses	Response	Comment
What is required to be on the label? Who requires this?	8	The name of the medication, name of the company of the drug, dose, composition, GESR stamp, name of pharmacy, number of the place made, date it was made and date of expiration	The medication is not in a vial of any kind, they are sold in tablets and the form they are ordered in from the companies
	8	The government (Ministry of Public Health) requires it	
Do you as a pharmacist; have the freedom to substitute certain drugs with generics?	3	No	The use of generic drugs are looked down upon and not many people use them unless they are desperate
	3	Some times	
	2	Yes	Of these two, one responded with a don't know
If no, then is it due to not having enough choice?	3	No	
How do you, as a pharmacist/doctor feel about generic drugs?	6	It was beneficial for those who didn't want to pay as much, but they are horrible quality	These pharmacists believe that their patients prefer to take a doctors consultation on medication than a pharmacist's consultation on medication
	2	It was beneficial for those who didn't want to pay as much	These pharmacists believe that generic drugs should only be used under financial stresses, or else they should use the brand name

Table 3a: Perspective on Generic Drugs and Government Regulation Continued

Questions	Number of responses	Response	Comment
Are they most available to patients?	8	Yes, but only if they ask or want it	Pharmacists usually do not give them the option to have generic drugs
How often do patients prefer generic drugs?	7	Rarely, they want what the doctor prescribes them, which is usually brand name	
	1	often	
What are governmental regulation concerning generic drugs?	4	They go by the Law of Generic Drugs of Ecuador	These pharmacists say although they do abide to the law, they still bend the rules a bit here and there
	4	Did not know	
What level of oversight is there on the practice of pharmacy?	8	There is no oversight on medications	Patients are allowed to purchase whatever dosage level of penicillin with a shot without a need for prescriptions
Are all drugs approved through the GESR?	8	Yes	
Who controls the pricing of drugs?	8	Government (Ministry of Public Health)	
If patients are not able to afford drugs, are there any programs that will help them?	2	Yes, but they are government related	Usually the programs that are offered (governmental or nongovernmental excluding the social security program) are composed of short term goals and are not used for long term goals. Also the drugs are usually really cheap and people are able to buy them but there are still some patients who cannot afford certain drugs.
	3	Yes, but they are non-governmentally related	
	1	No	
	2	Only the Social Security Program	

4.0 ANALYSIS AND CONCLUSIONS:

A comparison between the United States and Ecuador was conducted in three different aspects of pharmacy practice: cultural influences of practice, the educational requirement that pharmacists need for certification and the regulations the government implemented on the practice. For the purpose of this study, primary research was conducted through eight interviews of pharmacists in Ecuador. Due to the variety of pharmacists that were interviewed, responses varied. Regardless of some outliers, the majority of the responses were parallel.

Both Ecuador and the United States practice in pharmacy share similar qualities, but also have contrasting qualities as well. There is a significant gap of governmental regulation and cultural habits that both countries implement into their practice, but the role of a pharmacist and the structure of a pharmacy are examples of some similarities they share. Ecuador differs in practice because they only regulate with one pharmacist per pharmacy, whereas in the United States, pharmacies are not limited to one pharmacist per pharmacy.

Although cultural influences in both the United States and Ecuador are significantly different, their practices in pharmacy are very similar. As shown in Table 1: Cultural Questions, five out of the eight pharmacist response show that independent labs provide drugs and medications in Ecuador. However, each pharmacy regulates differently according to the different contracts they have with labs, depending on whether they work with wholesale companies or independent labs.¹³ Majority of the pharmacies in Ecuador, such as Fybeca are family owned pharmacies and therefore have contracts with independent labs. A family owned pharmacy is a chain pharmacy that is owned by a family, or has been created and maintained by one family and a corporate owned pharmacy is a pharmacy chain that is owned by a corporation.¹⁰ Generally, a

family owned pharmacy in Ecuador usually sees 250 patients a day while an independent pharmacy sees about 200 patients per day.

