TRANSLATIONAL STRATEGIES FOR IMPROVING MEDICATION COUNSELING IN COMMUNITY PHARMACY PRACTICE

THOMAS F. FREEMAN HONORS COLLEGE

SENIOR THESIS

BY

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August 28	Born-Cincinnati, OH
2015	Anti-Human Trafficking Activist Volunteer under Congressman Pete Olson Pearland, TX
2015-Present	Thomas F. Freeman Honors College Member
2016-2017	Student Ministry Volunteer at the Harbor Community Church
2016-2017	Former President of the Thomas F. Freeman Honors College Ambassadors
2016-2017	Thomas F. Freeman Honors College Model United Nations Team Member
2017	Awarded Best Security Council Delegate at the NCCIIE Model United Nations Conference Greensboro, NC
2017	Presented research on *Health-Seeking Behaviors of Men* at the Honors College Research Day
2017-Present	Open Doors Ministry Volunteer at the Harbor Community Church
2017	Hurricane Harvey Cleanup/Restoration

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Abstract

With the continual existence and burden of medication errors and the expansion of the pharmacist's role in patient counseling as a means to combat this issue, there is still much to evaluate and resolve in regards to this matter. Regardless of the reason that these errors still occur, be it contributed to blatant neglect of duty or perhaps an educational gap, this problem is critical to resolve as the consequences often lead to financial, personal, and potentially fatal outcomes that can rarely receive full rectification. This study evaluated a first year pharmacy class after their completion of a pharmacy practice course focusing on patient counseling. The results were then analyzed to discover any areas or gaps that can be addressed and improved which ultimately, once mended, could yield more competent future pharmacists and pharmacist interns in the practice of patient counseling, thus reducing the occurrence of medication errors.

This study utilized a self-assessed confidence survey following the student's completion of their pharmacy practice course. The confidence survey was comprised of four categories in patient counseling with each category consisting of various skills pertaining to that specific category: Introductions, Assessing Patient Knowledge, Use of Visual Aids and Demonstrations, Key Counseling Information. A demographics section was also included in the confidence survey. Each skill of the confidence survey was graded on a Likert Scale of 5 where a grade of 1 represented no confidence and 5 represented complete confidence. The results of the confidence survey revealed that 50% or more of the participants expressed "very confident" or "compete confidence" in all skills for each category of patient counseling, although some skills yielded results slightly less than 50% of participants on aforementioned confidence levels: very confident or complete confidence.

The pharmacy practice lab course (PHAR-411) and its teaching methods utilized was effective overall in producing first year pharmacy students with strong confidence levels in the realms of patient counseling.

Chapter 1: Introduction

Background

The Food and Drug Administration (FDA) defines a medication error as a preventable mistake that occurs during the preparation, dispensing, administration, or monitoring of medication use that may lead to serious patient harm or inappropriate medication usage.[1]There are approximately 1.5 million reported medication errors a year in the United States. This is equivalent to 171 errors per hour.[2,3] A recent study by Hodges et al. examined medication errors reported to Poison Control Centers throughout the U.S. in aims to see how many errors were occurring outside of hospital settings.[2,3] This study revealed that the rate of medication errors per 100,000 U.S. residents increased from 1.09 in year 2000 to 2.28 in 2012.[2,3] Out of 63,236 reported outcomes from medication errors, 93.5% were pronounced, prolonged, or systemic symptoms usually requiring treatment, 5.8% were life threatening symptoms or resulted in disability or disfigurement, and 0.6% resulted in death.[2,3]

These errors not only cause harm to the patient and their loved ones, but also creates a burden on the U.S. healthcare system. Preventable outpatient medication errors cost the U.S. healthcare system $4.2 billion every year. In perspective, this is 25% of the cost of inpatient preventable medication errors.[3,4] Granted, with groups like the Joint Commission that certify and accredit healthcare organizations, as well as implement standards for reporting medical errors, there has been improvement in patient safety practices as well as a reduction in medication errors.[5] However, this only benefits the situation for inpatients. Furthermore, there is no entity like the Joint Commission that monitors outpatient settings like that of a community pharmacy.[3] In 2017, 4 billion prescriptions were filled in the U.S., and despite the great potential in those numbers for errors to occur, there is limited research on how community pharmacies can better assist in combatting medication errors aside from patient counseling.[3,6]

For perspective purposes, it is of upmost importance to refer to the legislative Omnibus Reconciliation Act of 1990, simply referred to as OBRA '90.[7]This federal statute was the cornerstone for the new duties required by practicing pharmacists. Within OBRA '90 are four areas of focus: Prospective Drug Use Review, Retrospective Drug Use Review, Assessment of Drug Use Data, and Educational Outreach Programs. These areas outlined mandates that the states and their respective boards had to adopt into their own legislature. The main component of OBRA '90 that yielded the greatest change in responsibilities for pharmacists was the "Prospective Drug Use Review" (Table 1. "OBRA '90 Pharmacy Requirements").[8]

Given that this research/thesis took place in Texas, it is also of importance to reflect on the legislation that the Texas State Board of Pharmacy (TSBP) adopted in response to OSHA '90, specifically TSBP statute 291.33©.[9]This statute from the Texas Administrative Code lays out all the rules and requirements in regards to operational standards for Community Pharmacies (Class A).

Now, regardless of legislative actions, there are still numerous reports and lawsuits being filed for pharmacists neglecting their duty to counsel. Negligence, in this aspect, occurs when consultation is not offered, or if consultation is offered and a patient declines, yet the patient is not made aware of what they are signing away upon refusal of consultation. When counsel does not include the requirements stated in OSHA '90 or TSBP statute 291.33© such as dosing, administration, food or water requirements, side effects, drug interactions, and other important key counseling points, this too is considered negligence.[10] All such acts of negligence can lead to serious legal persecution as well as potential for serious risk to the patient's health, i.e. "medication errors", which very well could have been preventable.

Introduction

Following July 1st, 2000, the Accreditation Council for Pharmacy Education (ACPE) discontinued the Bachelors of Pharmacy degree and replaced it with the now required Doctor of Pharmacy degree. Due to this action, there has been much change in expected learning outcomes for future pharmacists. These implemented changes have focused on making future pharmacists full professionals on all things pharmaceutics. Furthermore, these changes have created more responsibilities for pharmacists in the realm of direct patient care and also patient counseling and education. This role expansion is an important factor when looking into outpatient medication errors and potential ways to prevent such events from occurring. There is even evidence from previous studies suggesting that patient counseling can be used to detect errors in patient's medications, but excessive workload and a fast-paced demanding environment may complicate the pharmacist's ability to provide sufficient counseling services to patients.[3,11,12]

Today, there have not been many studies conducted that analyze the transition from what is being taught in pharmacy schools and what is being practiced, and furthermore, how this correlates to medication errors and the potential means of prevention thereof. So, knowing that proper patient counseling has been suggested to decrease the occurrence of medication errors, this topic specifically will be of great focus in identifying gaps that could potentially exist between the educational lab setting, and that of the community pharmacy practice site. Mending these gaps and finding ways to improve the practice of patient counseling could potentially alleviate future patient suffering as well as reduce the harm done to the U.S. healthcare system when these medication errors occur, and also reduce the extraneous costs that are amounted from errors.

Problem Statement

Medication errors continue to plague our healthcare system. Medication errors in relation to the practice of pharmacy can typically be averted if proper patient counseling is given, as it provides an opportunity to verify the safety of the prescription and its proper usage, as well as provide the patient with adequate education on there therapy. As stated previously, there are continuous reports of negligence when it comes to providing counsel. Because of this problem, this study aims to address the issue from the vantage point of education, specifically a first year pharmacy practice lab course that educates future pharmacists/pharmacist interns on patient counseling. Given that education is the root of future practice, it is of upmost importance to review and assess what is being taught in regards to patient counseling, and with that information, assess the student's confidence in their ability to provide counsel, for their abilities will be tested in real time come there second year of the PharmD program when they begin their community pharmacy site rotations. In doing this analysis, potential gaps in confidence and ability to counsel can be assessed and reconciled in hopes to prevent the occurrence of medication errors when the students come into official practice.

