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Perceptions of Licensed Pharmacist Managers regarding Formally Versus Informally Trained Pharmacy Technicians

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Walden University
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Abstract

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Trained Pharmacy Technicians

by

Shalonica Cluse

MA, Texas Southern University, 2006

BS, Texas Southern University, 2003

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

Pharmacists rely on pharmacy technicians to assist with accurately dispensing prescriptions and providing information to clients. Texas does not have regulations for the education or training of pharmacy technicians, which may result in mistakes when dispensing prescriptions, causing significant harm to customers. The purpose of this qualitative phenomenological study was assessing formally and informally trained pharmacy technicians' job performance as perceived by licensed pharmacists/managers. Data were collected via face to face interviews with 9 pharmacy managers in Texas to gain insight into their lived experiences of supervising not formally and formally trained technicians. Audio recorded interview data were transcribed and organized using the NVivo software. The job performance theory was used to help understand and interpret the data. Pharmacists/managers indicated that pharmacy technicians who receive formal training, when compared to those who have been informally trained on-the-job, have more knowledge, better job performance, less need for training and supervision, and greater salary and other job related opportunities. All 9 of the respondents indicated that the State of Texas should develop a formal set of professional standards for pharmacy technicians and require a formal certification training program. The potential positive social change of this study is a better understanding of the job training and performance of pharmacy technicians that can improve services to communities.

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Dedication

To my handsome son, Bryce Anthony Angelle, who is the reason for my pursuit of this degree.

Acknowledgments

I first would like to thank God for waking me up and allowing me to accomplish such an honor as being one of the first of my family to graduate from college. God has opened so many doors for me and reminded me that when one door closes, another opens.

This dissertation is the result of many years of hard work and research and could not have been accomplished without the support of my chair, Dr. Richard Jimenez. I would also like to acknowledge the pharmacists who participated in this study. I sincerely appreciate them sharing their perceptions to create a social impact in pharmacy settings in the state of Texas. Their help was invaluable to help contribute to the area of pharmacy technician standards.

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I thank my mother and father for bringing me into this world and believing in me even when I did not believe in myself, as well as my other immediate family members.

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Chapter 1: Introduction to the Study

Introduction

Pharmacy technicians play an important role in the effective and productive functioning of a pharmacy. In 2012, the state of Texas had approximately 52,000 registered pharmacy technicians and 13,000 trainees, but there were no regulations regarding the education or training of pharmacy technicians in the state (Texas State Board of Pharmacy [TSBP], 2012). Researchers at the Bureau of Labor Statistics (United States Bureau of Labor Statistics, 2010) projected that the employment of pharmacy technicians in the United States would increase by 32% between 2010 and 2020 (TSBP, 2012). Pharmacy technicians in Texas have to earn a high school diploma or pass the General Education Development tests (GED) and have to pass the Pharmacy Technician Certification Examination (PTCE) to work in a pharmacy (TSBP, 2012). All these requirements should be reviewed prior to registration for the PTCE.

This qualitative phenomenological study involved assessing the job performance of formally and informally trained pharmacy technicians as perceived by pharmacists who also served as pharmacy managers and the technicians' supervisors. This chapter includes a brief discussion about the job duties of pharmacy technicians and pharmacy managers, as well as a background of the problem, a statement of research questions, operational definitions important to this study, and assumptions and limitations that may have affected the results of the study. Although the State of Texas does not regulate pharmacy technician education, technicians could have sought national certification to demonstrate their knowledge and skills (American Society of Health-System Pharmacists

ASHP, 2013). All pharmacy settings need to have the same set standard for pharmacy technicians nationwide.

The pharmacy profession made incremental progress, yet the TSBP had been slow in expanding the qualifications and roles of pharmacy technicians and in developing national standards that required pharmacy technicians to complete an accredited education or training program (Myers, 2011). A review of the literature revealed a lack of evidence for understanding whether national standards were necessary. Data regarding pharmacy personnel's perceptions provided evidence that national standards decreased filling and dispensing errors and led to improvements in the job performance of pharmacy technicians (citation). Providing all technicians the proper education for their profession fostered a sense of competence, confidence, professionalism, and pride (Mohr, 2009). Pharmacists consistently engaged in activities that required professional judgment, and they did so with the assistance of pharmacy technicians (Bachenheimer, 2011). Due to the lack of formal regulations, pharmacy technicians in the state of Texas could have completed a formal training program or received on-the-job-training (Bachenheimer, 2011). Pharmacy technicians play a very important role in the healthcare profession.

Medical errors are ubiquitous in pharmaceutical clinical practice, especially among pharmacy technicians (Bachenheimer, 2011), possibly due to the type of training. Pharmacies constantly evolve as new drugs are developed, dosages changed, and indications for the drugs altered. Therefore, it is imperative that pharmacy technicians remain abreast of the most current literature and trends that facilitated pharmacists' roles

in dispensing prescriptions more accurately. Formal training may help them stay current with changes in the field.

Pharmacy technicians with formal training had a better understanding of their responsibilities and implications of making mistakes when compared with pharmacy technicians without formal training (Myers, 2011). Pharmacy technicians need to be internet savvy and disciplined to perform sufficiently with little supervision. Both formal and experiential instruction better served new trainees with no experience and individuals interested in becoming pharmacy technicians (Myers, 2011). It's important for all pharmacy settings to hire qualified pharmacy technicians that are certified.

Background of the Problem

The role of pharmacy technicians involves being available to assist pharmacists in accurately processing and filling prescriptions. Pharmacy technicians need to be well versed in brand names as well as generic medications and have knowledge of drug indications and dosages (Myers, 2011). There are additional benefits to formal training for pharmacy technicians. Myers (2011) emphasized training that involved teaching skills, as well as building proficiency through hands-on experiences and practice, typically improved pharmacy technicians' job satisfaction and motivation. Pharmacy technicians who did not have formal training often did not have a complete understanding of their role in assisting the pharmacist (Myers, 2011). A lack of formal education also led to more instances of error (Myers, 2011).

Pharmacists make errors; however, they received training to be accurate all the time. It is a pharmacist's job to review pharmacy technicians' work and check for errors.

Horn (2009a) noted that although pharmacists are ultimately responsible for all dispensed prescriptions, technicians were an integral part of the process involved in filling and dispensing prescriptions. The more knowledge pharmacy technicians obtained regarding drug names, new drugs entering the market, and unapproved drug name abbreviations, the more they identified and prevented potential errors. According to the Pharmacy Technician Certification Board (PTCB, 2012), only seven states require licenses for pharmacy technicians. Nine states require certification, and the remaining states only require pharmacy technicians to register with the state (PTCB, 2012).

Statement of the Problem

The TSBP does not regulate pharmacy technician training and certification, but pharmacy technicians have the opportunity to seek national certifications, such as the certification offered by ASHP (2003). Therefore, pharmacy technicians can enter the field without formal training and licensure, which may result in poor job performance, including making mistakes when filling and dispensing prescriptions (ASHP, 2003). Such mistakes are detrimental to the wellbeing of customers and could result in serious and even fatal consequences. In 2016, no agency in the state of Texas regulated the education of pharmacy technicians.

In Texas, pharmacy technicians must have a high school diploma or have passed the GED, must have completed pharmacy technician certification, and must have obtained a state board certificate (citation). A pharmacy technician either completed a formal training program or received informal training in an on-site pharmacy setting

(Bachenheimer, 2011). National standards that require pharmacy technicians to complete an accredited program of study or formal training program do not exist (Myers, 2011).

The lack of national standards and a concerted push for the formal training of pharmacy technicians by the pharmaceutical industry is evident because of the absence of comparative studies that highlighted the relative ineffectiveness of informally trained technicians (Myers, 2011). The focus of this qualitative phenomenological study includes the performance of formally and informally trained pharmacy technicians in the state of Texas. The results of this study can assist in identifying the need for formal training and licensure regulation for pharmacy technicians in Texas, which benefits the population at large.

Purpose of the Study

The purpose of the qualitative phenomenological study was to assess formally and informally trained pharmacy technicians' performance as perceived by licensed pharmacists who were also managers to determine the need for formal training and licensure regulation for pharmacy technicians in Texas. This study utilized qualitative phenomenological methodology with a nonrandomized convenience sample of licensed pharmacists who were also pharmacy managers ($N = 9$). The intent of qualitative research is to understand a particular situation, event, role, group, or interaction (Creswell, 2009). Nine licensed pharmacists who also served as pharmacy managers and who had been pharmacy managers for a minimum of 1-year were the subjects of this study. Participants were from three different pharmacy settings—retail, hospital, and independently owned

pharmacies—not as a cross-comparison, but rather as a way to include a wider variety of pharmacists.

Research Question

As the researcher, I chose to use a the qualitative phenomenological study in an attempt to answer the following research question: What were the lived experiences of licensed pharmacists who were also pharmacy managers with respect to managing formally and informally trained pharmacy technicians regarding their job performance?

Conceptual Framework

For this study, I chose to use the Job Performance Evaluation Model (2011) as a lens through which to view the problem. I used this model to explain why certain issues that pharmacists and pharmacy technicians experience on a day-to-day basis occurred and contributed to the percentage of medication errors. If not formally trained, pharmacy technicians modeled the tasks and techniques of what they were taught and what they saw in the pharmacy. These behaviors and characteristics were best witnessed through example, training, models, and observations. After this study was conducted, technicians were able to develop new concepts and strategies to become better trained pharmacy technicians and assist in gaining national certification in the state of Texas.

Nature of the Study

This study is important because it may have help improve the quality of pharmaceutical service and reduced the incidence of error in a pharmacy. The results of this study clarified the needs for future training and licensure of pharmacy technicians, as well as the need for overall improvement in their job performance, specifically regarding

the quality of service and reduction or elimination of errors. Using this research question, I addressed the lived experiences of the target population of licensed pharmacists who were also pharmacy managers overseeing both formally and informally trained pharmacy technicians. The study involved gathering information regarding the number of years participants had been working as pharmacy managers, the type of pharmacy they served as pharmacists and managers, the number of pharmacy technicians they supervised, national and Texas standards followed in their pharmacy, and licensures of their pharmacy technicians.

The phenomenological approach of this study has a universal appeal for its general application and use in research studies that included interviews (Czech, 2004). The basis of the qualitative review completed in this evaluation job theory model was past research that contains a comparison of job performance and job satisfaction between formally educated pharmacy technicians and informally educated pharmacy technicians. This evaluation job theory model served as a guide to help understand and arrange the details and tasks that were necessary when planning the study.

Operational Definitions of Terms

Accreditation: The process by which leaders of an association, organization, or governmental agency granted public recognition to an organization was formal accreditation (Council on Credentialing in Pharmacy [CCP], 2010).

American Society of Health-System Pharmacists (ASHP): A growing organization with nearly 43,000 members, including health system pharmacists, pharmacy students, and pharmacy technicians (ASHP, 2016).

Certification: A voluntary process by which a governmental agency or an association grants recognition to an individual who met certain predetermined qualifications specified by that organization (CCP, 2010).

Community pharmacy: A group of three or more pharmacies independently owned by one or more individuals or a local chain with many pharmacies in a state or region was commonly known as a community pharmacy (Mohr, 2011).

Continuing education: A structured educational activity designed or intended to support the continuing development of pharmacists and pharmacy technicians to maintain and enhance their competence (CCP, 2010).

Credentialing: The process by which organizational or institutional leaders obtain, verify, and assess an individual's qualifications to provide patient care services (CCP, 2010).

Formal programs: An approved community or technical college program that results in a license or an associate degree as a pharmacy technician (Bachenheimer, 2011).

Formally trained: Pharmacy technicians who attended a formal program resulting in a certificate, a license, or an associate degree as a pharmacy technician (Bachenheimer, 2011).

Informally trained: Pharmacy technicians who received on-the-job training and did not hold a certificate, a license, or an associate degree in the pharmacy technician field (Bachenheimer, 2011).

Institutional pharmacy: The entity that supplies the medications for all patients during a hospital stay (Bachenheimer, 2011).

Job performance: The frequency of errors made when filling and dispensing prescription medication (Bachenheimer, 2011).

Licensure: The process by which a representative of a government agency grants permission to an individual to engage in a given occupation upon finding that the applicant attained the minimum degree of competency necessary to ensure the public health, safety, and welfare would be reasonably well protected (Bachenheimer, 2011).

Medication error: Includes any variation from the correct patient, medication, dosage form, route of administration, or time of administration (Mohr, 2009).

National Association of Boards of Pharmacy (NABP): A professional organization that represents all 50 state boards of pharmacy in the United States (NABP, 2011). One of its roles is to develop a national pharmacist examination for licensure administered by local state boards of pharmacy (NABP, 2011)).

Pharmacist: A health care professional licensed by a state to engage in the practice of pharmacy; he or she has advanced training in the pharmaceutical sciences such as pharmacology, pharmacokinetics, or pharmaceutics (Bachenheimer, 2011).

Pharmacy manager: The pharmacist in charge of overall responsibility for all pharmacy services (Bachenheimer, 2011).

Pharmacy technician: A board-registered employee who dispenses medication, handles clinical conflict resolution, prepares intravenous therapy admixtures, and packages medications under the supervision of a licensed pharmacist (NABP, 2011).

Pharmacy Technician Certification Board (PTCB): A national, voluntary certification program for pharmacy technicians (PTCB, 2011). The board administers a national examination, known as the PTCE, to assess a candidate's knowledge and skill base for activities performed by a pharmacy technician (PTCB, 2011).

Pharmacy Technician Certification Examination (PTCE): A computer-based exam administered at Pearson VUE test centers nationwide (PTCE, 2016). Certification specialists use PTCE scores to determine whether individuals demonstrated the knowledge necessary to practice as pharmacy technicians (Bachenheimer, 2011).