The United States and Ecuador share the same pharmacy structure and have similar responsibilities. For example, the pharmacies in both countries are structured to sell drugs for convenience. The pharmacies were built to run parallel to a typical day. A typical day would entitle a pharmacist filling prescription orders while collaborating with other assistants, such as pharmacy technicians, and they would only contact prescribers when needed or when there is a question about a certain prescription. According to Table 1, half of the pharmacists in Ecuador replied by saying that they do work with others, while half said that they would work alone. Thus, a typical day for a pharmacist in Ecuador would be filling prescriptions, working with assistants, or independently.

Pharmacists are held responsible to know their medical sources in both countries. Pharmacists use appropriate and dependable internet sources to keep themselves updated on certain medications that are new, or whenever a physician prescribes a new drug. Another way pharmacists are informed about new drugs is through magazines that markets and describes current events pertaining to the field of pharmacy and/or the health field in general. Typically in both countries, they rely upon different pharmacy associations and journals, such as the American Journal of Health-System Pharmacy in the United States, to continually update their knowledge about the progresses of science in the field of pharmacy.

Patient privacy and cultural perceptions are different between the United States and Ecuador. Patient privacy in the United States is bound by the Health Insurance Portability and Accountability Act of 1996 (HIPAA), which protects the privacy of an individual's identifiable

health information and protects the right of confidentiality.²⁰ HIPAA requires that a patient's health information is not allowed to be freely shown to anyone and is confidential. For example, a pharmacist is not allowed to announce a patient's name with their prescribed drug on the intercom in a drug store to inform the patient that their drug is ready for pick up.

In certain pharmacies, there are "consulting" windows, which the pharmacist and the patient can discuss the prescribed drug for the patient. Unlike in the United States, patient privacy and confidentiality is not emphasized in Ecuador, thus they do not have laws of patient confidentiality. Instead, cultural perceptions are integrated on a greater scale in Ecuador's pharmacy practice. Ecuador is a collective society, which makes private areas in patient care less prioritized because individuality is not a primary aspect for collective societies. Collective societies "are more family oriented than individual societies."²¹ The decision to use a certain drug, like birth control pills, might be decided by the family and their decision represents a particular family in a collective society like Ecuador. However, in independent societies like the United States, a woman would not necessarily include her whole family to choose whether or not to use birth control pills.

The educational requirement that is necessary for pharmacists in both the United States and Ecuador are similar. Each country requires a university level education for approximately 6-8 years, even though their structure in education have their differences. An individual in the United States would have to apply for an undergraduate university education to meet pre-requisites, where one can pick a major, or focus their education on a field that they wish to study. Regardless of whether or not their choice of study relates to the field of pharmacy, one would have to take the pre-requisites to apply for an accredited pharmacy program. An individual in Ecuador would simply apply for a pharmacy program from the start of their university education

and that would be one's concentration until they graduate and become a pharmacist. There is no little step in between, where a student must apply into an accredited pharmacy program like in the United States.

After 6-8 years of pharmacy school, both countries have a final requirement that gives an individual licensing to practice as a pharmacist. A student in Ecuador must present a thesis about any aspect of pharmacy one would like to research. However, an exam in the United States called the North American Pharmacist Licensure Examination (NAPLEX) exists, where "state boards of pharmacy use this exam as their assessment of competence to practice pharmacy."¹⁷ The exam is a computer-adaptive test that provides a measurement of knowledge and ability to be a pharmacist. Once one is certified, pharmacists have sources to continually update themselves throughout their years of practice in pharmacy.

After becoming certified as a pharmacist in the United States, one has limiting rights to practice anywhere in the United States, unlike in Ecuador. Once an individual becomes a pharmacist in Ecuador, the certification is valid throughout all over Ecuador and one can practice anywhere. A pharmacist needs to take the Multistate Pharmacy Jurisprudence Exam (MPJE) in the United States, according to which state one desires to work. The exam is a state board exam through the National Association of Boards of Pharmacy that allows a pharmacist to be certified in a particular state.^{22, 23} After certification, pharmacists need to follow specific state requirements and take an annual Continuing Education Exam (CE) to ration their license.¹¹