Purpose of the Study

The purpose of this study is to examine what is being taught in a pharmacy practice lab course in regards to patient counseling, and alongside this information provide the students with a self-assessed confidence survey which will be analyzed to determine and identify any gaps that may exist in the student's abilities and confidence to provide patient counseling, i.e. their perceived readiness. Lastly, with this collected information, create dialogue and discussion on potential improvements or modifications that can be made to the pharmacy practice education

to mend any gaps that may exist between the time of the student's education and their future real time practice all in efforts to ultimately decrease the occurrence of future medication errors.

Research Objectives

The overall aim of this research is to identify ways to prevent medication errors, specifically by addressing what is being taught in regards to patient counseling and comparing that to the student's self-perceived confidence to counsel in real time. Secondly, with the incorporation of a demographics section within the confidence survey, attempt to identify factors that could precipitate the student's perceived confidence, specifically, years of previous pharmacy experience. Lastly, address potential areas for future research that can further assist the prevention and resolution of medication errors in the realms of pharmacy when it comes to medication counseling education.

Significance of the Study

This study is of upmost importance to the patient, the tax payer, and the health care system. Medication errors are costly, can lead to permanently disabling conditions, and also cessation of life. It is crucial to address this issue as the repercussions and damages are severe. The results of this study will allow researchers, pharmacists, medical professionals, and other allied interests an opportunity to see potential resolutions to prevention of medication errors, primarily from an educational standpoint. This can yield further dialogue on how to better educate, prevent, and reduce medication errors at large. Ultimately, the impact of this study will bring about improvement to our health care system, reduce the extraneous costs to affected entities when medication errors occur, produce safer drug therapy usage, and decrease medication error related injuries.

Chapter 2: Methodology

Introduction

This study ran parallel to a first year pharmacy practice course that focusses on counseling and communication with patients and other health care professionals. It is a lab type course in which students are expected to participate via class discussion, case based simulations, and assessments as they learn the material. Listed below are the syllabus objectives for the course, all of which are based on the most up to date 2016 ACPE Standards.[13] Following completion of the curse the students took a self-assessed confidence survey on their ability to provide patient counseling.

Research Design

Following completion of the fall 2018 pharmacy practice lab course for first year pharmacy students, the students were given a self-reflective confidence survey in which they assessed themselves on their perceived readiness to provide counsel in a community pharmacy setting. Which they would begin doing in the following year of the pharmacy program. The survey results were then analyzed to identify potential gaps that may exist between the lab setting and the student's perceived readiness to counsel in the community pharmacy setting. The survey focused on four main areas of medication counseling: Introductions, Assessing Patient Knowledge, Use of Visual Aids and Demonstrations, and Key Counseling Info. Within each section were individual abilities in which the student would rank their level of confidence. A Likert scale of 1 to 5 was used: 1= no confidence, 2=slightly confident, 3=moderately confident, 4=very confident, 5= completely confident. The confidence survey also consisted of a demographics section in which participants stated their gender, age range, ethnicity, and years of previous pharmacy experience. The survey was anonymous.

Pharmacy Counseling Course Overview

The pharmacy practice lab course focused on twenty-six objectives, as noted in the student's syllabus that they received at the beginning of their course. The course objectives focused on multiple areas. One such area is interpersonal communication between the pharmacist and the patient as well as the pharmacist and other health care providers, for instance, verbal and non-verbal communication, and how they can be used and interpreted when communicating. The feedback method was also stressed in this course, as it is a proven tool to assess patient understanding of the counseling they are receiving. Overcoming barriers, empathetic responding, and ethics were all covered in this course as well. For a detailed table of all course objectives refer to the appendix (Table 2. "Pharmacy Practice Lab (PHAR-411) Course Objectives"). A detailed table of the Mobilizing for Action through Planning and Partnerships (MAPP) objectives with the courses teaching methods can also be found in the appendix (Table 3. "MAPP Objectives and Teaching Methods").

Sample

The participants of this study were first year pharmacy students enrolled at Texas Southern University in the fall of 2018 pharmacy practice lab course (PHAR-411)

Consent

Participation in this confidence survey was kept anonymous and confidential. All participants, if willing to participate, had to first give consent before taking part in the confidence survey portion of the study. Participation was expressed as voluntary with no penalty or loss of benefits. Within the consent form the purpose, risks, benefits, confidentiality notice, and investigator contact information was all given. The full consent form can be viewed in the appendix (Figure 1. "Confidence Survey Consent Form").

Instrumentation

A confidence survey developed with Google Forms® was utilized in assessing the participant's perceived self-confidence in patient counseling. Distribution of the survey occurred via Blackboard® within the Class of 2022 Module. The survey itself was divided into four skill categories: Introduction, Assessing Patient Knowledge, Use of Visual Aids and Demonstrations, and Key Counseling Information. Within each of the four categories were listed skills that pertained to their respective category. The participants rated themselves on a Likert scale of 1 to 5 on their confidence in each skill. A score of 1 equaled no confidence, 2 slightly confident, 3 moderately confident, 4 very confident, and 5 completely confident. All questions were based on the *ASHP Guidelines on Pharmacist-Conducted Patient Education and Counseling*.[14]A demographics section was also included in the confidence survey as another tool for analysis. The full confidence survey can be viewed in the appendix (Figure 2. "Confidence Survey").

Quantitative Data Assessment

Data was analyzed with Microsoft Excel®. Each skill within each patient counseling category was assessed by calculating the percent of students claiming very confident or completely confident, and those totals were added to give a total of students who claimed very or completely confident in each skill. For the demographics, percentages of each description was taken.

Chapter 3: Results and Discussion

Results

The confidence survey consisted of five sections. The first section consisted of demographic information. The other four sections were self-assessed skill areas: Introduction Skills, Use of Visual Aids and Demonstrations, Assessing Patient Knowledge and Understanding, and Key Counseling Information.

Demographics

Of the participants, the majority were female, **68.0%** to be exact (Chart 1. "Gender"). Those aged between 20 and 24 years old made up **52.0%** of the participants (Chart 2. "Age Range"). The primary ethnicities represented in the study consisted of African American or Black, which made up **44.0%** and another **44.0%** were Asian (Chart 3. "Ethnicity"). For previous years of pharmacy experience **52.0%** reported having at least one year of experience working in a pharmacy (Chart 4. "Years of Pharmacy Experience").

Introduction Skills (Chart 5. "Introduction Skills")

For the "*introducing yourself as the pharmacist intern*" skill, **23.1%** reported being very confident in their ability to introduce themselves as the pharmacist intern, and **50.0%** claimed complete confidence in their ability. The total percent of those claiming very confident or completely confident was **73.1%.**

For the "*determining the patient's primary language*" skill, **26.9%** reported being very confident in their ability to determine the patient's primary language, and the same percent reported complete confidence. The total percent of those claiming very confident or completely confident was **53.8%.**

For the "*explaining the purpose and expected length of the counseling session*" skill, **30.8%** reported being very confident in their ability to determine the patient's primary language, and **34.6%** reported complete confidence. The total percent of those claiming very confident or completely confident was **65.4%.**

For the "*obtaining the patient's agreement to participate*" skill, **19.2%** claimed they were very confident in their ability to obtain the patient's agreement to participate in a counseling session, and **42.3%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **61.5%.**

For the "*establishing a caring and appropriate relationship with the patient*" skill, **11.5%** claimed they were very confident in their ability to establish a caring and appropriate relationship with their patient, and **53.8%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **65.4%.**

Use of Visual Aids and Demonstrations (Chart 6. "Use of Visual Aids and Demonstrations")