Pharmacy Technician Educator Council (PTEC): An organization founded by, and for, pharmacy technician educators (Bachenheimer, 2011).

Registration: A formal entry for a pharmacist or pharmacy technician who has met state requirements for licensure and whose name had been entered on a state registry of practitioners licensed to practice in that jurisdiction (CCP, 2010).

Texas State Board of Pharmacy (TSBP): The state agency responsible for the licensure and discipline of Texas pharmacists and pharmacies (Bachenheimer, 2011).

Assumption of the Study

As the researcher, I assumed that pharmacy managers in this study provided reliable and authentic information that reflected their personal and professional experiences in the management of informally and formally educated pharmacy technicians. Acknowledging the assumption, I guided my research while exploring the gap in the literature regarding the relationship between pharmacy technicians' training and the rate of errors made when dispensing medication.

Limitations

Limitations in research studies vary according to the method followed in the research (Fink, 2000). Regulations for training pharmacy technicians are different outside Texas, which limited the generalizability of the findings to pharmacies in other states.

I only included pharmacists in the State of Texas in this study. By using a convenience sample, it may have limited generalizability.

Sample Size

Another limitation was the sample size. Though the number of participants in the study was large for a qualitative study ($N = 9$), the results may not be easily generalizable to represent the perceptions of all pharmacists. Creswell, Hanson, Plano, and Morales (2007) supported a small sample size for qualitative studies as the data collected were lengthy, detailed, and expansive.

Use of Interviews

Interviews could be problematic during data collection and could become a limitation (Creswell, 2004). Problems that inexperienced researchers encounter include difficulty writing interview questions, equipment failures with recording devices, and unexpected participant behavior (Creswell, 2004). Qualitative research studies have the limitation of gathering data based on self-reports and the views and behaviors of the participants (Creswell, 2004). Some have viewed such data as subjective (Creswell, 2004). Interviewing participants requires researchers to remain neutral and refrain from the influence of personal bias (Ioannidis, 2007). Below, I discussed each of these potential problems.

Writing interview questions and data analysis. Yin (2009) noted that qualitative studies need to have the interview questions posed in such a way to obtain information that aids the researcher in answering the problem. To guide the process of writing interview questions, I developed an interview with open-ended questions while keeping the language in a format that participants easily understand (Yin, 2009**)**. The volumes of data gathered in qualitative research require time consuming analysis that may have be prone to the researcher's subjective interpretation (Yin, 2009).

Generalizability was important in an inquiry as it allows researchers to apply the findings to other populations (Creswell, 2004). The findings of this study applied to pharmacies within Texas, but may not have be applicable to pharmacies in states outside of Texas that may have had different regulations and requirements for pharmacy technicians' training. States that have the same requirements as Texas may benefit from the findings of this study, as results may be applicable and generalizable to their settings. Also, I limited generalizability by including only pharmacists in the regional area; however, I attempted to compensate for this by including an equal number of pharmacists in each of the three identified pharmacy settings.

Significance of the Study

The purpose of this qualitative phenomenological study was to assess formally and informally trained pharmacy technicians' performance as perceived by licensed pharmacists who were also managers so that results of the study may assist in identifying the need for formal training and licensure regulation for pharmacy technicians in Texas. The results of the study may improve the quality of pharmacy service, reduce the

incidence of pharmacy errors, and assist in clarifying the needs for future training of pharmacy technicians.

Pharmacy technicians are critical assets to a pharmacist and play an important role in a pharmacy and its operation. Formal education of pharmacy technicians is necessary and crucial to the pharmacy profession. Doctors prescribing medication and pharmacy customers rely on the expertise and knowledge of pharmacists and pharmacy technicians.

Summary

I focused the study to interview licensed pharmacists who served as pharmacy managers about their lived experiences with formally trained and informally trained pharmacy technicians. More specifically, the study involved assessing the performance of formally trained versus informally trained pharmacy technicians in terms of errors made when filling prescriptions. Chapter 2 includes a thorough review of the literature regarding pharmacy technician training standards, the roles of pharmacy personnel, and medication errors in pharmacy settings. I described the systematic method of searching for literature related to the topic, the theoretical model upon which I framed this study, and the history of pharmacy technicians in the field. As the researcher, I also discussed literature on medication errors which were related to training of pharmacy technicians, the standards for training certification—or lack thereof—and the future of these technicians.

Chapter 2: Literature Review

Introduction

In this study, I focused on the training effectiveness for pharmacy technicians as perceived by pharmacy managers in various pharmaceutical settings in terms of the technicians' performance when filling and dispensing medication. Although no agency in the state of Texas regulated the education of pharmacy technicians in 2012, more than 52,000 pharmacy technicians and trainees registered throughout the state (TSBP, 2012). Many pharmacy technicians pursued national certification as a means of validating their understanding and abilities, but Texas does not mandate this certification (ASHP, 2003). In Texas, pharmacy technicians need to have either obtained a high school diploma or passed the GED, completed pharmacy technician certification, and obtained a board certificate in the state (ASHP, 2003). In addition to these requirements, a pharmacy technician also has to complete a formal training program or receive training at an onsite, or learn-as-you-go, type of practice (Bachenheimer, 2011). Although pharmaceutical industry leaders made significant advancements in overseeing the credentialing and training of pharmacy technicians, national standards requiring pharmacy technicians to complete an accredited program of study or formal training program do not exist (Myers, 2011).

The lack of national standards and a concerted push for the formal training of pharmacy technicians by the pharmaceutical industry was evident by the absence of comparative studies that highlighted the relative ineffectiveness of informally trained technicians (TSBP, 2012). According to the Bureau of Labor and Statistics and the

United States Department of Labor, America needs a 32% increase in pharmacy technicians in by 2020 (TSBP, 2012)**.** This study involved identifying and analyzing the perceptions of licensed pharmacy managers in Texas regarding the job performances of informally educated versus formally educated pharmacy technicians. The study also involved comparing regulations with respect to registration, certification, and licensure for the two groups in various pharmaceutical settings in Texas. As the researcher, my goal was to identify the need to reexamine the methods used to educate and certify pharmacy technicians.

In 2010, the erroneous filling of 6.2 million medications accounted for 98,000 deaths in the United States (Pham et al., 2012). Errors decreased when all pharmacy personnel were knowledgeable of the national standards for filling and dispensing prescriptions (Mohr, 2009). Thus, formally educating all technicians is a logical approach to developing a sense of confidence, professionalism, and pride related to individual work performance (Mohr, 2009). National standards lead to a high level of uniformity in all pharmacy settings (Myers, 2011). Although the State of Texas does not mandate that pharmacy technicians obtain a formal education, these technicians play a substantial role in the distribution of medications and in patient safety so formal education is beneficial. The role of the pharmacy technician increased in terms of duties assigned, with no accommodation for this expansion in overall preparation and attainment of professional certification (TSBP, 2012). The increased role justified the need to create a policy that required pharmacy technicians to receive formal education guided by national standards.

In Chapter 2, I provide a description of the literature search strategy and theoretical framework used to formulate this study, which includes the epidemiology of medication errors, not only in Texas but also throughout the United States. The chapter includes a discussion of the job duties of pharmacy technicians, pharmacists, pharmacy directors, and pharmacy managers, as well as an exploration and comparison of various pharmacy settings, trends in the role of pharmacy personnel, and current pharmacy technician standards. Chapter 2 ends with a critical evaluation of the methodology for this study and a summary of goals set for the study aimed at improving the quality of service provided by pharmacy technicians, especially in an attempt to reduce the number of incidental medication errors.

Literature Search Strategy

During the review of relevant and creditable sources, I conducted a detailed search of several main databases—Google Scholar, Medline, PUB MED, and Walden University library research databases—to obtain current publications of significant importance to this study. My focus of the search was to examine key peer-reviewed studies published between 2000 and 2015. The review included the following search terms: *pharmacy technicians, licensing requirements,* and *errors made by of pharmacy technicians.* After the initial search, I expanded the search to include key terms such as *pharmacy*, *pharmacy technicians*, *medication errors*, *drug errors*, *formally trained pharmacy technicians,* and *informally trained pharmacy technicians*. I selected to focus on articles related to pharmacy technicians' training and job performance, as well as related medication errors, and the various settings in which these technicians work. I

organized the articles according to these specific themes that related directly to pharmacy performance and saved them in separate subfolders using Zotero Software of Literature Review.

Theoretical Model

The purpose of this qualitative phenomenological study was to assess formally and informally trained pharmacy technicians' performance as perceived by licensed pharmacists who were also managers. The results assisted in identifying the need for formal training and licensure regulation for pharmacy technicians in Texas. Because the perceptions of these managers were critical to the overall study, it was imperative to identify these perceptions accurately in order to produce the assessment needed to accomplish the comparison required. Performance evaluations of technicians that contributed to manager perceptions also had to be valid and unbiased. When completed, the concluding comparison validated the necessity of training of pharmacy technicians that produced individuals who performed at equal levels in the workplace.

To assess pharmacy technicians, I utilized a standard job performance evaluation model sanctioned by ASHP (1996). This evaluation also served to enhance the effectiveness of pharmacy managers because it allowed them to develop stronger abilities to evaluate pharmacy technicians in the workplace. The detailed recommendations that resulted from the performance reviews of individual pharmacy technicians should have ultimately affected performance and stimulated the learning process (Mohr, 2009). I organized the qualitative review in the job performance evaluation model around the phenomelogical theory that characterized past research by comparing the job

performance and job satisfaction of formally educated technicians to that of informally educated technicians. Mohr (2009) stated that formal pharmacy technician programs were most likely to affect task performance in a positive way when instruction was sufficiently challenging. A literature review revealed that similar studies undertaken in the health care arena, inclusive of pharmaceutical settings, tended to follow one of two approaches or models: (a) using survey instruments, or (b) using a phenomenological approach or model. The phenomenological approach served as a guide to understand and arrange the details and tasks that were necessary in planning my study.

Researchers at PTCB conducted a national survey to compare the perceptions of pharmacists toward the certification of pharmacy technicians (PTCB, 2010). The results showed that over 80% of the pharmacists surveyed agreed that certification supported proper drug preparation and distribution, reduced the number of medication errors, and improved patient safety (Manasse & Menighan, 2011). The Pharmacy Society of Wisconsin conducted another comparative study with a survey approach to determine current perceptions on the training and credentialing of pharmacy technicians among PSW pharmacists and technician. Manasse and Menighan (2011) did not recommend the implementation of a training program requirement due to the potential for a workforce shortage of qualified technicians.

Two noncomparative studies, one by Desselle (2005) and one by Kennedy and Aiken (2011) used the survey. Desselle's (2003) study included a random sample of 3,200 certified pharmacy technicians supplied by the PTCB. It involved surveys using a cross-sectional descriptive design to identify various work-life attitudes and to determine

whether these attitudes differed by practice setting and the personal characteristics of the

respondents (Desselle, 2003). The results showed that the typical respondent was female,

White, 39 years old, and earned $12.87 per hour (Desselle, 2003). Respondents exhibited

modest levels of job satisfaction and career commitment and they expressed low

intentions for career turnover (Desselle, 2003). They perceived modestly high levels of

support from their employers (Desselle, 2005). Desselle (2005) significantly associated

quality-of-work-life attitudes with practice setting, rate of pay, and age but not with

gender, racial, or ethnic background. Because pharmacy technicians play ever increasing

roles of importance in the delivery of pharmacy care, Desselle (2005) concluded that

employers may want to consider rewarding experienced, certified pharmacy assistants

who demonstrated competency and loyalty to the organization, thus making career

ladders available to these individuals.

Kennedy and Aiken (2011) compared pharmacy technicians and their experiences

with medication errors at community pharmacies in Vermont to document opinions and

self-reported error experiences. Kennedy and Aiken conducted a telephone survey of one

self-identified pharmacy technician from each Vermont community pharmacy by

administering the surveys using a standard script, using descriptive statistics to

summarize quantitative data, and organizing qualitative data into similar categories. Of

128 operating community pharmacies, 72 (56.3%) responded by providing a technician

interview (Kennedy & Aiken, 2011). Nearly all respondents (93.2%) stated they had

experience with prescribing errors (Kennedy & Aiken, 2011). Two-thirds (66.7%) of the

respondents noted they had personally detected a medication error (Kennedy & Aiken,

2011). Only two (2.8%) responded that they had completed a medication report, with both reports submitted to their corporate reporting programs (Kennedy & Aiken, 2011). Kennedy and Aiken concluded that most pharmacy technicians were aware of medication errors in their practice, and the majority had personally detected errors. However, nearly one-third of the technicians responded that they had never received any training in medication errors (Kennedy & Aiken, 2011). As a result of the study, Kennedy and Aiken recommended further research on the level of training for pharmacy technicians, their job experience, and their understanding of, and ability to, report errors through the input and analysis from a larger and more diverse sample (Kennedy & Aiken, 2011).

On a regular basis, pharmacy technicians underwent job performance evaluations that made use of a standard set of performance objectives designated by ASHP (ASHP, 2012). The leaders of various state boards of certification also accepted this set of objectives (ASHP, 2012). Thus, pharmacy managers carried out and documented regular standard performance evaluations of technicians (ASHP, 2012). The primary documentation method that managers used, regardless of pharmacy setting, was a survey instrument or form formatted for the designated pharmacy setting with the format changing from setting to setting, even though the performance objectives assessed were the same (ASHP, 2012). Using this documentation served to reveal shortcomings in the use of surveys, in general, for research such as this study (ASHP, 2012).