There are certain governmental regulations that one is limited by to become licensed or to practice in the field of pharmacy. The Food and Drug Administration (FDA) in the United States approves the quality of drugs, but each state has their own board of pharmacy, which regulates

the practice of pharmacy in that state.⁷ Although there is a federal and state requirement on drugs in the United States, Ecuador regulates through the Government of Ecuador's Sanitary Registration (GESR) and the Ministry of Public Health of Ecuador, which is equivalent to a federal level of management if compared to the United States. GESR work with the Ministry of Public Health of Ecuador to ensure safe practice and approve or disapprove of drugs throughout Ecuador.¹⁰ If a pharmacist is licensed in Ecuador, the license can be used all throughout Ecuador unlike in the United States, because there are other regulations that limit the practice of pharmacy state by state.

Drugs approved in Ecuador do not follow the same approval guidelines as in the United States. After a drug is approved through the GESR in Ecuador, almost all drugs, except those used for head conditions (any condition that relates to the head and/or mental functions) are available without a prescription, such as sleeping pills or psychiatric drugs. Not anyone in the United States can walk into a pharmacy and buy a drug without a prescription, regardless of whether or not the drug has any relationship with any head conditions. Also, there is an oversight on drugs, but this depends on the type of drug that a consumer desires. For example, Ibuprofen is 200 mg over the counter, but any dosage above 200 mg requires a prescription. This is not the case in Ecuador since there are consumers that buy penicillin over the counter without a prescription, which is not allowed in the United States. Over the counter drugs in the United States are shown to be safe, if used correctly and are self treatable conditions. Since all over the counter drugs includes instructions for proper use, the manner in which the instructions were created should allow the consumer to easily self direct safe ingestion of a drug.

Once a consumer or patient buys medications, the packaging and dispensing of the drugs follow different regulations in the United States and Ecuador. The requirement on medications

includes the name of the drug, the generic name of the drug, the dosage, quick and easy directions for proper drug intake, proper storage of the drug and quantity. Drugs are dispensed in a separate container in the United States; as a result, the prescriber, where the drug was dispensed, number of refills and the name of the pharmacist are put onto a label to become a patient specific drug. Ecuador does not have a system like the United States where vials or separate containers are used to dispense medications; instead they are dispensed in the form in which they came from the manufacturer. The following figures demonstrate the difference between using a patient specific container (United States) verses dispensing medications in the manufactures packaging, without a container (Ecuador)^{24, 8}:

Figure 1. A Prescription Drug in Ecuador



Figure 2. Prescription Drug in the United States



Generic drugs are regulated differently in both the United States and Ecuador. Generic drugs are most available to patients, bound by law and can be affordable in both the United States and Ecuador. However, there is no freedom to substitute brand name drugs with generic drugs in Ecuador. Through the Law of Generic Drugs, the pharmacists in Ecuador are not allowed to freely substitute brand named drugs, unless the patient desires a generic version of the prescribed drug. Drug prices in the United States are regulated by the government and pharmaceutical industries and there are certain programs that can help or assist a patient when someone cannot afford medications.⁸ Programs for financial assistance are rare in Ecuador because drugs in general are very low priced and affordable. Pharmacists in Ecuador think that generic drugs do not hold the same quality as the brand name drug. According to some of the pharmacists that were interviewed, some responded by saying that generic drugs were looked down upon by society and by other health professionals. Pharmacists in the United States support the consumption of generic drugs over brand named drugs and also have the freedom to substitute for generic drugs without consulting the patient. Due to the fact that generic drugs are held to the same quality as the brand name in the United States, generic drugs are preferred because they give the same effect without the consequences of financial burdens.

The comparison of pharmacy practice between Ecuador and the United States was a qualitative study conducted by eight interviews. Although the interviews were not consistent with each other and there were varying answers, 5 out of the 8 pharmacists that were interviewed did not know how to respond to some of the questions. They referred to responses that were previously answered. Also, meanings behind a certain word or phrase could have been misinterpreted because Spanish is more expressive than English. Therefore, when pharmacists

were interviewed, they responded in Spanish, but once the responses were translated into English, there was possibility that the meaning and exact wording of the response was lost.