For the "*utilizing visual aids or demonstrations to aid patient knowledge and understanding*" skill, **15.4%** claimed they were very confident in their ability to utilize visual aids or demonstrations to aid patient knowledge and understanding, and **26.9%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **42.3%.**

For the "*opening the medication container to show patients the color, size, shape, and markings on solid oral medications*" skill, **23.1%** claimed they were very confident in their ability to open the medication container to show patients the color, size, shape, and markings on solid oral medications, and **34.6%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **57.7%.**

For the "*for liquids and injectables, showing patients the dosage marks on measuring devices*" skill, **26.9%** claimed they were very confident in their ability to show the patients the dosage marks on measuring devices for liquids and injectables, and **23.1%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **50.0%.**

For the "*demonstrating the assembly and use of administration devices like inhalers or eye drops*" skill, **11.5%** claimed they were very confident in their ability to demonstrate the assembly and use of administration devices like inhalers or eye drops, and **30.8%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **42.3%.**

For the "*providing supplemental handouts for patients to keep in case they need to recall the information*" skill, **23.1%** claimed they were very confident in their ability to provide supplemental handouts for patients, and **38.5%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **61.5%.**

Assessing Patient Knowledge and Understanding (Chart 7. "Assessing Patient Knowledge and Understanding")

For the "*assessing patient knowledge about their health problems*" skill, **19.2%** claimed they were very confident in their ability to assess patient knowledge about their health problems, and **34.6%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **53.8%.**

For the "*assessing patient knowledge about their medication*" skill, **11.5%** claimed they were very confident in their ability to assess patient knowledge about their medication, and **42.3%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **53.8%.**

For the "*assessing patient capability to use their medication appropriately*" skill, **23.1%** claimed they were very confident in their ability to assess the patients capability to use their medication appropriately, and **34.6%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **57.7%.**

For the "*assessing patients attitude toward their health problems and medications*" skill, **23.1%** claimed they were very confident in their ability to assess the patients attitude toward their health problems and medications, and **34.6%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **57.7%.**

For the "*utilizing open ended questions to assess the patients knowledge as to what each medication is for and what to expect*" skill, **19.2%** claimed they were very confident in their ability to utilize open ended questions to assess the patients knowledge as to what each medication is for and what to expect, and **38.5%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **57.7%.**

For the "*having the patient describe to you how they will use the medication*" skill, **11.5%** claimed they were very confident in their ability to have the patient describe to them how they will use the medication, and **50.0%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **61.5%.**

For the "*having the patient describe to you the expected outcomes and effects of their medications*" skill, **23.1%** claimed they were very confident in their ability to have the patient describe to them the expected outcomes and effects of their medications, and **42.3%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **65.4%.**

Key Counseling Information (Chart 8. "Key Counselling Information")

For the "*stating the medications brand name and generic name*" skill, **23.1%** claimed they were very confident in their ability to state the medication brand and generic name, and **38.5%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **61.5%.**

For the "*stating the medications indication, expected benefits, and action (to cure a disease, eliminate or reduce symptoms, stop or slow the disease process, or prevent the disease or a symptom)*" skill, **23.1%** claimed they were very confident in their ability to state the medications indication, expected benefits, and action, and **42.3%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **65.4%.**

For the "*stating the medications onset of action and what to do if the action does not occur*" skill, **19.2%** claimed they were very confident in their ability to state the medications onset of action and what to do if the action does not occur, and **34.6%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **53.8%.**

For the "*stating the medications route, dosage form, dosage, administration schedule, and duration of therapy*" skill, **38.5%** claimed they were very confident in their ability to state the medications route, dosage form, dosage, administration schedule, and duration of therapy, and **30.8%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **69.2%.**

For the "*giving the directions for preparing, using, and administrating the medication (this may include adaptation to fit a patients' lifestyles or work environment)*" skill, **19.2%** claimed they were very confident in their ability to give the directions for preparing, using, and administrating the medication, and **42.3%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **61.5%.**

For the "*stating the directions to follow in case of a missed dose*" skill, **30.8%** claimed they were very confident in their ability to state the directions to follow in case of a missed dose, and **38.5%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **69.2%.**

For the "*stating the potential common and severe adverse effects, actions to prevent or minimize their occurrence, actions that the patient can take if they occur, and health care providers they should contact in case of such events*" skill, **30.8%** claimed they were very confident in their ability to state the potential common and severe adverse effects, actions to prevent or minimize their occurrence, actions that the patient can take if they occur, and health care providers they should contact in case of such events, and **30.8%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **61.5%.**

For the "*stating ways to self-monitor their therapy*" skill, **34.6%** claimed they were very confident in their ability to state the ways for a patient to self-monitor their therapy, and **26.9%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **61.5%.**

For the "*giving the potential drug-drug, drug-food, and drug-disease interactions or contraindications (including non-prescription)*" skill, **23.1%** claimed they were very confident in their ability to give the potential drug-drug, drug-food, and drug-disease interactions or contraindications, and **34.6%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **57.7%.**

For the "*stating the precautions to be observed during the medications use and administration, as well as stating the medications potential risks vs benefits*" skill, **23.1%** claimed they were very confident in their ability to state the precautions to be observed during the medication use and administration, as well as stating the medications potential risks vs benefits, and **38.5%** claimed

complete confidence. The total percent of those claiming very confident or completely confident was **61.5%.**

For the "*giving the appropriate refill information and time, and process for obtaining a refill*" skill, **26.9%** claimed they were very confident in their ability to give the appropriate refill information and time, and process for obtaining a refill, and **46.2%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **73.1%.**

For the "*stating the proper storage of their medication*" skill, **23.1%** claimed they were very confident in their ability to state the proper storage of the patients medication, and **50.0%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **73.1%.**

For the "*stating the proper disposal of medications, devices, and containers*" skill, **26.9%** claimed they were very confident in their ability to state the proper disposal of medications, devices, and containers, and **38.5%** claimed complete confidence. The total percent of those claiming very confident or completely confident was **65.4%.**

Years of Previous Pharmacy Experience and Confidence Level

For all the skill assessments answered by the participants with zero years of reported past pharmacy experience, **19.7%** of all responses for each skill were very confident. **49.2%** were completely confident. The total percent for all students with zero years of past pharmacy work experience, for all skills from every section, claiming very or complete confidence, was **68.9%** (Chart 9. "Participants with Zero Years of Pharmacy Work Experience: Cumulative Confidence Scores").

For all the skill assessments answered by the participants with at least one year of reported past pharmacy experience, **27.4%** of all responses for all skills from every section were very confident. **30.0%** were completely confident. The total percent for all students with at least one year of past

pharmacy work experience, for all skills from every section, claiming very or complete confidence, was **57.4%** (Chart 10. "Participants with One Year or More of Pharmacy Work Experience: Cumulative Confidence Scores").

Discussion

The pharmacy practice lab course (PHAR-114) utilized lecture and lab based education. Tools used in developing these skills and competencies included the use of standardized patients for simulated counseling sessions, presentations, class discussions, and assessments. Overall it would seem from the levels of confidence that such methods are effective.

From the overall results, 50% or more participants reported very or complete confidence for all competencies from all sections of the survey, with the exception of two competencies, both of which were in the "Use of Visual Aids and Demonstrations" section. The two competencies were the "utilizing visual aids or demonstrations to aid patients knowledge and understanding" skill and the "demonstrating the assembly and use of administration devices like inhalers or eye drops" skill. This could suggest the need for more practice opportunities within the lab portion of the course with visual demonstrations and aids, as well as practical use and knowledge of drug delivery devices. This is an important area when it comes to medication counseling. Many drugs are utilized through the use of some sort of delivery system: insulin, eye drops, inhalers, etc. When looking at medication safety this can be an area of concern, especially for drugs like insulin, where improper use can lead to potentially fatal hyperglycemic or hypoglycemic conditions.