Types of Pharmacy Settings

In pharmacy settings, pharmacy technicians and pharmacists worked in long-term care facilities, institutional hospitals, home health care, and community pharmacies

(Ballington, 2011). They worked a variety of shifts that included days, nights, weekends, and holidays (Ballington, 2011). Community pharmacies in the United States employed three-fifths of all pharmacists in the workforce (Ballington & Anderson, 2010). According to Cooksey, Knapp, Walton, and Cultice (2002), health care leaders and policymakers addressed process and structural barriers to improve the medication-use process. Pharmacies were usually either independent or chain pharmacies (Bachenheimer, 2011). The community pharmacy was the local grocery or corner drug store (Bachenheimer, 2011). A compounding pharmacy specialized in drugs that were not commercially obtainable, and the pharmacy technician or pharmacist, had to make the drug (Bachenheimer, 2011). According to Ballington and Anderson (2010), mail-order pharmacies are somewhat related to retail pharmacies. A centralized operation ran mail-order pharmacies and employed pharmacy technicians to dispense and mail bulk prescriptions on a daily basis (Ballington and Anderson, 2010). Both the pharmacist and the pharmacy technician communicated to ensure effective operation within the pharmacy (Mohr, 2009). The lack of both face-to-face communication and contact with patients highlighted the difference between a community pharmacy and a mail-order pharmacy (Bachenheimer, 2011).

Pharmacy technicians have vast responsibilities in a community pharmacy: answering telephone calls, verifying prescriptions, assisting with third-party billing, controlling inventory, preparing prescriptions, and dispensing prescriptions (Mohr, 2009). They also need a working knowledge of medical terms, be able to read and interpret prescriptions, and were able to identify the correct drug for dispensing in the appropriate

manner (Mohr, 2009). Furthermore, they had to be able to accomplish all these tasks while maintaining an open communication channel with customers, which included greeting them and conversing with them appropriately (Mohr, 2009). I also focused the study on pharmacy technicians' performance in terms of their ability to fill prescriptions and dispense medication without making errors.

The most common example of an institutional pharmacy was a hospital pharmacy, which had links to all health care delivery systems (Ballington & Anderson, 2010). Approximately one-fourth of all employed pharmacists worked in a hospital setting (Bachenheimer, 2011). They have daily interactions with physicians and direct involvement with the pharmaceutical care and medication management of patients (Bachenheimer, 2011). In this setting, a pharmacy technician's responsibilities vary depending on the type and size of the facility (Mohr, 2009). As several insurance companies mandated the use of mail-order delivery for drug maintenance, pharmacies now employed hundreds of pharmacy technicians and pharmacists who dispense thousands of prescriptions daily (Mohr, 2009). Pharmacy employees in all settings are responsible for designated duties in the pharmacy depending on their job description.

Roles of Pharmacy Personnel

According to the United States Bureau of Labor Statistics, job growth for pharmacy technicians should grow at a rate of 32% per year through 2020, making it one of the most in-demand jobs of the decade (Keresztes, 2007). Over 108,000 new pharmacy technicians will be needed through 2020, and with average annual salaries of over $28,000 there could be high competition for the positions (Keresztes, 2007). The fact that

pharmacy technicians rapidly increased in scope and number made it essential that

industry leaders established one formal standardized method of orchestration to ensure all

technicians learned the same methods, practices, procedures, and courses of action

(Keresztes, 2007). The implementation of a formal, well-defined education may be the

key to helping set attainable goals for a gratifying career as a pharmacy technician and

may foster a less problematic pharmaceutical setting (Mohr, 2009). Examples of

pharmacy technician jobs included pharmacy technician educator, pharmacy technician

supervisor, pharmacy warehouse supervisor, clinical coordinator for a pharmacy

technician program, director of a pharmacy technician program, investigational drug

pharmacy technician, refill triage pharmacy technician, medication reconciliation

pharmacy technician, and quality assurance technician (Mohr, 2009). There are numerous

pharmacy technician job duties within the various pharmacy settings.

Pharmacists

Competent pharmacists who managed pharmacy establishments have the legal

qualifications to perform all tasks that the field demands, including those relevant to

medicine and administration (ASHP, 1996). Pharmacy managers and directors also have

exceptional knowledge and experience in pharmacy practice. The role of a pharmacist

includes responsibility for establishing and fulfilling the goals, values, overall mission,

and scope of service while focusing on patient needs. This role evolved through four

stages during the 20th century and continued to evolve (Ballington & Laughlin, 2010).

For example, during the 1920s, individual pharmacists compounded 80% of

prescriptions, whereas they compound only 1% of prescriptions in the 21st century

(Ballington & Laughlin, 2010). In the beginning of the 20th century, the minimum degree

requirement for a pharmacist to practice increased from 2 to 4 years. In the 21st century,

many pharmacists have additional training to administer immunizations such as

pneumonia and influenza shots because of pharmacist's accessibility (Ballington, 2011).

Therefore, pharmacists must have a 6-year doctor of pharmacy degree and 1 year of

clinical rotations (Mohr, 2009). Due to the complexity and expansion of new drugs, the

curriculum for becoming a pharmacist lengthened from 2 to 6 years over time.

Educational trends for pharmacists included advising patients regarding the

variety of over-the-counter drugs, herbs, and vitamins available to them, as well as how

to take better care of themselves (Ballington & Anderson, 2010). Pharmacy settings must

have had a sufficient number of proficient and qualified pharmacists to meet the needs of

all patients (ASHP, 1996). According to researchers at ASHP (1996), numerous

pharmacists sought additional ways to use pharmacy technicians in the direct delivery of

patient care. All states within the United States required pharmacists to have a license

(TSBP, 2012).

Pharmacists' perceptions of their own job satisfaction played an integral role in

the theoretical framework of medication errors and influenced job performance

accordingly (Keresztes, 2007). Beso, Franklin, and Barber (2005) stated that decreased

job satisfaction resulted in an increase in medication errors in various pharmaceutical

settings. According to Desselle (2009), the increasing demand for medications and

pharmacy services in a profession struggling to meet adequate staffing needs placed

stress on pharmacy employees' quality of work life and was an emergent concern for

owners, managers, and directors (Desselle, 2009). Pharmacy technicians bore much of the burden of these work-related stressors as they worked alongside their supervisors and pharmacists to meet the needs of the patients. High levels of preventable work-related stressors in various pharmacy settings led to equal levels of poor job performance. Pharmacy technicians carried out important responsibilities within pharmaceutical establishments, and they were, therefore, essential to daily operations and care of patients in general (Dooley, Carroll, & Galbraith, 2003).

Pharmacy Technicians

According to the medical dictionary, a pharmacy technician was a para-professional worker who performed pharmacy duties such as preparing and dispensing prescriptions, usually while working under the direct supervision of a licensed pharmacist who reviewed all prescriptions the technician handled prior to distribution to patients (BLS, 2012). According to Horn (2009b), although pharmacists were ultimately responsible for all dispensed prescriptions, technicians were an integral part of the filling and dispensing process. Pharmacy technicians filled approximately 96% of all prescriptions nationally (Gabay, 2011). The more familiarity that technicians attained with regard to drug names, new drugs, and approved or unapproved drug name abbreviations, the greater their potential for detecting potential medication errors (Ambrose et al., 2002). Researchers at the BLS (2010) projected the increase of employed pharmacy technicians by 32% between 2010 and 2020. This increase in employment was essential to support the rate of growth in the medical industry. However, the worth of this enhancement had a connection to the implementation and

maintenance of proper formal education for new potential pharmacy technicians if this growth in the workforce became a reality.

Optimal improved training for pharmacy technicians involved incorporating more proactive teaching skills, raising the skill level attained through real hands-on training, and improving job satisfaction and motivation (Myers, 2011). To sit for the PTCE, a candidate had to have earned a high school diploma and had no criminal or regulatory violations (PTCB, 2010). Individuals could not perform the duties of a pharmacy technician trainee or pharmacy technician unless they had an active registration with the TSBP (BLS, 2012).

Although pharmacy technicians continued to experience role expansions, such as taking on drug distribution management, administrative tasks, and important responsibilities related to care teams, negative implications plagued job performance giving cause for concern with regard to career commitment (Desselle, 2005). According to Desselle, certified pharmacy technicians exhibited reasonably high levels of career commitment, but they could not be expected to remain in jobs where the perceived value of their skills was tenuous. Certified pharmacy technicians voiced their concerns regarding the inadequacy and lack of value they perceived, especially because it was ultimately the responsibility of the internal staff to cover the external responsibilities of the pharmacy technician (Desselle, 2005). Managers and supervisors of certified pharmacy technicians had been able to alleviate these concerns by properly educating technicians and increasing their roles through respectable acknowledgment. These simple

approaches had the potential to increase job satisfaction, thus decreasing medication errors in the profession (Kalman, Witkowski, & Ogawa, 1992).

Some states required certification for pharmacy technicians, whereas others only required their registration (Bachenheimer, 2011). A nongovernmental agency indicated that an individual had met specific criteria to become a pharmacy technician, and the technician seeking certification had to seek this on a voluntary basis (CCP, 2006). The results from a PTCB consumer survey indicated 73% of the public believed that before pharmacy technicians helped prepare and dispense medications, they should have received training and certification (CCP, 2006). The survey results also revealed that 91% of people agreed that pharmacies should only have hired certified pharmacy technicians. Candidates wishing to obtain certification had to take the PTCE to become a certified pharmacy technician (Bachenheimer, 2011). Eligible candidates must have earned a high school diploma or passed the GED to register for the examination, must have paid the required testing registration fees, and must have provided all supporting documentation. Qualified candidates could then take the examination at any time and at any of the 600 supervised testing centers throughout the United States (Bachenheimer, 2011). Pharmacy technicians had to maintain their certification by recertifying and completing 20 hours of continuing education related to pharmacy every two years (PTCB, 2011).

History of Pharmacy Technicians

Prior to the 1940s, most pharmacists performed their duties alone or with the aid of an apprentice (Raehl et al., 2008). By the early 1980s, 36 states had pharmacy assistants in community pharmacies, and all 50 states had assistants working in hospital

pharmacies (ASHP, 1982). Some states prohibited the use of pharmacy assistants; however, by 1991, all states permitted pharmacy technicians in both the hospital and community settings (Fitzgerald, Smalley, & Cash, 1991).

By 1991, at least 25 states had provisions for acknowledging the role of pharmacy technicians in health care delivery (Fitzgerald et al., 1991). Although the majority of the states did not legally acknowledge pharmacy technicians at that time, 23 states had technicians working in various pharmacy settings (Fitzgerald et al., 1991). Only one state did not legally acknowledge the role of pharmacy technicians (NABP, 2011).

Current Standards for Pharmacy Technicians

The NABP (2011), the standard-setting body for the various state boards of pharmacy, released a report where they found that 43 states had inadequate requirements for persons desiring to become pharmacy technicians. Most states required technicians to be at least 18 years old, hold a high school diploma or have passed the GED, and have passed a certification examination. In some states, including Texas, technicians completed informal training programs, while other states required technicians to complete formal training programs.

Training and Certification of Pharmacy Technicians

The process of credentialing pharmacy technicians and pharmacists as occupations within the pharmaceutical industry was an important topic (CCP, 2010). The limitations of pharmacy technician training were the primary focus in regulating systematic guidelines in this overall process. Professionals expressed both internal and external concerns for the lack of sufficient training and education, as well as for the

potential threat of the lack of safety in pharmacy technicians dispensing medication

(Cooksey et al., 2002). Researchers at ASHP developed a model curriculum for

technicians to use as a guide in all practice settings; however, there was no statutory

federal definition of the role of the pharmacy technician due to the need for pharmacists

to perform more clinical functions in pharmacy settings. For example, as previously

noted, many pharmacists administered immunizations such as pneumonia and influenza

shots because of pharmacists' accessibility, which placed more of the traditional

responsibilities of the pharmacist on the pharmacy technician without any additional

preparation or training related to these new duties (Ballington, 2011).

Selected health care occupations required some type of formal education before

working in the field. Dental assistants, for example, had many tasks, ranging from patient

care to record maintenance within the dental office, and their duties varied by state and

fluctuated depending upon the office in which they work. The location of the facility

where they worked, specialty or area of expertise, and size of the employing

practitioner's practice also affected professional preparation.

As another example, medical assistants completed administrative and clinical

tasks in the offices of physicians, podiatrists, chiropractors, and other health care

practitioners. Medical assistants' maintenance of clerical and medical records, as well as

the physical acquisition of health-related information, assisted physicians in both

organizing and adhering to patients' needs. Furthermore, medical assistants preserved

quality, accuracy, accessibility, and security on paper, as well as within an electronic

system. Responsibilities attributed to these individuals required appropriate professional

preparation.

As noted in the previous section, NABP researchers acknowledged that 43 states

had limited requirements for pharmacy technicians (NABP, 2011). In 2011, the state of

Georgia implemented new pharmacy technician regulations (PTCB, 2011), increasing

that number to 44. Leaders at NABP (2011) recommended that all state boards of

pharmacy regulate pharmacy technician certification requirements by 2016, yet it was not

clear which states, if any, planned to abide by this recommendation. The standardization

of teaching methods, pharmacy procedures, practices in different pharmacy settings, drug

recognition expectancy of both name brand and generic prescriptions, and safety in drug

administration functioned to establish professional uniformity via formal education. Such

standardization served to minimize the likelihood of human error and greatly decreased

the number of erroneous injuries and fatalities due to medical ignorance.