Both pharmacy practices in Ecuador and the United States are changing, either converging in practices or diverging in practices. Though out time, both the practices in the United States and Ecuador will reflect the health care system in general. Therefore, the practices will converge or diverge in terms of what is happening in society at that time. Whether or not there is a risk prevalence of certain diseases, or if there has been technological advancement in medicine, the occurrences in the health field and in society will be reflected upon in the practice of pharmacy. As a suggestion, one should continually think about the cultural implications on practice, how the educational institution has been changing to furthermore better pharmacists and the way that governmental regulations on pharmacy practice has been responding to progress in the field of pharmacy.

5.0 BIBLIOGRAPHY:

1. Central Intelligence Agency. Ecuador Facts and Statistics. *CIA Factbook*. 2009.
<https://www.cia.gov/library/publications/the-world-factbook/geos/ec.html>. Accessed May 2010.
2. Homedes, N., Ugalade, A. *Multisource drug policies in Latin America: survey of 10 countries*. Bulletin of the World Health Organization 2005, Vol. 83: 1-2.
3. Candib, Lucy. *Family Medicine in Ecuador: At Risk in a Developing Nation*. Families, Systems and Health 2004, Vol. 22: 277-289.
4. Drugs. Xanax: What is it. 2010. <http://www.drugs.com/xanax.html>. Accessed May 2010.
5. Artículos informativos México. Carrera de Farmacia Directorio. 2009.
<http://www.articulosinformativos.com.mx/>. Accessed May 2010.
6. Center on Budget and Policy Priorities. The number of uninsured Americans. *Health*. 2009. <http://www.cbpp.org/research/?fa=topic&id=32>. Accessed May 2010.
7. Food and Drug Administration. Prescription Drugs. *Prescription Drugs*. 2009.
<http://www.accessdata.fda.gov/scripts/cder/drugsatfda/>. Accessed May 2010.
8. Dra. Aizaga, Ketty, S. Bases farmacológicas de Estupefacientes y Psicotrópicos. Universidad de Ecuador de Farmacia, 2008. Microsoft Powerpoint File. Accessed May 2010.
9. United States Food and Drug Administration. Facts and Myths about Generic Drugs. 2009. <http://www.fda.gov/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/UnderstandingGenericDrugs/ucm167991.htm>. Accessed May 2010.
10. Dra. Pico Lama, Teófilo. *Consejo Nacional de Salud*. Quito, Ecuador: ARTEGRAF, 2004.
11. State of Oregon. Licensing info, forms, fees and procedures. *Board of Pharmacy*. 2009.

12. National Association of Boards of Pharmacy. Patient Safety. 2009.
http://www.oregon.gov/Pharmacy/Patient_Safety.shtml. Accessed May 2010.
13. Dra. Chang Campos, Caroline. *Cuadro Nacional de Medicamentos Básicos*. Quito, Ecuador: ARTEGRAF, 2007.
14. Skledar, Susan, J. Training and recruiting future pharmacists through a hospital base student internship program. *Practice Reports of American Society of Health System Pharmacists* 2009. Vol. 66: 1560-1564.
15. Stenson B, Syhakhang L, Eriksson B, Tomson G. Real world pharmacy: assessing the quality of private pharmacy practice. *National Institute of Health*. National Center of Biotechnology Information, 2009. <http://www.ncbi.nlm.nih.gov/pubmed/11330774>. Accessed May 2010.
16. Robertson, Dr. K. *Definition of Clinical Pharmacy*. American College of Clinical Pharmacy 2008, Vol 28: 816-817.
17. American Associations of College of Pharmacy. NAPLEX. 2009.
<http://www.aacp.org/resources/student/currentstudentpharmacists/Pages/naplex.aspx2010>. Accessed May 2010.
18. Abramowitz, Paul, W. *Evolution and metamorphosis of the pharmacy practice model*. Harvey A. K. Whitney Lecture of American Society of Healthy-System Pharmacists 2009, Vol. 66: 1437-1446.
19. Bernknopf, Allison C, et al. *Drug Information: From Education to Practice*. PRN Opinion Paper 2009, Vol. 3: 332-345.
20. U.S. Department of Health and Human Services. Health Insurance Portability and

Accountability Act of 1996 (HIPAA) Privacy and Security Rules. 2009.