When looking at the confidence scores of the "Introduction Skills" section, 60% or more of the participants expressed very confident or complete confidence with all competencies except the "determining the patient's primary language" skill. Only 53.8% reported very confident or complete confidence. For that particular skill, perhaps greater emphasis within the course can be given to the

recognition or familiarity with other cultures and languages. Cultural sensitivity is important in the healthcare field, especially when it comes to building a good reputation with your patients. At bare minimum, being able to determine the language of a patient will be of great value because with that knowledge you can assist the patient get the assistance they need in a more time sensitive manner.

As addressed earlier, the lowest scoring competencies occurred in the "Use of Visual Aids and Demonstrations" section of the survey. The highest scoring competency, those claiming very confident or completely confident, was 61.5%, and this was in the "providing supplemental handouts" skill. Given these results, it could be suggested that more time in lab can be spent allowing the students to become more familiar with the practice of using visual aids and demonstrations to educate patients. This includes showing the patients their medications, how to use and administer the medications, and also how to measure the proper amounts of medication prior to administration.

The following section of the survey, the "Assessing Patient Knowledge and Understanding", the competency levels of very confident and completely confident reported by the participants ranged from 53.8% to 65.4%. The assessed skills on the bottom end of the spectrum were the "assessing patient knowledge about their health problems" skill and the assessing patient knowledge about their medication" skill. 53.8% of participants scored themselves as very confident or completely confident for both these skills. It is important as health professionals to not just treat the patient, but to educate the patient on their health condition as well as the treatments being used to manage it. This is crucial when it comes to medication adherence. The more a patient is aware of their own condition and the importance of their medication in their therapy, the more likely they will adhere to their regimen. As concluded by the study, "Medication Understanding Among Patients Living with Multiple Chronic Conditions: Implications for Patient-reported Measures of Adherence":

> *Many patients demonstrated difficulty identifying the name and purpose of prescribed medications; this did not differ by demographic group or medication storage type. Patients may*

benefit from routine review of medications with their provider in order to improve health literacy, outcomes, and patient-reported adherence measurement.[15]

Proper medication adherence is critical when assessing the potential for medication errors. So, with confidence in these skills being the lower of this section, it could be beneficial to implement more focus on developing the skills of educating a patient on their health condition and general knowledge about their medication, perhaps by incorporating more simulated sessions with a key focus on educating the patient with an appropriate amount of information in regards to their condition as well as the medications role in their treatment.

The final skills section, "Key Counseling Information", had some of the highest levels of confidence as compared to the other sections. For the percent of the class claiming very confident or completely confident, the lowest was 53.8% for the "stating the medications onset of action and what to do if the action does not occur" skill, but the highest was 73.1% for the "stating the proper storage of their medication" skill and the "stating the proper disposal of medications, devices, and containers" skill. Many of the other skills with reports of very confident or completely confident fell in between the 60%-70% range (9) as opposed to 50-60% range (2). So confidence levels of very confident and completely confident were highly prevalent in this section. This would indicate that the participant's confidence in their general knowledge for consultation on the prescriptions name, indication, usage, side effects, monitoring, and other key counseling info is very strong compared to the other skill categories. This would indicate that the teaching methods utilized by the pharmacy practice lab course (PHAR-411) are effective when it comes to educating the students on key counseling information.

This study also compared the level of confidence responses of those with at least one year of previous pharmacy work experience to those with none. Contrary to predictions, those reporting no previous pharmacy work experience had greater claims of very confident or complete confidence with all the skills assessed (**68.9%**). Whereas those reporting at least one year of previous pharmacy work

experience, (**57.4%**) had claims of very confident or complete confidence for all skills assessed. Whether this is due to a pseudo-confidence portrayed by those with no pharmacy experience, or perhaps participants not answering truthfully, it is difficult to determine. Regardless, more studies examining previous pharmacy work experience and its effect on students confidence in counseling can definitely be done to investigate a corollary effect, whether positive or negative, but that was not the main focus of this study.

Implications and Recommendations

For the confidence survey results at large, it would seem that the methods used in the pharmacy practice lab (PHAR-411) are effective. The utilization of a lecture/lab format along with the tools of standardized patients, simulated patient counseling activities, graded assessments, and class discussions all yield high results of confidence for the first year pharmacy students prior to their first community pharmacy rotation site. This is great for the prevention and reduction of potential medication errors because pharmacies need competent and confident pharmacist interns, for they will be required to counsel patients at their assigned sites, along with other pharmacist related duties.

Areas of training that can be looked at for potential modification, greater emphasis, or improvement would be the usage of visual aids and demonstrations during counseling, specifically how to use medication dispensing devices: eye droppers, inhalers, insulin pens and syringes, etc. Other areas with a suggested need for emphasis or modification would be cultural sensitivity and being able to recognize the primary language of a patient, how to assess and educate patients on their knowledge of their conditions and medications, and also just continual reinforcement of key counseling points such as informing the patient of the onset of action for their medication and actions to take if said action does not occur, as this skill had lower reported confidence in comparison to the other assessed skills.

For future study, it would be of interest to look into the effects of previous pharmacy work experience on the confidence level of first year pharmacy students in their ability to counsel on medications. Along those same lines, perform a pre-course confidence survey to compare to a post course survey such as this one. Furthermore, a follow up study to assess the confidence level of these post-first year pharmacy students after they finish their first semester of community pharmacy rotations, as to see if their stated confidence level carried over into their real time performance.

The potential recommendations stated here: areas of emphasized focus or improvement in medication counseling training, as well as the verification of teaching methods that were deemed effective in the pharmacy practice lab course, and the stated prospective studies. All can assist in the long run, to further reduce the occurrence of medication errors in community pharmacies.

Limitations

One big limitation within this study was the sample size for the confidence survey. The fall 2018 pharmacy practice lab course (PHAR-411) had a total of 85 students, and the number of those that participated in the confidence survey was 26, so 30.6% of the class.

A lack of a confidence survey being given prior to the start of the course could also be a limitation to this study. So, one can only assume that the confidence level in the assessed skills prior to the completion of the course were lower than that of the claimed confidence levels post-course completion.

Another limitation is the existence of potential bias from those who had previous pharmacy work experience. Granted, one would have to assume that those with previous experience would have greater confidence in their abilities to counsel, but that was not the case with the results from this survey.

Conclusion

The pharmacy practice lab course (PHAR-411) and its teaching methods utilized was effective in producing first year pharmacy students with strong confidence levels in the realms of patient counseling.

Chapter 4: Appendices

Introduction

Activities required by pharmacists under OBRA '90

Table 1. "OBRA '90 Pharmacy Requirements"[8]

OBRA '90 Required Pharmacy Activities
Prospective Drug Utilization Review Factors to consider in regards to the necessity and appropriateness of a prescription: • Over/under utilization • Therapeutic Duplications • Drug-disease interactions • Drug-drug interactions • Drug-allergy interactions • Incorrect dosage or duration of treatment • Clinical abuse and/or misuse
Patient Counseling Standards Pharmacist consultation must be offered and these items addressed: • Name of drug (brand name, generic name, or other descriptive information) • Intended use and expected action • Route, dosage form, dosage, and administration schedule • Common side effects that may be encountered, including their avoidance and the action required if they occur • Techniques for self-monitoring of drug therapy • Proper storage • Potential drug-drug or drug-food interactions or other therapeutic contraindications • Prescription refill information • Action to be taken in the event of a missed dose
Maintaining Patient Records Keep accurate and up-to-date patient profiles with the following information: • Patient's full name • Address and telephone number • Date of birth or age • Gender • Drug profile • Pharmacist comments • Chronic conditions, allergies, and drug reactions

Methodology

The pharmacy practice lab (PHAR-411) course objectives, consent form, and confidence survey

Table 2. "Pharmacy Practice Lab (PHAR-411) Course Objectives"