Future of Pharmacy Technicians

Changing roles of pharmacy technicians surfaced due to new trends in technology

and an increase in a variety of pharmacy settings. Most pharmacy settings had new

technology and new ways to serve their patients with robotic systems, bar coding,

computers, and automated dispensing technology, therefore elevating the expectations

from pharmacists and pharmacy technicians (Bachenheimer, 2011). As improvements

took place in delivering quality patient care, a clear understanding of the values, skills,

and knowledge of pharmacists and pharmacy technicians highlighted the importance of

the implementation of various credentials (CCP, 2010).

Unpredicted growth in the use of medication created a demand for pharmacists that outpaced the feasible supply (Cooksey et al., 2002). Pharmacy technicians acquired more recognition from pharmacists, along with expanded accountabilities, as their magnitudes grew (Rouse, 2001). According to The Bureau of Labor and Statistics (2012), as the settings of pharmacies continued to grow along with the demand for patient care by pharmacists, pharmacy technicians also realized more opportunities to advance as paraprofessionals as a result of assisting pharmacists with nondiscretionary functions. In unanimity and out of concern for the risk of medication errors, people wanted pharmacy personnel to be competent, knowledgeable, licensed, and registered in public health to minimize liability (Levinson & Gallagher, 2007). Approximately 334,400 pharmacy technicians were currently identifiable in the United States, and this number was likely to increase by 32% by 2020 (BLS, 2012).

With an increase in the aging population in the United States, the need for pharmacy technicians in the future was likely to escalate as well. Pharmacy technicians must have been knowledgeable about the operation and maintenance of new technologies (Mohr, 2009). Members of the ASHP's Council on Education and Workforce Development described future roles of pharmacy technicians as generalists working in inpatient, chronic, and home care settings; focused practitioners working in specialty settings; advanced practitioners collecting clinical data for pharmacist evaluation; and practitioners serving in managerial and supervisor roles (ASHP, 1996). With the new practice trends, Bachenheimer (2011) projected that there would be more competition in the pharmacy profession with regard to health screenings, dietary supplements,

immunizations, and specialty compounding. As a result, many technicians, pharmacists, and educators favored executing national standards for technician training through formal education. Uniformity in education could have also been strengthened and enhanced by outlining an agreed-to hierarchy of levels attainable by technicians based on accepted prerequisites that are dependent upon job experience, job roles, projected responsibilities, and corresponding pay (Desselle, 2005).

To meet the growing demands and needs of the pharmacy profession, pharmacy technicians needed to prepare for new standards of practice (Mohr, 2009). Leaders of the American Public Health Association supported regulating pharmacy technicians through imposing a requirement for either a registration or a license (Ballington & Anderson, 2010). To prepare students to pass examinations related to either certification or licensure more effectively, formal training programs were the most desirable way to ensure preparation. For pharmacy technicians to remain current with respect to professional knowledge and skills, it was already an accepted practice for them to attend seminars and earn continuing education credits for maintaining or earning desirable or required certifications or licensures (Ballington, 2011).

To upgrade and standardize the training of pharmacy technicians, ASHP leaders endorsed training programs. These programs served to upgrade and standardize technician practices through the definition of adequate criteria aimed at facilitating their development and ongoing professional advancement (ASHP, 1996). Pharmacy technicians had to be able to perform duties in a competent manner and determine the best course of action in difficult situations. Critical thinking skills were, therefore,

essential for their development, as these skills aided in problem solving and troubleshooting, as needed (Bachenheimer, 2011).

Medication Errors in Pharmacies

All medical and health care personnel, which included both pharmacists and pharmacy technicians, had to be most concerned with the safety of patients (National Pharmacy Technician Association [NPTA], 2009). People and patients, in general, took medications for the primary reason of preserving their lives (NPTA, 2009). Unfortunately, independent of the original intent for a prescription, careless mistakes resulted in errors that caused irreversibly severe or detrimental catastrophes. The NPTA, founded in 1999, served as the largest nonprofit association for pharmacy technicians in the world. It represented a variety of settings such as retail pharmacies, health-system pharmacies, independent pharmacies, federal pharmacy purchasing, and education management. To help prevent medication errors and raise the national standards for training pharmacy technicians, in 2009 the NPTA members passed a bylaw called Emily's Law in Ohio (Kapp, n.d.). Emily Jerry, the law's namesake, was an one-year-old who died from a lethal dose of medication administered during chemotherapy for a diagnosed yolk sac tumor. The administering technician was responsible for the lethal dosage (Kapp, n.d.). After 2010, NPTA members worked to pass a national version of Emily's Law to ensure all pharmacy had the proper educational training to handle complex medications (NPTA, 2009). However, such a national law did not yet exist, and many states continued to have no regulations regarding training for pharmacy technicians.

At least nine states permitted the use of a process commonly referred to as tech-check-tech in the completion and distribution of medication prescriptions. In this process, one pharmacy technician filled an order that a second pharmacy technician subsequently checked for accuracy, as opposed to a professional pharmacist, before distribution. According to Adams, Martin, and Stolpe (2011), most of the states that allowed the use of tech-check-tech required the pharmacy technicians to complete special training. Researchers produced more than 11 published studies regarding this process since 1978. The researchers of six of the studies reported on ranges of differences in error detections found. However, the study conducted by Adams et al. (2011) indicated that the TCT process produced accurate results comparable to those attributed to pharmacists.

Sekhar, Mary, Anju, & Hamsa (2011) concluded from a three-week study conducted in a 1100-bed hospital that medication errors seriously affected the health care delivery system by causing significant mortality in health care settings. An Institute of Medicine report indicated that medication errors were responsible for between 44,000 and 98,000 deaths each year, which made these errors the eighth most prominent cause of death yearly (McDonald, 2000). The volume of research regarding medication errors was inadequate and included few findings used to educate pharmacy professionals about the seriousness of these errors in delivering quality health care.

Pacheco, Viscusi, Hays, and Woolridge (2012) found a correlation between the experience of residents treating patients and medication errors, concluding that errors in calculation rates found in prescriptions came about due to a lack of educational training. The researchers' study supported findings in other research: medication errors were

responsible for significant mortality and a heightened need existed for ongoing medication error assessment.

Kennedy et al. (2011) evaluated the use of a modified prescription form versus the traditional prescription form in reducing medication prescription errors. In the study, pharmacist consultants collected quantitative data that resulted from prescribers' use of two types of prescription pads: modified (i.e., new version) and placebo (i.e., the standard or traditional version already in use). Using the modified version brought about more errors than the placebo version. Thus, modifying the prescription form actually led to more medication prescription errors rather than less. As the need for medications increased, the responsibility of pharmacy technicians in the medication prescription preparation and distribution process also increased. Although pharmacists were ultimately responsible and accountable for this process, including medication errors made, pharmacy technicians were intimately involved. Thus, in spite of responsibility, either the pharmacist or the technician involved, or both, could have made a process error. Desselle (2009) showed pharmacy technicians had higher error rates than pharmacists. In the study, 3,200 certified pharmacy technicians responded to open-ended questions related to medication errors and provided their views on educational needs, wants, and training that affected the error-making process. The 3,200 responding technicians worked in both chain and hospital pharmacies. The technicians who participated felt they made errors due to interruptions, distractions, and inadequate staffing. The researcher also found that pharmacist always informed the technicians of

errors that they made; however, they seldom received training and guidance to help prevent future occurrences.

Four years after the medication error study referenced above, Schmitt and Desselle (2009) reported on a qualitative phenomenological study conducted to assess pharmacists' views on the importance of certification for pharmacy technicians with whom they worked. Conversations and interactions between the two groups provided the material and data needed for the study, which produced three overall focus areas of interest, with one deemed to be the most important: the benefits of certification for pharmacy technicians. Schmitt and Desselle concluded that to assess the benefits of pharmacy technician certification accurately, daily observations and further research were both necessary.

In the early 2000s, medical professionals reported to poison control centers that the most common pharmacy prescription dispensing errors were due to work- or labor-related substitutions and labeling errors (Seifert & Jacobitz, 2002). Labor substitutions occurred because of the intense growth in the pharmaceutical industry, which had an increase in the number of pharmacy assistants (i.e., pharmacy technicians, trainees, and aides) hired to help support the demanding workload and counteract the lack of sufficiently qualified and available pharmacists. Between 1996 and 2000, the number of pharmaceutical assistants in the industry skyrocketed from 123,000 to 247,000 (Cooksey et al., 2002).

Leaders at the TSBP submitted reports to the Healthcare Integrity and Protection Data Bank regarding all disciplinary actions taken against pharmacists, pharmacies,

pharmacist interns, and pharmacy technicians (TSBP, 2012). According to Seifert and

Jacobitz (2002), most actions resulted from reported overdoses. Generally, these

occurrences were the most common medical errors recognized, especially because

overdosed patients typically generated obvious signs and symptoms recognizable by both

themselves and health care providers. Of those reported, most have related to children's

prescriptions, since, due to their small sizes, their prescriptions required very precise

measurements by pharmacists of the drugs prescribed. Without the implementation of

formal education, instances of severe medical errors of a catastrophic magnitude

continued to rise (Ness, Sullivan, & Stergachis, 1994). However, with the implementation

of proper education and formalized training, pharmacy personnel became increasingly

vigilant in both recognizing and preventing possible errors through appropriate actions,

thus enabling or activating an additional layer of safety during the dispensing process.

In 2008, a Texas hospital pharmacy incurred a lawsuit because of an error on the

part of a pharmacist and three pharmacy technicians (Texas Hospital Heparin Error,

2008). The preliminary investigation indicated that the error occurred within the mixing

process at the hospital pharmacy (*Legal* Examiner, 2008). A report released subsequently

indicated that these avoidable adverse drug reactions added up to approximately $3.5

billion in hospitalization costs each year, not including the economic liability of lost

wages and production (Schneider, 2006). Smerd (2007) stated that the overall impact of

health care costs, lost profits, and lost production reached between $17 billion and $29

billion annually due in large part to expenses directly related to the job performance of

employees. Although these errors were monetarily costly to the medical industry, one

cost that superseded all others was the increased risk of potential death. Each year, more cases arose where oversights by pharmacy personnel caused either mild or severe medical complications or death (Smerd, 2007).

Many well-known neighborhood pharmacies attempted to justify prescription errors by highlighting the fact these errors were minor in scope when considering the larger picture that pharmacy staff correctly fill millions of prescriptions every day (Beso et al., 2005). Those affected by prescription errors did not report all incidents, especially if the patient did not expose the pharmaceutical staff (Cina et al., 2006).

Walgreen's, the nation's largest drugstore chain in sales and profits, experienced at least four lawsuits dealing with prescription errors that resulted in fatalities between 2006 and 2007 (Levinson & Gallagher, 2007). One such case in Ohio, involving a patient named Terry Paul Smith, received national media coverage in 2007 and appeared in *USA Today* (2007). The dispensing instructions for the patient were different from those prescribed by the attending physician, which led to the death of the patient. Neither the patient nor anyone in his family received information about the proper intake of the medication or was able to pose questions upon receipt of the medication. Due to the fast-paced environment in mainstream pharmacies and the general lack of educated staff, this scenario was common. The medication-use process had not been a priority in health care policy, and there was inadequate evidence and research to indicate the updating and redesign of the process (Cooksey et al., 2002).

Theoretically, medication errors were subject to epidemiological analysis as a strategy for helping to prevent them, thus reducing the harm that they cause. Ferner

(2009) addressed the requirements for reliable epidemiological studies that included understanding the general definition of a medication error, the condition to evaluate, and the study design for the targeted population. Ferner provided a general definition of a medication error as a failure in the treatment process that had the potential to harm or leads to harming the patient. The number of epidemiological studies increased from 2006-2016, but there had been inconsistencies in the results because of the lack of consistently imposed requirements across them all. Ferner contended that comparing results from these different studies related to medication errors was difficult and dependent upon error verification and data gathering methods used. Hence, the impact of epidemiological studies in reducing medication errors needed further study and review.

As a final consideration in understanding the minimization of medication errors in pharmacies, the quality of work life of pharmacy technicians needed consideration. Desselle & Holmes (2007) addressed this issue by discussing a structured model for certified pharmacy technicians' job satisfaction. Because their job duties were critical for medication preparation, pharmacy operations, and patient care, their attitudes about their work were important. In fact, overall job satisfaction may have enhanced the job performance of pharmacy technicians, thus affecting the frequency of medication errors due to these individuals. Desselle discussed small-scale studies conducted in the 1980s that were difficult to generalize to apply to the larger population of pharmacy technicians. Even with applicability difficulties, certain findings regarding job stress, organizational commitment, organizational support, practice settings, and demographic variables did logically appear to affect job satisfaction statistically, even in pharmacy environments.

From a theory-based model discussed, Desselle defined significant linkages between career commitment and job satisfaction. Desselle concluded that pharmacy technicians played a big role in the success or failure of a pharmacy because both their behavior and attitudes served as critical factors in affecting patient satisfaction and affecting the frequency of medication errors.

Qualitative Research Tradition

The qualitative research tradition I chose for this study was phenomenology using one-on-one interviews for data collection. This design was suitable for collecting data to explore the perceptions of pharmacy managers with regard to the certification, national and international registration, and educational background of pharmacy technicians in an array of pharmacy settings. A key emphasis was the comparison of practice effectiveness between formally and informally educated pharmacy technicians.

I justified the selection of the phenomenological approach, in detail, earlier in this chapter in the Theoretical Model section and included examples of its effective use for comparative studies in pharmacy settings and other health care settings. Additional studies with the same approach, including some examples outside the realm of health care, had universal appeal for its general application and use in research studies. Generally, phenomenological researchers focused primarily on human subjectivity in new and critically important ways, thus making the qualitative analysis of phenomena scientific (Giorgi, 2005). The purpose of this phenomenological approach was to make clear the exact intent and discover a phenomenon as the participants in a setting perceive it (Lester, 1999). Lester used the approach to obtain an understanding of the perspectives

of pharmacy managers regarding the job performance of pharmacy technicians through their normal daily operations or routines as they work alongside one another in a homogeneous pharmacy setting.