<http://www.hhs.gov/ocr/privacy/>. Accessed May 2010.

21. Kerbo, Harold R. *World Poverty: Global Inequality and the Modern World System*. New York: McGraw Hill, 2006.

22. American Associations of College of Pharmacy. Exams. *MPJE*. 2009.

<http://www.aacp.org/resources/student/pharmacyforyou/admissions/Pages/default.aspx>.

Accessed May 2010.

23. American Associations of College of Pharmacy. General Information. 2009.

<http://www.aacp.org/resources/student/pharmacyforyou/admissions/Pages/PSAR.aspx>.

Accessed May 2010.

24. The Cat's Meow. Generic Bottle RX Pet Poison. Blogs.Caster.com, 2009.

<http://blogs.catster.com/the-cats-meow-a-cat-and-kitten-blog/top-10-pet-poisons/2010/01/15/>. Accessed May 2010.

6.0 APPENDIX:

6.1 Interview Questions (English)

Cultural questions:

1. Who provides you the products? Are they wholesale or independent companies?
2. How often do you contact prescribers?
 - a. Are you collaborative, independent or how would you describe your relationship with your collaborators?
3. What other health workers do you work with?
4. Do you sell any drugs that are specifically natural medicine?
5. How important is it that patients are provided private areas?
6. Why is the pharmacy set up this way? Is there a specific set up?
 - a. How many patients do you see a day (approximately)?
7. Do you have a pharmacy technician or assistant? Do you do everything on your own?
8. How does a typical day go for a pharmacist?

Subset of cultural differences: Education/Licensing

9. What is the educational requirement to become a pharmacist?
10. How do they maintain knowledge about drugs/how are you informed about new drugs?
11. Once you become a pharmacist, is your certification valid throughout all of Ecuador?

Perspective on generics/governmental regulations:

12. What is required to be on the label? Who requires this?

13. Do you as a pharmacist have the freedom to substitute certain drugs with generics?
 - a. If no, then is it due to not having enough drugs?
14. How do you as a pharmacist feel about generic drugs?
 - a. Are they most available to patients?
 - b. How often do patients prefer generic drugs?
15. What are governmental regulation concerning generic drugs?
16. What level of oversight is there on medications?
17. Are all drugs approved through the GESR?
18. Who controls the pricing of drugs?
19. If patients aren't able to afford drugs, are there any programs that will help them?

6.2 Interview Questions (Spanish)

Cultural:

1. ¿Quién te da los productos? Son de compañías independientes o que venden en mayoreo?
2. ¿Cada cuando les hablas a los que recetan?
 - a. ¿Eres cooperativo, independiente, o como describes tu relación con tus cooperadores?
3. ¿Con quién otros trabajadores de salud trabajas?
4. ¿Vendes drogas que son específicamente medicinas naturales?
5. ¿Qué tan importante es que los pacientes tengan áreas privadas?
6. ¿Porque la farmacia esta puesta de esta manera? Es una manera específica?
7. ¿Tienes un asistente de farmacia o haces todo tu solo?
 - a. ¿Cuántos pacientes ves a día aproximadamente?
8. ¿Cómo es un día típico para el farmacéutico?

Diferente de cultural: Educación y certificación

9. ¿Qué son los requerimientos educacionales para ser un farmacéutico?
10. ¿Cómo se mantienen informados sobre las drogas/medicinas y como son informado sobre drogas nuevas?
11. ¿Cuándo llegan a ser farmacéutico el certificado es válido por todo Ecuador?

Regulación de gubernamental y otros drogas genéricas:

12. ¿Que se requiere ponerle en la etiqueta? Quien lo requiere?
13. ¿Tu como, tienes la libertad de substituir ciertas drogas con drogas genéricas?
 - a. ¿Si no, es porque to hay suficientes selecciones/alternativas?
14. ¿Tu, como farmacéutico, que piensas sobre las drogas genéricas?