Pharmacy Practice Lab (PHAR-411) Course Objectives
1. Describe the process of interpersonal communication as it relates to pharmacy
2. List the components of the interpersonal communication model
3. Describe the responsibility of pharmacist in the communication model
4. Describe the congruence between verbal and nonverbal messages
5. List ways to prevent misunderstanding
6. Describe the use of feedback to verify the meaning of the message
7. Describe the use of feedback to verify perceptions
8. Describe the importance of perception, credibility and persuasion as it relates to communication
9. Differentiate between verbal and nonverbal counseling
10. Describe the elements of nonverbal counseling
11. Detect nonverbal cues in communication
12. Describe techniques used to overcome distracting nonverbal factors
13. Describe barriers in communication (e.g. environmental, personal, patient, administrative, financial and time)
14. Describe the differences between listening and hearing
15. Define empathetic responding and discuss attitudes underlying empathy
16. List nonverbal aspects of listening
17. Discuss problems in establishing healthy relationships
18. Define assertiveness and its theoretical foundations

19. Discuss assertiveness as it relates to patients, physicians, employers, employees and colleagues 20. Describe ways to improve patient assessment and educational diagnosis 21. List the components of an effective interview and describe the interviewing process 22. Describe techniques to assess and improve patient understanding 23. Describe the communication process in special populations/situations (e.g. the elderly, speech impairments, terminally ill, AIDS populations, patients with mental health problems, adolescents and caregivers) 24. Define ethical principles as they relate to patient care 25. Describe decision-making processes to assist pharmacists in resolving ethical conflicts 26. Using a simulated patient, provide appropriate patient counseling to a patient

Table 3. "Table 3. "MAPP Objectives and Teaching Methods"

MAPP Objectives include Teaching Method		
ACPE 2016 Domain	***COPHS Terminal Outcomes Statements (Program Specific)***	***Teaching Method***
Standard 3: Approach to Patient and Care 3.2 Education	Educate all audiences by determining the most effective and enduring ways to impart information and assess learning.	Class discussions Quizzes Case-based simulations
Standard 3: Approach to Patient and Care 3.3 Patient advocacy	Represent the patient's best interests.	Class discussions Quizzes Case-based simulations
Standard 3: Approach to Patient and Care	Actively participate and engage as a healthcare team member by demonstrating mutual respect, understanding, and values to meet patient care needs.	Class discussions Quizzes

3.4 Interprofessional collaboration		Interprofessional, case-based simulations
Standard 3: Approach to Patient and Care 3.5 Cultural sensitivity	Recognize social determinants of health to diminish disparities and inequities in access to quality care.	Class discussions Quizzes Case-based simulations
Standard 3: Approach to Patient and Care 3.6 Communication	Effectively communicate verbally and nonverbally when interacting with individuals, groups, and organizations.	Class discussions Quizzes Case-based simulations
Standard 4: Personal and Professional Development 4.1 Self-awareness	Examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth.	DISC Personality Assessment Class discussions

Figure 1. "Confidence Survey Consent form"

CONSENT FORM

You are invited to participate in a study to evaluate student confidence in performing patient counseling.

PURPOSE: The purpose of this study is to examine what is being taught in pharmacy schools, given the new curriculum expansion into patient counseling and education, and with this information, evaluating the student's perceived readiness for counseling in the community pharmacy setting. Also, to identify potential gaps and develop ways to mend such gaps in an effort to ultimately decrease the occurrence of future medication errors.

RISKS: There are no foreseeable risks associated with participation.

BENEFITS:

- Learn and train in a state of the art facility
- Train in practice laboratories that prepare you for practice
- Gain hands-on experience before entering practice sites
- Learn in a facility that replicates a practice environment
- Improve patient safety by practicing real-world scenarios before treating real patients
- Become practice-ready graduates

CONFIDENTIALITY: Confidential and proprietary information will be safeguarded in a private, secure location. Access to confidential information will be limited to principal investigators and co-investigators.

Your participation is voluntary. Refusal to participate will involve no penalty or loss of benefits. You may discontinue participation at anytime without penalty or loss of benefits.

If you have questions regarding this research or research subjects' rights, please contact Dr. Willie Capers II at 713-313-1232 or Lorin Shirdon II at 864-436-7306 or via email at lorinshirdon@gmail.com.

"This study has been explained to me. I volunteer to take part in this research. I have had an opportunity to ask questions. If I have questions later about the research, I can ask one of the researcher(s) listed above. If I have questions about my rights as a research participant, I can call the Texas Southern University Office of Research at 713.313.4301, or go to visit the Office of Research on the Texas Southern University website (http://www.tus.edu)."

If you have decided to participate in this survey, please indicate by selecting YES. If you do not want to participate, you may exit the survey by closing out that browser tab. Note, you cannot move forward onto the survey unless you have selected YES to give your consent.

[YES]: I consent to participate in this survey

Figure 2. "Confidence Survey" (Format of the survey is modified to best fit the document)

Confidence Survey

Demographics

Please select your gender:

Male__

Female__

Other__

Please select your age range:

19 years or less__

20-24__

25-29__

30-34__

35-39__

40 years or older__

Please select your ethnicity:

American Indian or Alaska Native__

Asian__

Black or African American__

Hispanic or Latino__

Native Hawaiian or Pacific Islander__

White__

Other__

How many years of experience do you have working in a pharmacy:

None__

1 year__

2 years__

3 years__

4 years or greater__

Confidence Assessment

Directions: Rank your level of confidence with each aspect of patient counseling and education.

1-*no confidence* in my ability

2-*slightly confident* in my ability

3-*moderately confident* in my ability

4-*very confident* in my ability

5-*completely confident* in my ability

Introduction

1. Establishing a caring and appropriate relationship with the patient:__
2. Introducing yourself as the Pharmacist Intern:__
3. Explaining the purpose and expected length of the counseling session:__
4. Obtaining the patients agreement to participate:__
5. Determining the patients primary spoken language:__

Assessing Patient Knowledge

1. Assessing patient knowledge about their health problems:__
2. Assessing patient knowledge about their medication:__
3. Assessing patient capability to use their medication appropriately:__
4. Assessing patients attitude toward their health problems and medications:__
5. Utilizing open ended questions to assess the patients knowledge as to what each medication is for and what to expect:__
6. Having the patient describe to you how they will use the medication:__
7. Having the patient describe to you the expected outcomes and effects of their medications:__

Use of Visual Aids and Demonstrations

1. Utilizing visual aids or demonstrations to aid patients knowledge and understanding:__
2. Opening the medication container to show patients the color, size, shape, and markings on solid oral medications:__
3. For liquids and injectables, showing patients the dosage marks on measuring devices:__
4. Demonstrating the assembly and use of administration devices like inhalers or eye drops:__
5. Providing supplemental handouts for patients to keep in case they need to recall the information:__

Key Counseling Information

1. Stating the medications brand name and generic name:__
2. Stating the medications indication, expected benefits, and action (to cure a disease, eliminate or reduce symptoms, stop or slow the disease process, or prevent the disease or a symptom):__
3. Stating the medications onset of action and what to do if the action does not occur:__
4. Stating the medications route, dosage form, dosage, administration schedule, and duration of therapy:__

5. Giving the directions for preparing, using, and administrating the medication (this may include adaptation to fit a patients' lifestyles or work environment):__
6. Stating the directions to follow in case of a missed dose:__
7. Stating the potential common and severe adverse effects, actions to prevent or minimalize their occurrence, actions that the patient can take if they occur, and health care providers they should contact in case of such events:__
8. Stating ways to self-monitor their therapy:__
9. Giving the potential drug-drug, drug-food, and drug-disease interactions or contraindications (including non-prescription):__
10. Stating the precautions to be observed during the medications use and administration, as well as stating the medications potential risks in relation to benefits:__
11. Giving the appropriate refill information and time, and process for obtaining a refill:__
12. Stating the proper storage of their medication:__
13. Stating the proper disposal of medications, devices, and containers:__