Although researchers studied pharmacists and pharmacy technicians working jointly in various treatment settings, there was little research relevant to evaluating specific work done by formally trained pharmacy technicians compared to their informally trained counterparts by those who supervised them both directly and indirectly on a daily basis (Giorgi, 2005). Therefore, the perceptions and testaments of pharmacy managers, the individuals whose work mandated a daily evaluation of their subordinates, were of expert status and vital importance. Hence, it was imperative that pharmacy managers be integral subjects in this research study. There was a gap concerning medication errors regarding pharmacy technicians who did not gain a formal education to simulate and learn how to dispense medication.

Sanchez (2010) conducted a qualitative phenomenological study to describe the medication experiences of Hispanics living with HIV/AIDS. The results showed that the lives of these subjects were relevant and pertinent to their medication experiences (Sanchez, 2010). The subjects' medication-taking behaviors altered their worldly existential views (Sanchez, 2010).

Surveys, one-directional mechanistic approaches in research under the control of the persons or entities administering them (ASHP, 2012), provided little or no opportunity for the individual assessed to have self-directed input. Even with a standard set of objectives, the design or formatting of a survey instrument required a lot of thought

and preparation if its use was to account for individual differences, strengths, weaknesses, and uniqueness. A more open-ended approach may have been more appropriate for the data collection required in this study. Thus, I selected a phenomenological approach included one-on-one interviews for collecting data.

Sanford, Forrester, Chapman, Chadley, and Hastie (1984) explored the first study that appeared in the *Journal of Health-System Pharmacy* using a phenomenological approach. The focus was on essential and extrinsic factors affecting pharmacy technicians' job contributions in two community hospitals. A student performed comparable observations during one summer while posturing as a community researcher. Technician-training programs at both hospitals included classroom teaching and on-the-job training. The collection of statistics centered on note-taking that resulted from casual conversations with both pharmacists and pharmacy technicians. This method yielded a list of factors identified by technicians that they felt led to essential job satisfaction: availability of formal training programs, respect from pharmacists, coordinating work with job stress, and training of other pharmacy technicians. The negative aspects identified included the unchallenging nature of the work and the limited opportunities for advancement. In addition to recommending the modification of job activities to help promote intrinsic job satisfaction for technicians, Sanford et al. (1984) also recommended that managers expand extrinsic fulfillment by providing satisfactory salaries, job security, and flexible work schedules.

Herrera (2010) used a phenomenological approach to study enhancing pharmacy technician qualifications through foundation degrees (FD). FDs existed since 2000, and

although they had a potential targeted student population of more than 15,000, very few

enrolled in related courses between 2007 and 2010 when the study took place. Because of

low enrollment, the future of FDs was uncertain; thus, Herrera sought to gather the views

of students, graduates, employers, and people involved in course delivery and

development. Data collection occurred over a 3-year period using one-to-one and group

interviews. These interviews entailed asking a series of research questions with the

results recorded, transcribed verbatim, and subjected to thematic analysis. Herrera

developed a theoretical model representing the experiences of stakeholders involved in

the FD and identified multiple themes. There was a general lack of awareness of the

availability and scope of FDs, and although stakeholders perceived them as valuable, this

was not necessarily the perception in the workplace (Herrera, 2010). From a pedagogic

viewpoint, FDs were demanding because content required constant updating to reflect

changes in practice. Pharmacy technicians' motivation to acquire skills and knowledge to

improve patient care was the main driving force for participation (Herrera, 2010).

Researchers used the phenomenological approach successfully in studies related

to other health care professionals such as dental technicians and advanced practice

nurses. Reeson (2011) investigated the professional experiences and development of

dental technicians and undergraduate dental students during a shared learning exercise in

a combined university dental school and hospital in the United Kingdom. The purpose of

this study was twofold: (a) to gain an in-depth understanding of the experiences of trainee

dental technicians and undergraduate dental students during shared learning

opportunities, and (b) to examine whether interprofessional learning between the two

groups offered any professional and occupational disciplinary benefits or disadvantages. The study made use of a qualitative approach with a phenomenological framework where data sources included reflective diaries, focus group interviews, and other salient material. Dialogue between researcher and participants played a major part in ensuring the rigor of the study. Results indicated that both groups of participants regarded the exercise as useful in facilitating communication and understanding each other's roles. Findings were consistent with previous research into interprofessional education. The students involved regarded the processes of sharing learning as having a positive impact on future interprofessional teamwork (Reeson, 2011). Evidence supported using a phenomenological approach in conducting the study. Researchers used this approach widely in various health care studies in a variety of settings, including various pharmacy settings, as well as in non-health care settings. These further validated using phenomenology in the collection of data for this study.

In a qualitative phenomenological study, Shoemaker (2006) reported that patients perceived the traditional approach taken by pharmacists to have a negative impact on their natural attitudes toward their overall care. Shoemaker found that pharmacists treating patients using pharmacology only, without considering the patients as individuals, devalued the patients' personal understanding of their own situations. Such treatment also negatively affected the care the patients received (Shoemaker, 2006).

Makowsky, Koshman, Midodzi, & Tsuyuki. (2009) completed a collaborative, team-based care study in an inpatient medical setting by incorporating a collaborative approach where pharmacists, physicians, and nurse practitioners worked together as

health care teams. The study included a phenomenological approach to comprehend the processes that helped to generate well-functioning teams. Makowsky et al. discussed findings from key informant interviews, as well as insightful journaling from pharmacists, physicians, and nurse practitioners participating in the trial team approach to delivering care to patients in a controlled clinical hospital setting. The phenomenological method guided the information breakdown and substance analysis to identify and categorize up-and-coming themes in the study. The participants indicated that the operation of teams that incorporated pharmacists, physicians, and nurse practitioners facilitated positive patient outcomes by improving drug-therapy decision-making, continuity of care, and patient safety.

Mackey (2009) conducted a phenomenological study to explore the lived experiences of advanced practice nurses with clinical experience after studying critical thinking at the college level. Four major findings or themes emerged from the study: getting information was vital in therapeutic development; critical thinking courses helped in problem solving; the effects of counseling produced realistic entrustment; and patients' views on the impact of the plan were positive. The overall results of the study demonstrated that critical thinking skills led to the reduction of medical errors and improved during training in both clinical and academic settings (Mackey, 2009).

Finally, several researchers used phenomenology in areas unrelated to health care. Chappell, Eatough, Davies, and Griffiths (2006) used an interpretative phenomenological approach to examine how individuals perceived and made sense of EverQuest, an Internet-only computer game, in the context of their lives in an effort to understand

gaming addiction. EverQuest was one of the most popular and largest of the massively multiplayer online role-playing games. The data for the study were from a range of online gaming forums where individuals shared their experiences of playing EverQuest. The study included an interpretative phenomenological analysis of online gamers who perceived themselves to play excessively. Accounts presented by players and ex-players categorized them as addicted to EverQuest in the same way that other people become addicted to alcohol and gambling.

Czech, Wrisberg, Fisher, Thompson, and Hayes (2004) conducted an existential phenomenological investigation to study the first-person perspective on Christian athletes' lived prayer experiences. Nine former Division I collegiate Christian athletes participated in interviews and described their experiences of praying before, during, or after competition. The results revealed four categories that characterized athletes' experiences of praying in sports: performance prayers, prayer routines, thankfulness, and God's will. The findings supported results from previous research that indicated ritualistic activity has a powerful influence on athletes, athletes used prayer as a coping mechanism to ease stress, and athletes varied with respect to the specific prayer style they wanted to use. As a result, recommendations included for coaches and sports psychology consultants, as well as for researchers interested in using phenomenology methodology, to gain greater an understanding of the participants' behavior in sports.

Furthermore, Hansemark and Albinsson (2004) used the phenomenological method to explore how employees of a company experienced the concepts of customer satisfaction and retention. The approach allowed Hansemark and Albinsson to discover

the informants' own interpretations. The discussion on satisfaction included three perspectives: how to define of the concept, how to recognize when a customer was satisfied, and how to enhance satisfaction. The informants' experiences pertaining to these three categories varied, and seven ways to define, recognize, or enhance satisfaction emerged: service, feeling, chemistry, relationship and confidence, dialogue, complaints, and retention. With the exception of the first two categories, the others enhanced retention, and relationship and confidence had the strongest connection between retention and satisfaction strategies. Thus, the use of phenomenology was universal in facilitating studies such as the study, where opinions and perceptions needed identifying and analyzing to draw valid conclusions.

I found the literature on the phenomenology research helpful as it guided my use of this methodology in the current study. The researchers in these previously-identified studies provided detailed descriptions of their data collection, examples of data analysis, and a guideline of how to interpret these results. These were extremely beneficial so that I would not make omissions in the data collection, analysis, and interpretations that I may have made as a first-time researcher.

Chapter Summary

The literature review in this chapter consisted of the breakdown of the roles of all pharmacy personnel, the current standards in the credentialing and training of pharmacy technicians, and a description of the literature search strategy and theoretical framework selected for this qualitative phenomenological study. A need existed for additional evidence to justify education and training standards for all pharmacy technicians,

including managers' perceived need for these individuals to receive certification from a

review board. The study involved exploring the gap in the literature regarding the

relationship between pharmacy technicians' training and the rate of errors made when

dispensing medication. The implementation of more adequate training for future

pharmacy technicians would have affected the job performance of these individuals.

Chapter 3 includes a detailed description of the research methodology for this study,

along with suggested methods of execution.

Chapter 3: Research Methodology

Introduction

This qualitative study involved examination of the perceptions of pharmacists, who were also pharmacy managers, regarding the job performance of pharmacy technicians with formal training compared to those with informal training in the state of Texas. Merriam (2009) stated that researchers conducted qualitative research to explain interpretations of an experience at a particular point in time. Denzin and Lincoln (2005) noted that qualitative researchers "seek out answers to questions that emphasize how social practice is formed and giving significance" (p. 10). Qualitative research also allows researchers to implement a systematic way to collect data from conversations, transcribe them, and derive common themes to make meaning of what people think and why they think it (Lincoln & Guba, 1985; Merriam, 2009; Patton, 2002). The sample in this qualitative research was small to allow a concentration on a particular group and to enhance my ability to enter that group's world (Lincoln & Guba, 1985; Patton, 2002).

Pharmacy services are essential to the practice of medicine. Without the inclusion of pharmacies, hospitals could not run successfully. Pharmacy settings differ from the medical practices that they support and have employees with varied specializations, including pharmacy technicians and licensed pharmacists. Pharmacy technicians support licensed pharmacists, who also manage the operations of pharmacies, and play one of the most important roles in health care settings. The training or education of pharmacy technicians, as well as the job performance and professionalism that they exhibited in the work environment, is essential to the operation of a pharmacy. Chapter 3 includes a

discussion of the research design for the study. Also included are the (a) methodology; (b) instrumentation; (c) pilot study; (d) data analysis; (e) assumptions of the study; (f) limitations; (g) issues of trustworthiness; and (h) ethical considerations, as well as a summary.

Problem Statement

In 2016, The TSBP did not regulate pharmacy technician training and certification, but pharmacy technicians had the opportunity to seek national certifications such as the one offered by the ASHP (ASHP, 2003). Therefore, some pharmacy technicians entered the field without formal training and licensure, which resulted in poor job performance, including making mistakes when filling and dispensing prescriptions (ASHP, 2003). Such mistakes were detrimental to the wellbeing of customers and resulted in serious and even fatal consequences (ASHP, 2003). In this qualitative study, I focused on the performance of formally and informally trained pharmacy technicians in the state of Texas. The results of this study assisted in identifying a need for formal training and licensure regulation for pharmacy technicians, which benefits the population at large. The problem was that lack of training may result in errors that could be harmful to customers' health and wellbeing.

Purpose of the Study

The purpose of the qualitative phenomenological study was be to assess formally and informally trained pharmacy technicians' performance as perceived by licensed pharmacists who were also managers—the population for the study—to determine the need for formal training and licensure regulation for pharmacy technicians in Texas.

Pharmacists possess a license from the state pharmacy board to practice medication activities in a variety of health care settings (ASHP, 2003). Pharmacists also have a degree of involvement in the hiring and informal training of pharmacy technicians (ASHP, 2003). The perceptions of pharmacists regarding pharmacy technicians' performance in terms of dispensing medications error free were important to this study because I drew valuable and beneficial inferences regarding regulations for the training of pharmacy technicians from their personal reports.

Research Design

The study included a qualitative phenomenological research methodology using one-on-one interviews for data collection. Data collection included interviews to explore the perceptions of pharmacists who were pharmacy managers. In these interviews, I focused on gathering information regarding certifications, national and international registration, and educational preparation of pharmacy technicians in three different pharmacy settings: (a) a retail pharmacy (b) a hospital pharmacy, and (c) an independent pharmacy. I had an emphasis on assessing the formal and informal education of pharmacy technicians.

According to Creswell (2009), the objective of qualitative research is to understand a specific condition, group, interaction, or role. The focus of the research question for this study was the lived experiences of licensed pharmacists who were pharmacy managers—the target population of this study—with at least 1 year of experience managing pharmacy technicians with formal training or informal training. The study also involved examining the demographics of the sample. The only means of

reaching the target population was through gathering relevant statistics and information from various public pharmacy websites. After this was completed, I contacted individuals regarding participating in the study. The phenomenological approach had universal appeal for its general application and use in research studies that used interviews. I organized the qualitative review in this evaluation model around the theory that characterized past research by comparing the job performance and job satisfaction of formally educated technicians to that of informally educated technicians. The Evaluation Job Theory Model involved evaluating how investments linked to results was a suitable guide for the sequence of actions and the details and tasks in planning this study.