- a. ¿Están disponibles para los pacientes?
 - b. ¿Cada cuando prefieren drogas genéricas los pacientes?
15. ¿Cuáles son las regulaciones del gobierno sobre las drogas genéricas?
16. ¿Qué nivel de cuidado hay sobre las medicaciones?
17. ¿Todas las drogas son aprobadas por el GESR?
18. ¿Quién controla los precios de las drogas?
19. ¿Si los pacientes no pueden comprar las drogas/medicinas, hay programas que les pueden ayudar?

6.3 Informed Consent (English)



COLLEGE OF PHARMACY

Oregon State University, 203 Pharmacy building, Corvallis, Oregon 97331

Tel 541-737-3424 | Fax 541-737- 3999 | Pharmacy@oregonstate.edu

INFORMED CONSENT DOCUMENT

Project Title: **A Comparative Study of Pharmacy Practices between Ecuador and the United States**

Principal Investigator: **Ann Zweber, College of Pharmacy**

Investigator(s): **Stellar Yi**

WHAT IS THE PURPOSE OF THIS STUDY?

The pharmacist in the community pharmacy setting interacts with patients on a daily basis. Cultural diversity is increasing around the world. A better understanding of cultural differences in perceptions and expectations of the pharmacist will help pharmacists to better serve their community. As a student pharmacist, community pharmacist, and professor, we are asking for your help in determining the perceptions that a patient has of their pharmacist in Ecuador based on past interactions.

WHAT IS THE PURPOSE OF THIS FORM?

This consent form gives you the information you will need to help you decide whether to be in the study or not. Please read the form carefully. You may ask any questions about the research, the possible risks and benefits, your rights as a volunteer, and anything else that is not clear. When all of your questions have been answered, you can decide if you want to be in this study or not.

WHY AM I BEING INVITED TO TAKE PART IN THIS STUDY?

You are being invited to take part in this study because the researcher is focusing on her thesis about pharmacy practices in Ecuador in completion of her International Degree.

WHAT WILL HAPPEN DURING THIS STUDY AND HOW LONG WILL IT TAKE?

The researcher will ask you a series of questions regarding pharmacy practices in Ecuador. If you agree to take part in this study, your involvement will last for minutes to answer a series of questions for one day.

WHAT ARE THE RISKS OF THIS STUDY?

There are no foreseeable risks to participating.

WHAT ARE THE BENEFITS OF THIS STUDY?

You will not benefit from this study.

WILL I BE PAID FOR PARTICIPATING?

You will not be paid for being in this research study.

WHO WILL SEE THE INFORMATION I GIVE?

The information you provide during this research study will be kept confidential to the extent permitted by law. To help protect your confidentiality, we will keep it in a storage such as a drawer and it will be locked. If the results of this project are published your identity will not be made public.

DO I HAVE A CHOICE TO BE IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering.

You will not be treated differently if you decide to stop taking part in the study. There will be no if you choose to withdraw from this project before it ends, the researchers may keep information collected about you and this information may be included in study reports.

WHAT IF I HAVE QUESTIONS?

If you have any questions about this research project, please contact: Stellar Yi, at 011-503-453-9184 or by email at stellaryi@gmail.com. Ann Zweber, the principal investigator, can be reached at 011-541-737-5798 or by email at ann.zweber@oregonstate.edu

If you have questions about your rights as a participant, please contact the Oregon State University Institutional Review Board (IRB) Human Protections Administrator, at (541) 737-4933 or by email at IRB@oregonstate.edu.

Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a copy of this form.

Participant's Name (printed):

(Signature of Participant)

(Date)

6.4 Informed Consent (Spanish)



COLLEGE OF PHARMACY

Oregon State University, 203 Pharmacy building, Corvallis, Oregon 97331

Tel 541-737-3424 | Fax 541-737- 3999 | Pharmacy@oregonstate.edu

DOCUMENTO INFORMADO DE CONSENTIMIENTO

Título: Un Estudio Relativo de Prácticas de Farmacia entre Ecuador y Estados Unidos

Inspectora principal: Ann Zweber, El departamento de Farmacia

Investigador (s): Stellar Yi

¿CUÁL ES EL OBJETIVO DE ESTE ESTUDIO?