Results

Graphs, charts, and tables pertaining to obtained data from the confidence survey

Chart 1. "Gender"

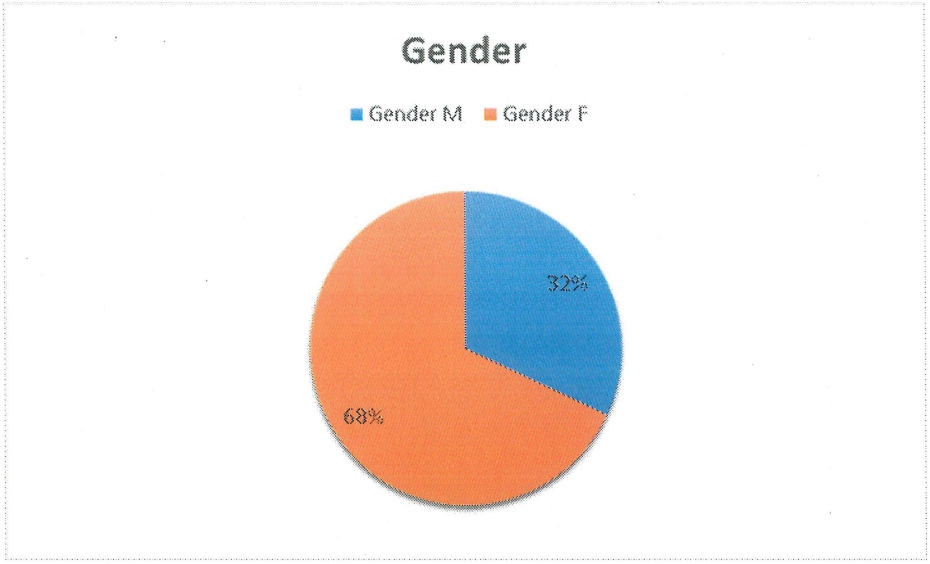


Chart 2. "Age Range"

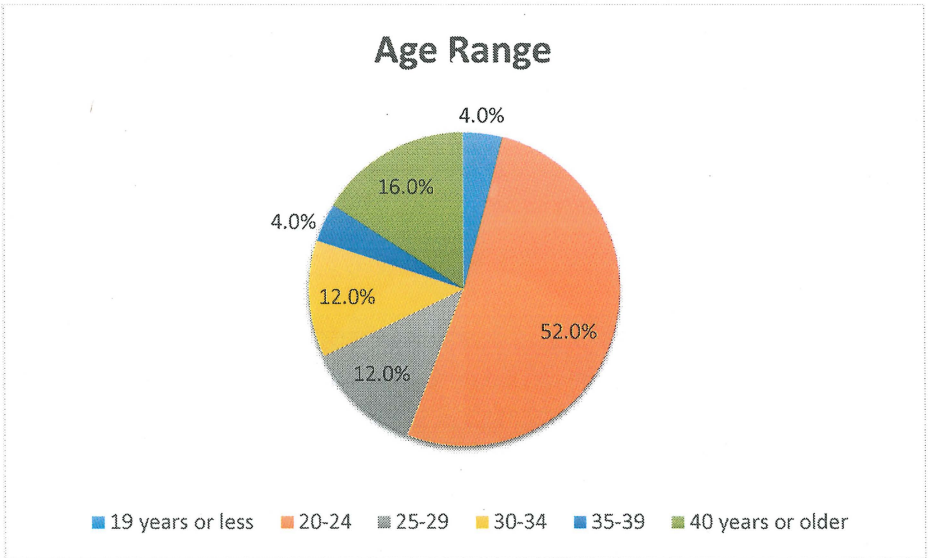


Chart 3. "Ethnicity"

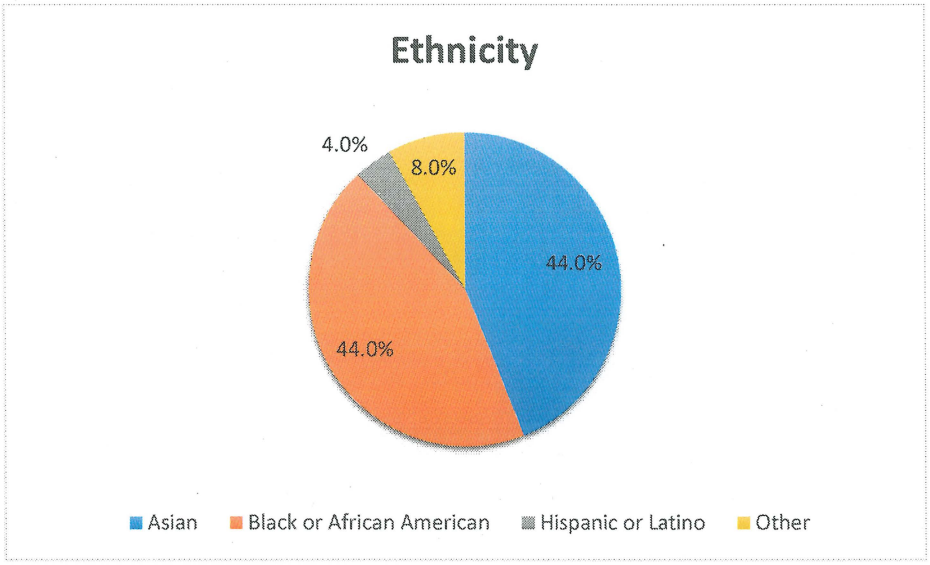


Chart 4. "Years of Pharmacy Experience"

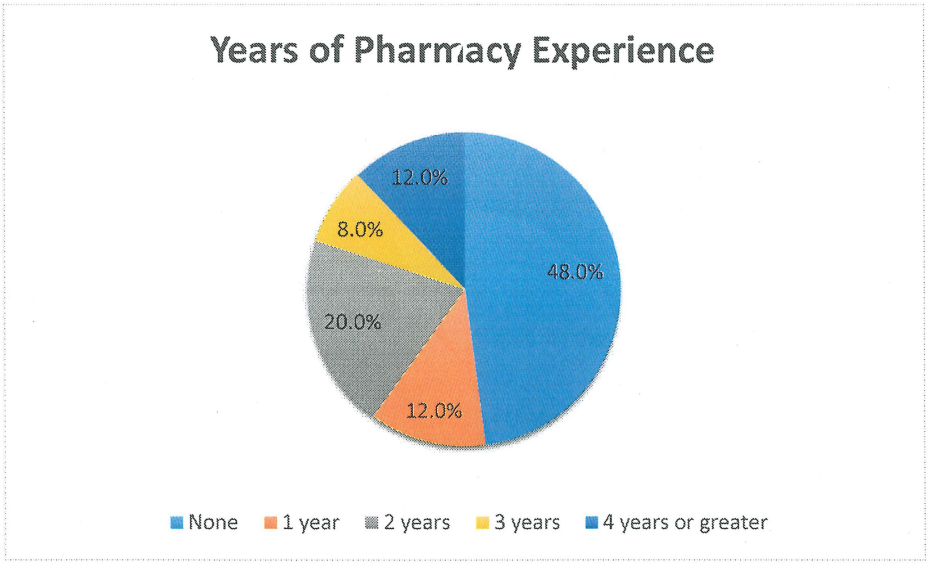


Chart 5. "Introduction Skills"