Role of the Researcher

A researcher may take one of several stances during data collection that details the relationship between the observer and the observed (Merriam, 2009). Because this study was qualitative with a phenomenological approach, I served as both observer and participant. My role as an observer was to focus on the perceptions of pharmacists who also served as pharmacy managers supervising informally educated pharmacy technicians from the perspective of management and job performance. My role as a participant was to complete interview notes that contained accurate and reliable information while conducting interviews. Patton (2002) described entry into the field as a way to make contact with subjects to find some pattern of behavior in a way that would permit the participants to accept the researcher.

In some studies, researchers had personal or professional relationships with the participants in a study. Such relationships could have been useful in helping researchers

gain better insight as well as minimize potential communication barriers, thus making the collection of qualitative data easier. Dresser (1998) noted that the protection of participants balances the executive problem of ethical reviews and dealings. Having a balanced research relationship promotes the trust and awareness of possible ethical issues. I looked for relationships among assorted data, as well as summarized, arranged, and organized data into themes. I also analyzed data with a focus on gaining information applicable to the pharmaceutical field. Funder (2005) noted that to ensure the study is valid a researcher must address biases by keeping an open mind to prevent influenced thinking, expand academic research skills, understand the research field structure, and develop good relationships with participants through applying friendly tactics. Ferner (2009) noted that addressing the requirements for reliable epidemiological studies in the pharmaceutical field, which included understanding the general definition of medication error, the condition under evaluation, and the study design for the targeted population, minimized biases by collecting and analyzing data with an open mind, with results of new knowledge derived from the essence of experiences (Moustakas, 1994). Add summary to fully conclude the paragraph and section.

Methodology

Participant Selection

As suggested by Creswell (2009), I began the data gathering process by selecting nine licensed pharmacists who also served as pharmacy managers working in retail, hospital, and independent pharmacy settings in the State of Texas and who had also supervised formally and informally trained pharmacy technicians for at least 1 year. The

rationale for using a small sample was to gather rich and in-depth information which is often lost in quantitative studies with large samples. This convenience sample consisted of pharmacists from three different types of pharmacy settings using Creswell's (1998) guidelines to maintain a sample size of 5 to 25 for qualitative research studies. The final sample size in this qualitative research study depended on reaching saturation during the data collection process, a tool used for ensuring that adequate and quality data were collected to support the study. I reached data saturation after interviewing nine pharmacists, three from each type of pharmacy.

I gathered information about the target population from various public websites including www.walgreens.com, www.cvs.com, www.houstonmethodist.org, www.google.com, and www.memorialhermann.org. The TSBP website contained a public list of all potential licensed pharmacists who were also pharmacy managers. I then selected three pharmacists from a retail pharmacy setting, three pharmacists from a hospital setting, and three pharmacists from an independent pharmacy setting. After collecting the names and identifying ideal participants, I directly contacted the pharmacists by email or telephone to ask about willingness to participate in the study. Interviews took place at an agreed upon location that had sufficient privacy to record the interview. Participants must have agreed to the audio recording of their interview to be eligible for the study. I became familiar with the agreed upon the interview setting before beginning the interviews to ensure an adequate environment. Before starting each interview I explained the purpose of the study and the procedures involved, and was flexible and adaptable while interviewing participants.

Each of the participants worked in a different pharmacy facility. During the separate interviews, I explained the purpose of the study, as well as possible risks, confidentiality (see Appendix A), consent for audio tape-recording interviews, and the ability to withdraw at any time. After receiving their consent for participation in the study, I met with the participants face-to-face so they had the opportunity to ask any questions and to schedule the interview. I designed the interview prompt questions to answer the following research question: What were the lived experiences of licensed pharmacists who were also pharmacy managers with respect to managing formally and informally trained pharmacy technicians regarding their job performance? Prompt questions helped to gain insight into the following:

1.   Have you noticed any difference in supervising pharmacy technicians that are informally trained versus formally trained?

2.   Do you believe that certification, formal training, or registration advance the roles of pharmacy technicians in a variety of pharmacy practice settings and how?

3.   In your opinion as a pharmacist who serves as a pharmacy manager, do you think implementation of pharmacy technician standards such as certification, training, or registration in the state of Texas will affect the workforce in a variety of pharmacy practice settings and how so?

My goal is that the results of this study lead to a discussion about changing the requirements for pharmacy technicians' training and licensure, which in turn may increase job performance and improve the quality of service in pharmacy settings. There is a need for national standards that require pharmacy technicians to complete an

accreditation from an approved training program (Myers, 2011). Although the TSBP

slowly addressed the issue in Texas, the results of this study may have accelarated the

process (Mitchell & Jolley, 2012).

Instrumentation

In a qualitative phenomenological research study, the researcher serves as the data

collection tool (Creswell, 2009). Open-ended interviews allow the interviewees to follow

streams of reflection and expose their personal values and perceptions Creswell, 2009). I

began the interviews with one general opening question and asked prompt questions as

individual interviews proceeded. With the consent form (see Appendix B), I had a prompt

guide in case the topics did not come up naturally during the conversation. The prompts

helped the participants reflect and answer the research question (see Appendix C).

Participants had the opportunity to add further suggestions and perceptions for more

insight. The total completion time for the interviews was approximately 45-60 minutes.

<div align="center">

Pilot Study

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Before initiating the main study and after receiving Institutional Review Board

(IRB approval number 01-13-16-0072062) approval to conduct the study, I designed a

sample interviewing format with open-ended questions for pilot testing to provide me

with practice in conducting the interviews and to assess whether or not the questionnaire

needed revising. The pilot study included three participants who met the same criteria for

participation in the study, and the procedures were the same as those outlined for the

formal study. I gathered information to identify potential participants from the various

pharmacy websites. Such information was public and included contact information. I

used in-depth interviews to determine the issues to address in a large-scale questionnaire survey. I piloted the phrasing of the questions as well as the order. This pilot study helped to assess the feasibility and internal validity of the study and to test the data collection process during data collection.

Data Collection

The study included one main technique for creating narrative records of the phenomena in question: unstructured interviews. Burns and Grove (2007) stated that the main aim of a qualitative study is to assess the power of the two affiliated variables and simplify the results by taking samplings from the inference population to make casual assumptions regarding why things happened or did not happen in an exact way. In this qualitative research, I aimed to find out the relational system as a framework for understanding participants' reality and the dynamic structure underlying their reality in terms of the counter transference reactions of participants. Burns and Grove (2007) also posed that interviewing was an effective method that allowed researchers to investigate a phenomenon in-depth to understand participants' lived experiences.

Data collection, a methodical gathering of information, was applicable to the research questions using methods such as participant observation, focus group discussions, and interviews (Burns & Grove, 2007). Data collection began for the pilot study after the study received IRB approval. I collected data via open-ended interviews from sample participants regarding their lived experiences with respect to managing pharmacy technicians who had not graduated from a formal pharmacy technician program as well as those who had received formal training. I obtained permission from

participants for audio recording the interviews. As part of the interview introduction, I

informed the participants that I would take notes during the interviews. Once the

interviews were complete I analyzed the interview transcripts for patterns that emerged to

formulate common themes.

Data Analysis

Burns and Grove (2007) stated that data analysis was a way to organize data to

generate findings. According to Streubert-Speziale and Carpenter (2007), it was crucial to

categorize the way statements or central themes surfaced and connected to one another to

form themes to be comprehensive. I recorded the interviews and took notes. After I

completed and transcribed the interviews, I reviewed the notes, the recordings, and the

transcripts thoroughly with the purpose of finding commonalities and themes. I read all

the transcribed interviews methodically to reflect on all interviews and gather information

that I used for content analysis.

I used NVivo 10.0, a qualitative data analysis software, to organize data into

categorized folders and subfolders before analysis began (Bazeley, 2007). I used the

following steps outlined by Braun and Clarke (2006): (a) data familiarization;

(b) generating initial codes; (c) searching for themes; (d) reviewing themes; (e) defining

and naming themes; and (f) producing the report. Only I collected the data; a research

assistant aided with coding e data to provide reliability. NVivo 10.0 served as a medium

so that I could code the interviews, which included taking the raw data, extracting related

concepts, and further developing them in terms of their dimensions and properties. Both

the research assistant and I agreed with independent coding themes that I developed.

Issues of Trustworthiness

Talbot (1995) noted that trustworthiness was essential to "establishing validity and reliability of qualitative research" (p. 428) when it accurately represented the experience of the study participants. The trustworthiness of data emerged through a researcher's attention to, and affirmation of, information detection, also referred to as rigor. My target of rigor in qualitative studies was to signify the study participants' experiences precisely (Streubert-Speziale & Carpenter, 2007).

I assumed that the pharmacists selected to participate provided reliable and authentic information and that the information gathered reflected their personal and professional experience in the management of both formally educated and informally educated pharmacy technicians. To conduct this study in an ethical manner, I was intentionally nonjudgmental and refrained from asking leading questions. Lincoln and Guba (1985) established four criteria for trustworthiness: credibility, transferability, dependability, and conformability. To establish credibility as well as for the purpose of comparing the results for validity, a research assistant coded data along with me. Investigators advocated "the use of multiple coders to better link abstract concepts with empirical data" (Ryan, 1999, p. 315). Furthermore, "having multiple coders mark a text increase[d] the likelihood of finding all the examples in a text that pertain to a given theme" (Ryan, 1999, p. 319). Multicoder agreement served as the validity measure for coded data, thereby demonstrating that multiple coders picked the same text as pertaining to a theme (Ryan, 1999). Multicoder agreement provided evidence that "a theme ha[d]

external validity and was not just a figment of the primary investigator's imagination"

(Ryan, 1999, p. 320).

Limitations

In qualitative studies, the researcher's data analysis may have been sensitive to his

or her preconceived notions and biases. Additionally, this quantitative design involving

interviews was characterized by self-reports, which also presented as a limitation.

Although I assumed that participants' self-reports were honest, participants' perceptions

influenced their reports, and I, therefore, viewed them with caution and reviewed them in

the context of participants' work setting (Ioannidis, 2007). I had to be especially careful

not to overgeneralize (Creswell, 2009).

Ethical Procedures

Aligning with Creswell (2009), I developed trust with participants and promoted

the integrity of research by protecting their privacy and rights as participants of a research

study. Creswell suggested that researchers anticipated and addressed any ethical

dilemmas that arose when conducting the research. Therefore, I ensured the protection of

all participants' identities at all times. All participants provided consent for participation,

and I informed them of the purpose of the study, the procedures I utilized, the possible

risks, and the right to withdraw at any time, ensuring the confidentiality of participants

required an informed consent form (Creswell, 2009), among other procedures aimed at

protecting the rights of all participants. Prior to conducting the study, I gained approval

from the IRB for the data collection utilized in the study. I maintained participants'

confidentiality so no one could associate their identity with the information that they made available, and the final report did not include any identifying information.

Summary

The purpose of the qualitative phenomenological study was to assess formally and informally trained pharmacy technicians' performance as perceived by licensed pharmacists who were also managers to determine the need for formal training and licensure regulation for pharmacy technicians in Texas that may have benefitted the population at large. This qualitative study involved examining the perceptions of pharmacists regarding the job performance of pharmacy technicians with formal education as compared to those without formal education in the state of Texas. I sought pharmacists who were also pharmacy managers and who have supervised pharmacy technicians for at least one year to gain their perspective in an interview regarding pharmacy technicians' job performance. The study included observations and interviews to gather data from participants. I used the transcribed data to develop themes that were usable in the future to develop guidelines, training, and licensure of pharmacy technicians. In Chapter 4, I include a detailed description of the pilot study, demographics, data collection, data analysis, and the results of the study.

Chapter 4: Data Analysis

Introduction

In this study, I had a main objective to assess and compare formally and

informally trained pharmacy technicians' job performance as perceived by licensed

pharmacists who were also managers to determine the need for formal training and

licensure regulation for pharmacy technicians in Texas. The primary research question

for this phenomenological study was what were the lived experiences of licensed

pharmacists who were also pharmacy managers with respect to managing formally and

informally trained pharmacy technicians regarding their job performance? I used several

prompt questions as indicated in my data collection tool (see Appendix C). Utilizing data

from nine single-incident interviews (i.e., each considered individually in the analysis

results for each individual), I identified common codes and themes from all the

interviews to address the research question.

In this chapter I describe the pilot study used to questions for the formal study,

provide a detailed description of the settings where the data collection occurred, discuss

the demographics of the participants and report my findings. To provide the reader with a

complete picture of the study findings, I also explain the processes of data collection and

data analysis.

Pilot Study

For the Pilot Study, I interviewed three participants for 45 to 60 minutes each. As

an inexperienced researcher, I was extremely nervous to conduct interviews with

participants. I used this time to uncover problems associated with the interview questions

and the interview itself and concluded that the interview process was realistic and workable. This study helped improve my thinking about the necessary resources to conduct and prepare for the larger study. The three pilot study interviews helped me establish the issues that needed to be addressed and ensure reliability of my interview protocol. When conducting the interviews for the formal research study, I made sure to place the tape recorder closer to the participant so their voice would be clearer and easier to hear. Also, I identified the need to vary my wait time when prompting some of the participants for their answers. After addressing these issues, I conducted the remaining interviews in the same method as the pilot study.