El farmacéutico en la farmacia comunitaria establecimiento interactúa con los pacientes sobre una base diaria. La diversidad cultural es cada vez mayor en todo el mundo. Una mejor comprensión de las diferencias culturales en las percepciones y expectativas de que el farmacéutico le ayudará a los farmacéuticos para servir mejor a su comunidad. Como estudiante de un farmacéutico, farmacéutico de la comunidad, y el profesor, que estamos pidiendo su ayuda en la determinación de las percepciones que el paciente tenga de su farmacéutico en el Ecuador sobre la base de interacciones pasadas.

¿CUÁL ES EL PROPÓSITO DE ESTA FORMA?

Este formulario de consentimiento te da la información necesaria para ayudarte a decidir si permanecer en el estudio o no. Por favor, lea cuidadosamente el formulario. Usted puede hacer cualquier pregunta sobre la investigación, los posibles riesgos y beneficios, sus derechos como voluntario, y cualquier otra cosa que no está claro. Cuando todas sus preguntas han sido contestadas, usted puede decidir si desea participar en este estudio o no.

¿POR QUÉ ME INVITADOS A PARTICIPAR EN ESTE ESTUDIO?

Ha sido invitado a participar en este estudio porque el investigador se centra en su tesis sobre las prácticas de farmacia en el Ecuador en la terminación de su International Degree.

¿QUÉ SUCEDERÁ DURANTE EL ESTUDIO CUÁNTO TIEMPO VA A DURAR?

El investigador le hará una serie de preguntas sobre las prácticas de farmacia en el Ecuador. Si usted se compromete a participar en este estudio, su participación tendrá una duración de minutos para responder a una serie de preguntas para un día.

¿CUÁLES SON LOS RIESGOS DE ESTE ESTUDIO?

No hay riesgos previsible a participar.

¿CUÁLES SON LOS BENEFICIOS DE ESTE ESTUDIO?

Usted no se beneficiará de este estudio.

¿ME PAGARÁN POR PARTICIPAR?

No se le pagó por participar en este estudio de investigación.

¿QUIÉN VERÁ LA INFORMACIÓN QUE DOY?

La información que usted proporcione durante este estudio de investigación se mantendrá confidencial en la medida permitida por la ley. Para ayudar a proteger su confidencialidad, lo vamos a tener un almacenamiento como un cajón y que estará bloqueado. Si los resultados de este proyecto se publican tu identidad no se hará público.

¿TENGO UNA ELECCIÓN PARA ESTAR EN EL ESTUDIO?

Si usted decide tomar parte en el estudio, debe ser porque usted realmente desea ser voluntario. Usted no perderá los beneficios y derechos que tendría normalmente si usted decide no ser voluntario. Usted puede parar en cualquier momento durante el estudio y seguir manteniendo los beneficios y derechos que tenía antes de voluntariado. Usted no recibirá un trato diferente si usted decide dejar de participar en el estudio. No se si usted decide retirarse de este proyecto antes de que finalice, los investigadores pueden mantener la información recopilada acerca de usted y esta información podrá incluirse en los informes de estudios.

¿Y SI TENGO PREGUNTAS?

Si usted tiene alguna pregunta acerca de este proyecto de investigación, por favor póngase en contacto con: Stellar Yi, en 011-503-453-9184 o por correo electrónico a stellaryi@gmail.com. Ann Zweber, el investigador principal, se puede alcanzar en 011-541-737-5798 o por correo electrónico a ann.zweber@oregonstate.edu. Si usted tiene preguntas acerca de sus derechos como participante, por favor póngase en contacto con la Universidad Estatal de Oregon Institutional Review Board (IRB) Protección de Sujetos Humanos de administrador, al (541) 737-4933 o por correo electrónico a IRB@oregonstate.edu.

Su firma indica que este estudio de investigación ha sido explicado a usted, que sus preguntas han sido contestadas, y que usted concuerda en tomar parte en este estudio. Usted recibirá una copia de esta forma.

El Nombre de participante: _____

(Firma de participante)

(fecha)