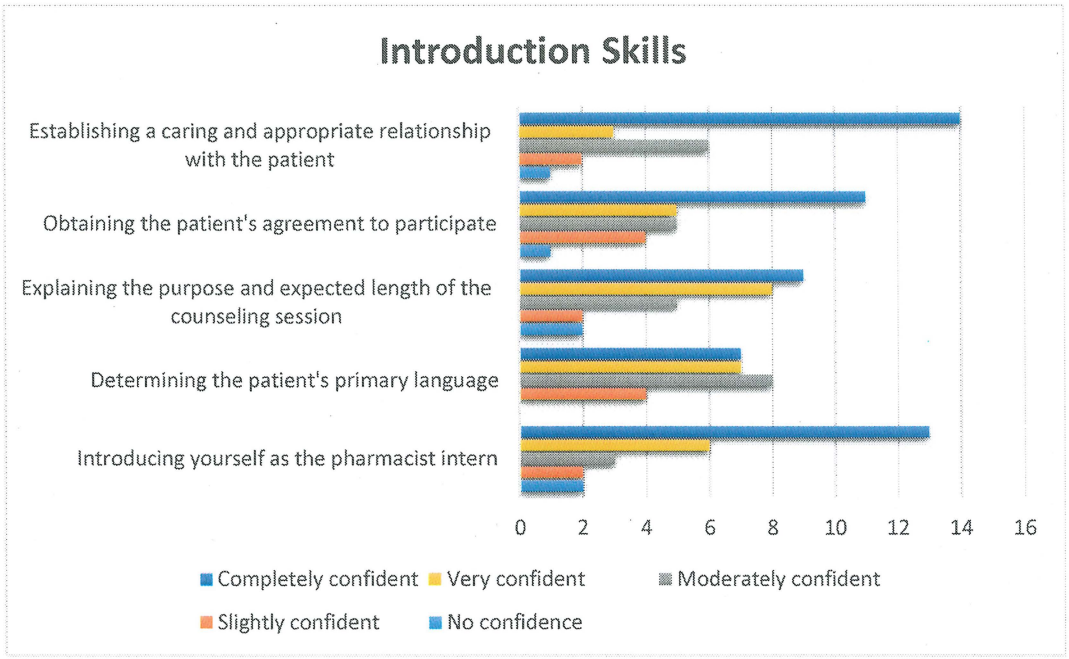


Chart 6. "Use of Visual Aids and Demonstrations"

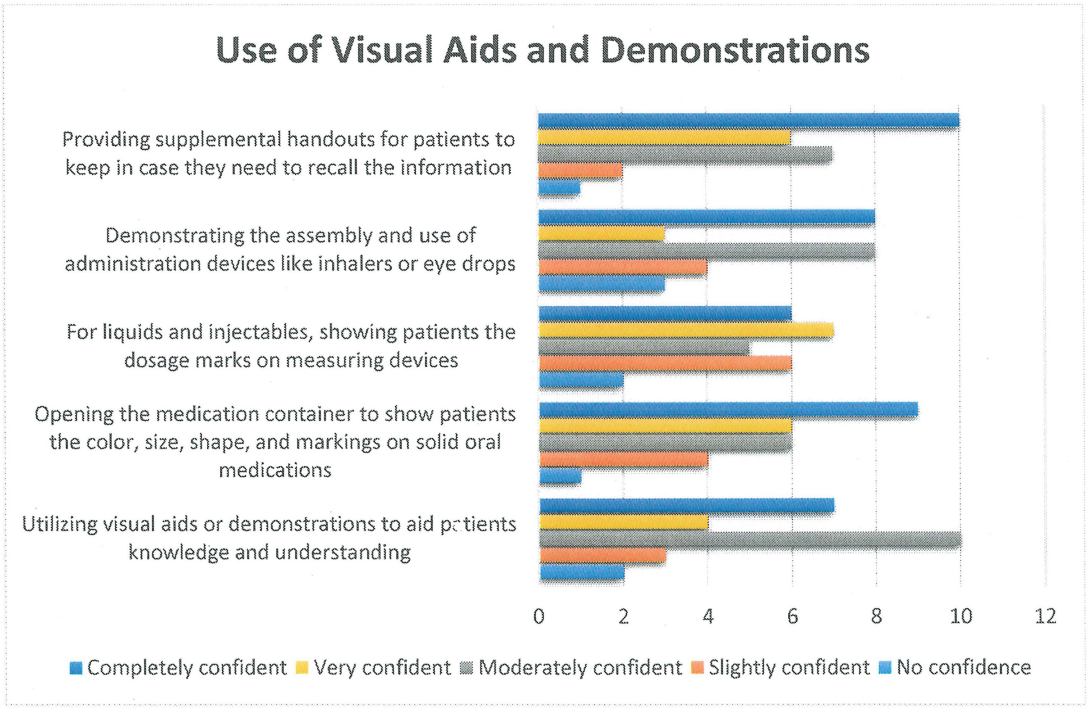


Chart 7. "Assessing Patient Knowledge and Understanding"

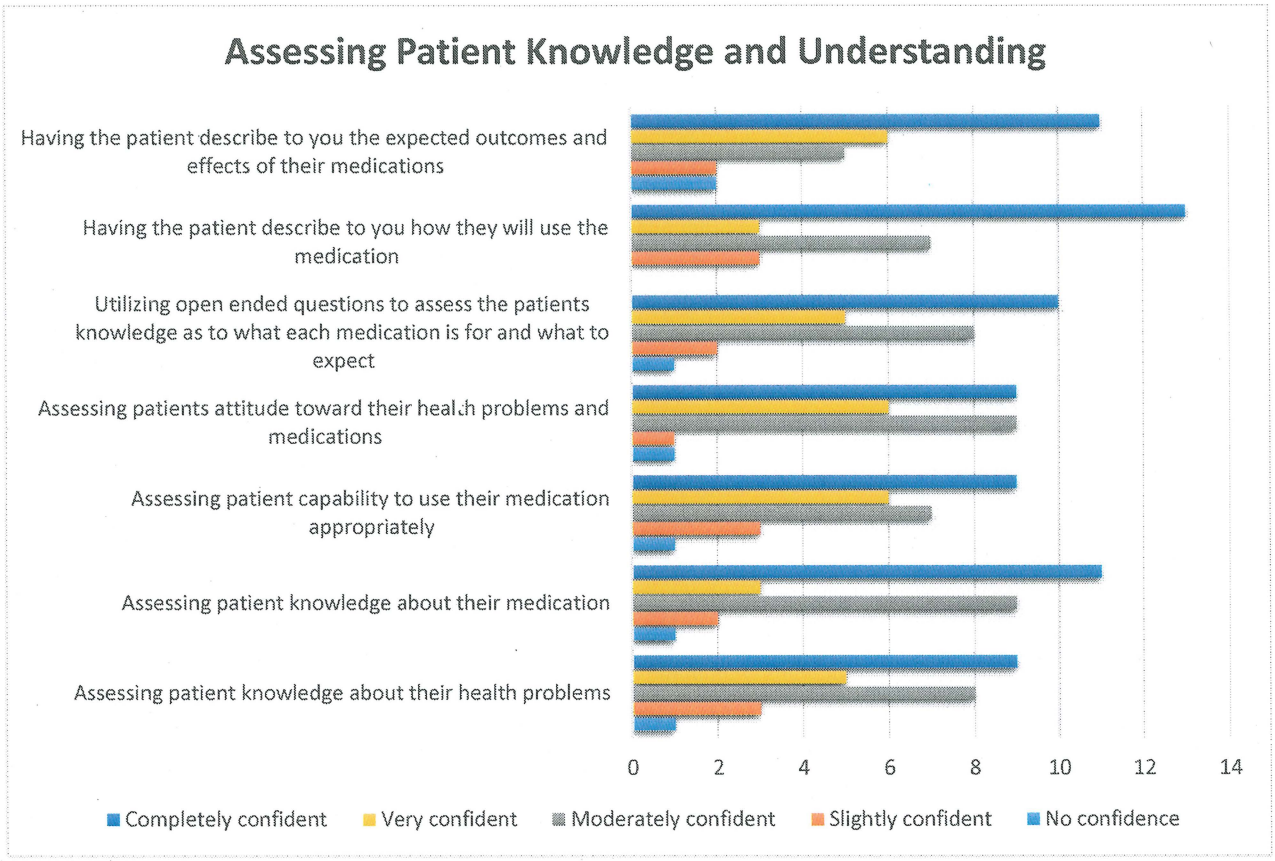


Chart 8. "Key Counseling Information"