Data Collection

I interviewed three pharmacists from a retail pharmacy setting, three pharmacists from a hospital setting, and three pharmacists from an independent pharmacy setting (see Table 1). Each individual interview time frame varied from 45 to 60 minutes with all participants.

In the retail pharmacy setting, I met with one pharmacy manager in the corner of a patient waiting area. The waiting room had 12 chairs with 4 patients sitting. While the area was generally quiet, several of the patients coughed and spoke to others who were seated, not allowing for a completely private interview. The second pharmacy manager and I met in a small office in the optical area with the door closed. This was a much more clinical setting, which probably provided for a much more in-depth interview with more feedback. In the third interview, I met with the pharmacy manager in the patient lobby area prior to the work shift. During this interview, an employee burst in the room while

we were conducting the interview to ask a question, not knowing that we were inside

interviewing, which caused a break in thought and may have compromised some of the

trust and the pharmacist's answers. Even though these different settings provided unique

circumstances, pharmacists provided similar responses, so the data were valid.

Table 1

Demographics of Participants

Participant	Gender	Age	Setting
1	M	31-40	Retail Pharmacy
2	F	31-40	Retail Pharmacy
3	M	31-40	Retail Pharmacy
4	F	31-40	Hospital
5	M	51-60	Hospital
6	F	41-50	Hospital
7	M	41-50	Independent Pharmacy
8	F	41-50	Independent Pharmacy
9	M	41-50	Independent Pharmacy

In the three hospital settings, the pharmacy managers and I met in private offices

with the doors closed. Each office was decorated differently based on the pharmacist's

preference. The environment appeared to affect the tone of the interviewees' answers but overall similar data was gathered.

Varying settings were used for the interviews with pharmacists working in independent pharmacies. For two of the interviews, I met with the pharmacist in a private office. Both pharmacists were inviting and answered questions with honesty in this type of setting. In the final interview with the independent pharmacy managers, I met with the manager at a coffee shop outdoors in the patio area. While the pharmacist requested this place, presumably because for comfort, I had a hard time transcribing this interview because of outside stimuli in the environment.

Data Analysis

The process of data analysis involves "making sense out of text and data…and preparing the data for analysis, conducting different analyses, moving deeper and deeper into understanding the date, representing the data, and making an interpretation of the larger meaning of the data" (Creswell, 2009, p. 183). I looked for patterns, themes, and dimensions in the data through analysis of the interviews. I then coded the data and looked for further analysis as themes and patterns emerged. My goal was to describe the participants' subjective experiences and views and to make some reasonable generalizations about their experiences. I utilized the following steps in the data analysis process:

1. Reviewed all interview transcripts;

2. Imported the data into NVivo;

3. Coded the data in NVivo using open coding;

4.   Defined the properties of the themes;

5.   Created categories that represented the themes and subthemes and crosschecked with the research assistant;

6.   Coded all the interview data using final themes; and

7.   Obtained agreement with second coder (i.e., research assistant).

I audiotaped and transcribed each interview. The first level of identification occurred during the initial review of each interview transcript. Upon receiving the transcripts, I read each transcript, analyzed the data for each interview, and then conducted open coding utilizing NVivo 10.0 software.

I used *open coding* to "open up the data to all potentials and possibilities contained within them" (Corbin & Strauss, 2008, p. 160). In open coding, I thoroughly reviewed the data contained within the data set before beginning to group and label concepts. Through coding, I utilized the raw data, extracted concepts, and then further developed them in terms of their properties and dimensions (i.e., the location of the characteristics and attributes). I then organized the data into themes.

Another coder independently reviewed the transcripts and themes. The coder and I had 100% intercoder agreement. As a result, I did not change any codes or themes. I identified the following eleven primary themes for the research question:

- Experiences with differences in formally and informally trained pharmacy technicians' knowledge;

- Experiences with differences in formally and informally trained pharmacy technicians' job performance;

- Experiences with differences in formally and informally trained pharmacy technicians' training and supervision;

- Perceived differences in formally and informally trained pharmacy technicians' salary and opportunities;

- Lack of differences in training or certification;

- Lack of differences in job performance;

- Lack of differences in required supervision;

- Need for standards to improve quality and commitment;

- Need for standards to reduce liability;

- Need for standards to increase knowledge; and

- Need for standards to increase wages.

Validity, Trustworthiness, and Reliability

I ensured the validity of the analysis in various ways. Qualitative validity, according to Creswell (2009), refers to the researcher's ability to check for the accuracy of the findings by employing certain procedures. Validation of findings in qualitative research occurs throughout the steps in the process of the research (Creswell, 2009). I did a continual check during the coding process to ensure that coding did not drift from the original intent as the coding process evolved. I used an electronic codebook within NVivo to code the data. I was responsible for analyzing the data and to cross check for intercoder agreement with a research assistant. The findings for the research question with regard to the themes are summarized in the Results section of Chapter 4.

Lincoln and Guba (1985) established four criteria for trustworthiness: credibility, transferability, dependability, and conformability. To safeguard the trustworthiness in this study, as well as for the purpose of comparing the results for validity, I utilized a research assistant to simultaneously code data along with me. This confirmed Ryan's (1999) theory that "having multiple coders mark a text increase[d] the likelihood of finding all the examples in a text that pertain to a given theme" (Ryan, 1999, p. 319). While I included only pharmacists in Texas in this study, I used three different settings and gathering similar data in each of these setting, therefore strengthening the case of transferability. To further address trustworthiness, I examined my own personal bias. I decided to lessen the effects of any potential bias by asking open-ended questions. Although I did provide the participants with verbal prompts, if needed, this did not lead them to provide specific answers but rather encouraged them to think carefully about topics related to the research question of this study.

As Lincoln and Guba (1985) also stated, credibility and dependability are closely related; however, while credibility leans toward data analysis, dependability most strongly refers to data collection. I addressed credibility by keeping detailed field notes describing the participants, their demographics, and the settings. I reasonably concluded that the results of this study would be similar if another researcher performed the data collection with the same sample, noting that the lapse of time and individual oddities during the original interviews may affect any subsequent research.

I assumed that the pharmacists selected to participate provided reliable and authentic information and that the information gathered reflected their personal and

professional experience in the management of both formally educated and informally educated pharmacy technicians. To conduct this study in an ethical manner, I was intentionally nonjudgmental and refrained from asking leading questions.

Lincoln and Guba (1985) also posited that in any study, validity could not be present without reliability. In qualitative studies, Lincoln and Guba stated that reliability and dependability were almost synonymous. To address reliability, I performed constant comparison of participants' responses to identify themes as the interviews continued. Also, by utilizing a research assistant to code the data along with the primary researcher, I evaluated similar intercoder themes. With constant comparison during interviews, having intercoder agreement, and by reviewing field notes from the interviews, triangulation of the data strengthened the reliability of the study.

Results

Demographics

Nine pharmacy managers, each with a minimum of 1 year managerial experiences, participated in this study. These pharmacists supervised pharmacy technicians in various pharmacy settings: three pharmacists from a retail pharmacy setting, three from a hospital setting, and three from an independent setting. Five male pharmacists and four female pharmacists, which ages ranging from 30-60, participated in the study. The participants supervised an average of four pharmacy technicians per shift. While I did collect demographic data from the participants, I did not use that data to compare the results.

Research Question

I used the primary research question-What were the lived experiences of licensed pharmacists who were also pharmacy managers with respect to managing formally and informally trained pharmacy technicians regarding their job performance?—to guide the research. In this section, I summarize the themes related to this research question and the description of the results, including tables summarizing the definition of the identified themes and subthemes, the frequency of occurrence for the themes and subthemes, as well as the number of interviewees that mentioned a specific theme or subtheme.

The first set of themes (Themes 1 to 4) related to differences in formally and informally trained pharmacy technicians' knowledge, performance, training, opportunities, and supervision. The primary themes with regard to experiences with differences included: (a) experiences with differences in formally and informally trained pharmacy technicians' knowledge; (b) experiences with differences in formally and informally trained pharmacy technicians' job performance; (c) experiences with differences in formally and informally trained pharmacy technicians' training and supervision; and (d) perceived differences in formally and informally trained pharmacy technicians' salary and opportunities.

Theme 1: Experiences with differences in formally and informally trained pharmacy technicians' knowledge. Licensed pharmacists (100%) indicated that they experienced differences in formally and informally trained pharmacy technicians' knowledge. I further categorized this primary theme into the following corresponding subthemes: (a) differences in drug and medication knowledge; (b) differences in

knowledge about insurance or regulations; (c) differences in software and prescription knowledge; (d) differences in knowledge about professionalism and customer service; and (e) differences in knowledge of safety and settings. Table 1 showed the subthemes for differences in formally and informally trained pharmacy technicians' knowledge, the subthemes' corresponding definitions, and the frequency with which the subthemes appeared across interviews and across the data.

Each subtheme is discussed in detail below.

Differences in drug and medication knowledge. I identified the first subtheme for differences in formally and informally trained pharmacy technicians' knowledge as *differences in drug and medication knowledge*. This theme appeared eight times in six interviews. As an example of this subtheme, Participant 6 stated, "The major difference is that the formally trained technicians know what the drugs are. They kind of have been introduced to that." Participant 2 explained:

> When you have someone that is formally trained, they come to you, they are ready to work. You just need to basically give them the guidelines for your company or your particular store or your expectations. But they come in with the knowledge of the profession, they know the nomenclature. They know the drugs. They understand insurance.

Table 2

Frequency Distribution of Subthemes for Theme 1 with Definitions Based on Interviews

(N = 9)

Subtheme	Examples	Interviewees Mentioning Subtheme (*N*)	Exemplar Quotes (*N*)
Differences in drug and medication knowledge	Nomenclature, brand names, dosages, abbreviations	6	8
Differences in knowledge about insurance or regulations	Communication between customers and insurance, billing codes and procedures	3	5
Differences in software and prescription knowledge	Navigating computer programs, basic keyboarding and computer use skills, ability to learn	2	3
Differences in knowledge about professionalism and customer service	Greet, understand, and customize services	1	3
Differences in knowledge of safety and settings	Personal protection, medication safety, working in different settings	2	2
Differences in workflow knowledge	Time to fill prescriptions, consultations, procedures	1	2

Similarly, Participant 1 stated:

I've always noticed differences. Without being told, I can typically identify those

who have formal training and those who do not. Those who may not have the

formal training typically come with a lesser background of drug knowledge

particularly brand name, generic name drugs. Typically, there are vast differences

with the non-formally trained technicians when it comes to the metric system in

pharmacy calculations. Other examples, also when it comes to reading

prescriptions, understanding typical doses of common medications, understanding

how we prepare prescriptions.

He later stated, "It's really important that technicians understand simple things

like pediatric prescribing verbiage on prescriptions for example." In a final example of

this subtheme, Participant 4 shared:

They have a much better understanding the trade with generic names. They

should have an understanding of drug classes and so if they are setting in a

hospital setting, if they are setting in a unit dose cart, or refilling a Pyxis machine

and they are helping the pharmacist sometimes they can catch the dosing errors,

preparation, they can assist with the preparation if they having to pull multiple

vials of the drug to make an IV bag, and they have some training that can

question, pulling too many vials, is this an overdose, or if they are pulling too

little out of a vial, is this an under dose, am I giving a sub therapeutic dose.

Differences in knowledge about insurance or regulations. I identified another

subtheme for differences in formally and informally trained pharmacy technicians'

knowledge: differences in knowledge about insurance or regulations. Three interviewees addressed this subtheme five times during the research.

Participant 2 said, "But they [formally trained pharmacy technicians] come in with the knowledge of the profession, they know the nomenclature. They know the drugs. They understand insurance." Participant 1 said

Some technicians just understand how to greet, understanding how to get a customer to understand the prescription filling process, working through some challenges with prescriptions, communicating with prescribers or agents of prescribers, communicating with third party insurers, things of that nature.

This pharmacist further explained, "It's very important that we are trained technicians that come by way of formal training and not just examination." Participant 3 indicated:

Well yeah the formally trained ones tend to have like a step up or two, because they at least know a little bit more about the procedures…Also things like insurance billing which is a lot of, could be a little daunting for a new person with all the different codes and different rejections that we get.

Differences in software and prescription knowledge. The next subtheme for differences in formally and informally trained pharmacy technicians' knowledge emerged *differences in software and prescription knowledge*. Formally trained technicians, when they entered the workplace, know how to use basic prescription-filling software. Even if they have not had experience on the one software program the pharmacy used, these technicians had practiced on some type of software. They had basic knowledge of the

aspects of the software, along with the basic navigating of the computer. Participants identified this three times in two interviews. In the first example of this subtheme, Participant 1 indicated:

> They need to have more experience with pharmacy software though pharmacy software varies from one pharmacy to another, but just navigating through pharmacy software. Use of the keyboard, use of function keys in conjunction with simply transcribing prescriptions and then going through the prescription filling process.

> He further explained:

> Some examples just understand how to greet, understanding how to get a customer to understand the prescription filling process, working through some challenges with prescriptions, communicating with prescribers or agents of prescribers, communicating with third party insurers, things of that nature.

> Participant 3 also stated, "They have to, at least, mostly know about all the

prescription pharmacy abbreviations and they have been taught like how to calculate supplies and things like that."

Differences in knowledge about professionalism and customer service. The next subtheme for differences in formally and informally trained pharmacy technicians' knowledge was *differences in knowledge about professionalism and customer service*, which was defined as licensed pharmacists' experiences with differences in formally and informally trained pharmacy technicians' professionalism and knowledge about customer service. It appeared three times in an interview with Participant 1, who stated, "Pharmacy

technicians in the independent pharmacy sector tend to have a need to have several layers of skill sets primarily a professional attitude." He later said, "Secondly, customer service driven focus. Lastly, the ability to customize pharmacy services to our customers that are very different from retail pharmacies particularly the big block pharmacies." In a final example of this subtheme, Participant 1 also indicated:

> That's more so from the technical aspect; not from a human to human aspect with customer service. I find that lesser trained technicians tend to have to learn the nature of customer service when it comes to a customer in the pharmacy world. Some technicians just understand how to greet, understanding how to get a customer to understand the prescription filling process.