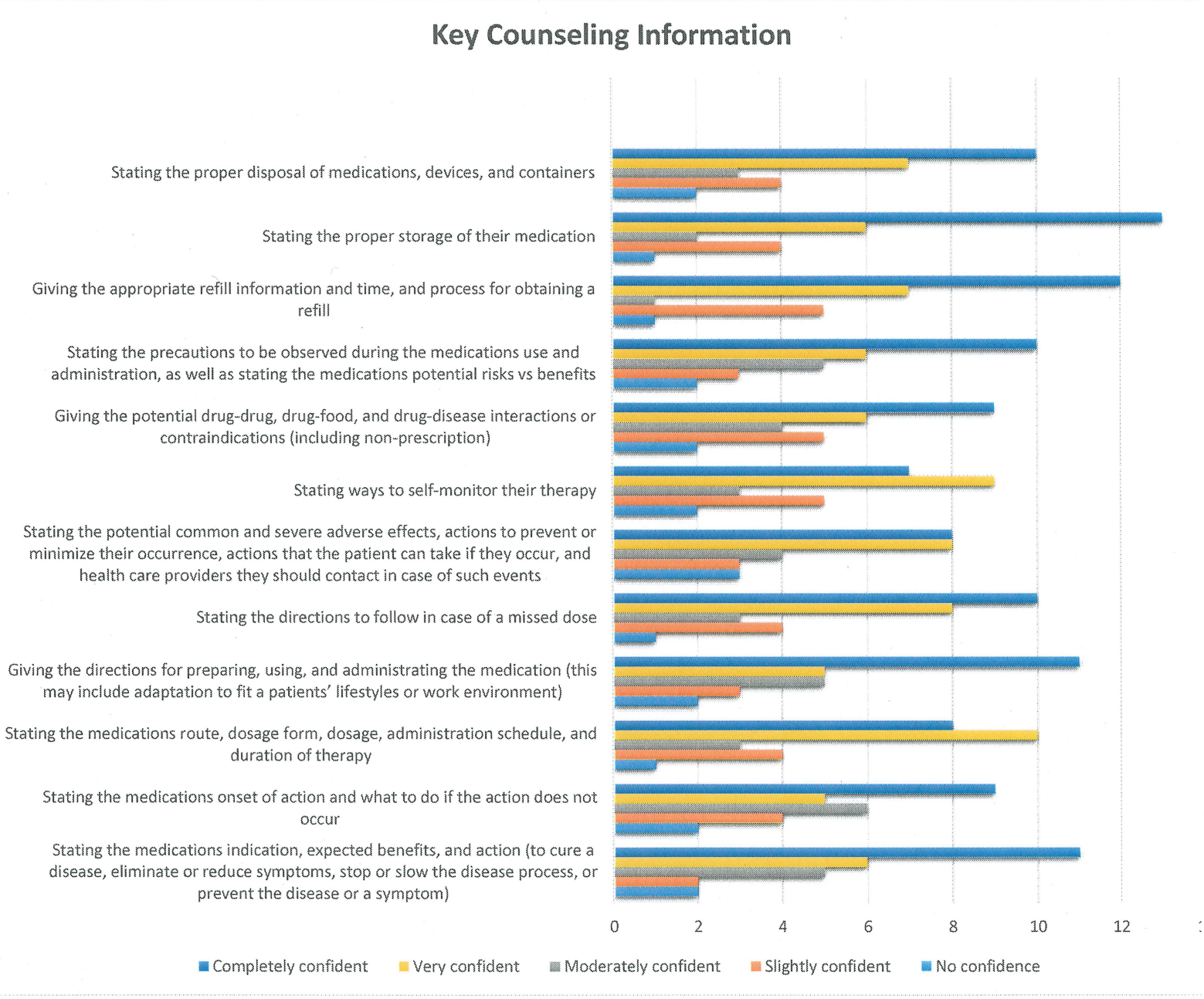


Chart 9. "Participants with Zero Years of Pharmacy Work Experience: Cumulative Confidence Scores"

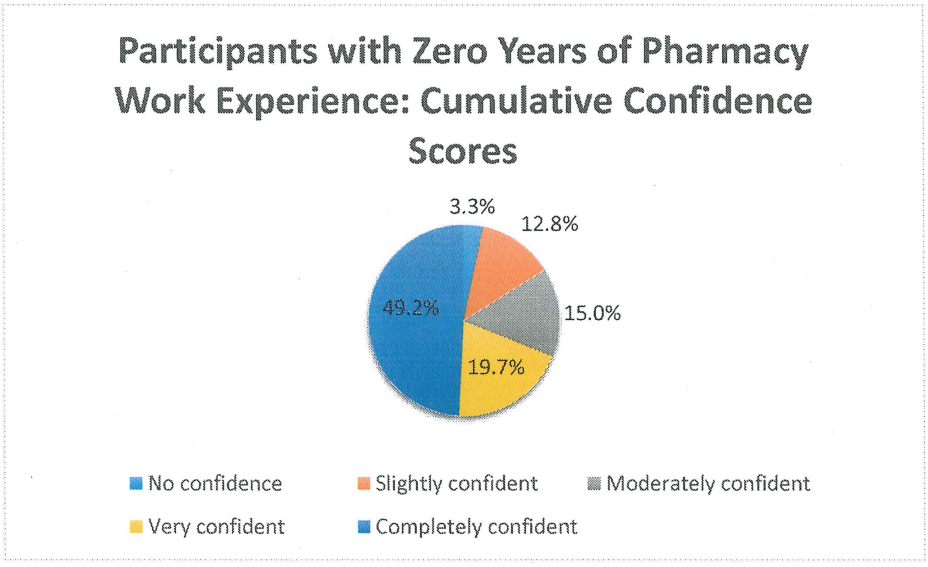
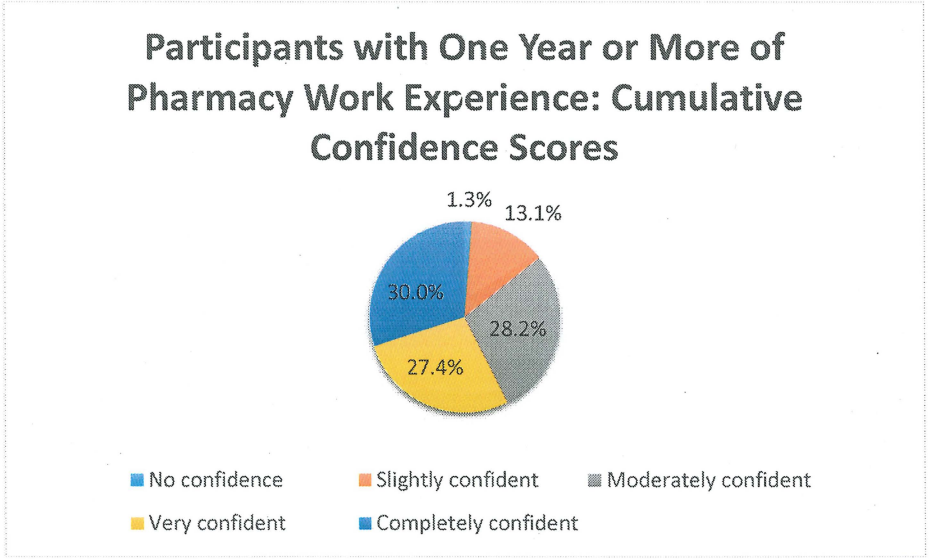


Chart 10. "Participants with One Year or More of Pharmacy Work Experience: Cumulative Confidence Scores"



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