Differences in knowledge of safety and settings. I identified another subtheme for differences in formally and informally trained pharmacy technicians' knowledge: *differences in knowledge about professionalism and customer service*. It appeared one time in two separate interviews. Participant 4 stated, "The technicians out of a training program should also be able to work in all three settings, the in-patient room operations, IV room operations, and out-patient settings." In a final example, Participant 5 explained the importance of technicians knowing how to work in different settings:

> In a hospital setting, pharmacy technicians need to be IV-certified so they can compound stereo-medication and that is crucial to patient safety; simple things like the proper way to wash your hands is a technique that is learned and is important. Something as simple as taking off your gown and throwing it in the trash as opposed to taking off your gown and hanging it up and reusing it. Those

things are important, and you have to have training to even walk in the room.

Some of those little things are definitely important for patient safety because at

the end of the day, the people are sick and you don't want to do any harm. You

want them to get better in your care, not worse, and if you are not using the proper

aseptic techniques then of course you could cause harm to the patient, one.

Differences in knowledge of workflow. I identified one final subtheme for

differences in formally and informally trained pharmacy technicians' knowledge:

differences in knowledge of workflow. It appeared two times in one interview. Participant

6 explained the role of workflow knowledge by stating, "I think that formally trained

technicians have an understanding of the workflow more than the informally trained

technicians." Participant 6 referred to this subtheme again later in the interview:

So I don't really see a difference but whenever I do see the difference, it's

immediately when they come into the pharmacy. Some of them just don't have a

clue as to what the flow is. I see that mostly with informally trained technicians.

Theme 2: Experiences with differences in formally and informally trained

pharmacy technicians' job performance. Licensed pharmacists (55.55%) indicated that

they experienced differences in formally and informally trained pharmacy technicians'

on-the-job performance. I further categorized this primary theme into the following

corresponding subthemes: (a) informally trained have less bad habits than those formally

trained; and (b) formally trained perform better than informally trained. Table 3 showed

the subthemes for differences in formally and informally trained pharmacy job

performance, the subthemes' corresponding definitions, and the frequency with which the

subthemes appeared across interviews and across the data.

Table 3

Frequency Distribution of Subthemes for Theme 2 with Definitions Based on Interviews

(N = 5)

Subtheme	Examples	Interviewees Mentioning Subtheme (*N*)	Exemplar Quotes (*N*)
Formally trained perform better	Work hard, more professionalism, higher standard of care	4	5
Informally trained have less bad habits	Privacy, counseling patients	1	1

Each subtheme is discussed in detail below.

Formally trained perform better. Formally trained pharmacy technicians were

committed to self-improvement of skills, were better prepared, and had a great

understanding of medication knowledge. They seemed to be more accountable for their

work and made ethically sound decisions with pride in the pharmacy profession. Also,

they tended to hold a sense of leadership and not need as much supervision. I identified

the first subtheme for differences in formally and informally trained pharmacy

technicians' job performance as *formally trained perform better* It appeared five times in

two interviews. Participant 6 explained the difference between the job performances of

formally and informally trained technicians, "I do have to continue to remind my low performers of things that they need to do on a day to day basis. You know be on time to work, professionalism, things like that." Participant 4 mentioned that formal training "raises the standard for those technicians. Those technicians can then perform at a higher level." Later Participant 4 added, "So the benefit of the training allows the technician to perform at a higher standard which pharmacists' job easier." In regard to formally train technicians, Participant 3 said:

> I would prefer to have someone with experience, if it's like, if they've had [experience with our company] that's a plus, but as long as they have experience they might have a little bit of a head up, on the other applicants because they are more aware of what they need to do, like especially in a busier pharmacy, they have an idea they need to multi task, not just do one thing.

In a final example of this subtheme, Participant 7 explained that those trained must stay abreast of trends to continue to perform better, "As far as formal training, depends on how you learn and directed in the field. All about once you obtain the certification and how you stay abreast of the trends that are happening in the pharmacy community."

Formally trained have less bad habits. As the researcher, I identified a final subtheme for differences in formally and informally trained pharmacy technicians' job performance as informally trained have less bad habits. It appeared once in an interview with Participant 5. In a detailed description that exemplifies this theme, Participant 5 shared:

If they have not been trained, they have more bad habits and you will teach them what they need to know and they learn and run with it. Sometimes, the more seasoned technicians who do not have formal training, may have been grand-fathered into the license and they didn't really have to take an exam, and they have their way of doing things and it's difficult to talk them out of it. Even when it comes to counselling patients, of course technicians are not allowed to counsel patients. Some of your more experienced techs without training, do tend to, "Oh just do this, or take it with food," and it's just in their nature and their personality, but it's also illegal. You have to constantly tell them, "Hey, you're going to have to speak to the pharmacist," or if somebody that hadn't been trained and they're going strictly by the book, "Hey just a moment, let me get the pharmacist for you. Give me a minute, the pharmacist can make a recommendation for you." It's weird that it would be like that to me, but that's been my experience.

Theme 3: Experiences with differences in formally and informally trained pharmacy technicians' training and supervision. Licensed pharmacists (55.55%) indicated that they experienced differences in the degree to which they needed to train or supervise formally and informally trained pharmacy technicians' knowledge. I categorized this primary them into the following corresponding subthemes: (a) formally trained pharmacy technicians require less training; and (b) informally trained technicians required more training and supervision. In Table 4, I presented the subthemes for differences in formally and informally trained pharmacy technicians' training and

supervision and their corresponding definitions and the frequency with which the

subthemes appeared across interviews and across the data.

Table 4

Frequency Distribution of Subthemes for Theme 3 with Definitions Based on Interviews

(N=5)

Subtheme	Examples	Interviewees Mentioning Subtheme (*N*)	Exemplar Quotes (*N*)
Formally trained require less technical training	Understand rules and regulations, including liability, learn more quickly, more confident	5	10
Informally trained require more basic training and supervision	Less confident, must train in every area, no previous knowledge	5	8

Each subtheme is discussed in detail below.

Formally trained require less training. I developed the first subtheme for

differences in formally and informally trained pharmacy technicians' training and

supervision: formally trained require less training, which refers to licensed pharmacists'

experiences with formally trained pharmacy technicians requiring less training than

informally trained pharmacy technicians. It appeared ten times in five interviews.

Participant 2 explained that formally trained technicians require less training:

I have someone that is trained. It can free me up to do more things that I need to

do more hands on with the patient because I'm confident you can do data entry.

You can handle the insurance claims. I don't have to stand over you and show you

to do the day's supply, so that you are doing my billing correctly so I don't get an

audit back on it because you understand the importance of an audit. I don't have

to stand constantly with you. What's this drug? What's that drug? What is QD? I

feel it helps the pharmacist to free you up to be more hands on with the patient.

That's why I think it enhances it better instead of just someone that can you can

pluck off the street and put in here.

Participant 1 felt similarly:

A well-trained pharmacy technician learns about the liability aspect during their

training. It's big part of the pharmacist being comfortable with the technician and

being comfortable with a technician being involved with customers and

prescription records and drugs alike. Yes, it is important. Yes, it is a difference

maker. Another aspect of it is to understand the relationship between humans and

drugs. It's really important that technicians understand simple things like pediatric

prescribing verbiage on prescriptions for example. It's very important that we are

trained technicians that come by way of formal training and not just examination

only understand another big component of confidentiality by way of HIPAA.

Participant 4 expressed similar sentiments, "The benefit of hiring somebody of a

training program is they have an understood base line, and the training for them on the

job training is much quicker and more operationally focused." In another example of this

subtheme, Participant 3 stated, "Of course everyone's system could be a little bit different, so everyone had to get used to the system of the store, but usually the trained ones do have a step or two ahead of the untrained ones."

Informally trained require more training and supervision. I developed the final subtheme for differences in formally and informally trained pharmacy technicians' training and supervision: informally trained require more training and supervision. This subtheme appeared eight times in five interviews.

Participant 1 explained why informally trained technicians need more training:
You find those challenges with technically trained and untrained technicians, but the learning curve is much greater for those who have not had the training experience. Lastly, from a confidence standpoint, you find that the training process in my past experience has been a bit more challenging because building confidence in technician duties tends to require more attention than those that are more formally trained.

Participant 4 said:
In other words patients who are trained in-house, you know usually get one aspect of that training and if you use them in another area then you have to spend additional time, training them in that area. The most common example of that is technicians who have been trained, in a retail setting, such as the CVS or the Walgreens, and some of those technicians function primarily as cashiers.

Participant 5 stated:

Sometimes, students that have been trained may not have experience so you're starting from square one and you have to teach them every single thing along the way. Depending on the work environment that could be beneficial because they don't have any bad habits and you can teach them [those not formally trained] exactly what they need to know.

In a final example, Participant 3 shared, "With a brand new person, you have to start from scratch teaching from the ground up."

Theme 4: There are perceived differences in formally and informally trained pharmacy technicians' salaries and opportunities. The final theme I developed for differences in formally and informally trained pharmacy technicians' knowledge, performance, training, opportunities, and supervision included that there are perceived differences in formally and informally trained pharmacy technicians' salaries and opportunities (33.33%). In Table 5, I presented the definition of this theme and the frequency of which the theme appeared across interviews and across the data.

I focused the theme of perceived differences in formally and informally trained pharmacy technicians' salaries and opportunities as it appeared four times in three interviews.

Table 5

Frequency Distribution of Theme 4 with Definitions Based on Interviews (N = 3)

Theme	Definition	Interviewees Mentioning Subtheme (*N*)	Exemplar Quotes (*N*)
Differences in salary and opportunities	Equal pay for unequal training	3	4

Participant 6 explained the differences in salary as follows:

So our formally trained and informally trained technicians all get paid the same.

It's only those that have more experience actually working, those maybe paid

more than those with less experience, but there is not a difference in pay whether

you are informally trained or formally trained in an institution.

Participant 4 mentioned differences in salary as well:

Long term the pay scale in a hospital pharmacy is much higher than minimal

wage, so the technician who invests 6 months or 9 months or a year of time to get

that training, can recover that investment rather quickly when they are working

for a higher pay.

Participant 4 provided a similar description of salary differences:

So there is a big push to increase the minimum wage and some states have done

that, I don't think we have in Texas. I think it is around $8.50 an hour.

Technicians probably start closer to $15.00 - $16.00 an hour. So almost twice the minimal wage in a hospital setting. They have a better work environment in my opinion in a retail setting. Hospital technicians tend to be employed closer to full time, if not full time basis. In a retail setting they may not be full time.

In a final example of this theme, Participant 7 said, "Lead techs make $.50-1.50 an hour more depending on their job performance. I see more workforce opportunities in hospital setting vs. retail setting."

The next set of themes (Themes 5 to 7), I addressed licensed pharmacists' (55.55%) experiences with a lack of differences in formally and informally trained pharmacy technicians' training, job performance, and required supervision. The themes in this category included (a) lack of differences in training or certification; (b) lack of differences in job performance; and (c) lack of differences in required supervision. In Table 6, I have presented the definition of this theme and the frequency with which the theme appeared across interviews and across the data.

Theme 5: Lack of differences in training or certification. In Theme 5, I identified a lack of differences in training or certification pharmacy technicians needed for job performance. It appeared five times in two interviews (22.22%). Participant 6 stated,

Across the board, I'm not comfortable with making IVs, so it doesn't matter if you are formally trained or informally trained. I feel as though all of the technicians still need work in the IV room and being comfortable before they come into the pharmacy. They do need training on the floor.

Table 6

Frequency Distribution of Themes 5-7 with Definitions Based on Interviews (N=5)

Subtheme	Examples	Interviewees Mentioning Subtheme (*N*)	Exemplar Quotes (*N*)
Lack of differences in training or certification	All must develop a comfort level, need training, must be certified	2	5
Lack of differences in performance	Must have willingness, cannot be taught soft skills	2	3
Lack of differences in required supervision	Initially increased supervision, more time on job, no extra supervision needed	1	2

Participant 6 also stated:

No. If you are an entry level technician, you still have to work to understand the

workflow, understand what your assignments are, grow to be well-versed in your

position and then from there you would be asked to do that lead technician role or

supervisor; but you are not held higher than another technician just because you

went to school…All technicians have to be certified.

In a final example, Participant 7 stated:

No I honestly don't see a difference. I think that everyone is trainable depending

on your background and how your career or job trains you from the beginning

when you start the job. With me, I have to train all technicians anyway.

Theme 6: Lack of differences in performance. I developed the next theme for

licensed pharmacists' experience as a lack of differences in performance, specifically

drug and medication knowledge. It appeared three times in two interviews (22.22%).

Participant 6 indicated:

I don't see a real difference between stocking medications...I think that the in-

house training of each technician could be different and I think that's why some

technicians need extra help, but I do have one high performer who happens to be

informally trained, but was trained well in the pharmacy. So therefore, he is one

of my high performers. I do have a formally trained technician that is a high

performer as well. So I don't really see a difference.

Participant 4 also explained a lack of differences:

A technician who has been through a certification program, and has that

document or certificate that they graduated from a program, can have a reasonable

expectation of at least being competitive for one of these jobs. It still comes down

to the technician has to get into the door, they still have to interview and they

need the people skills, because these positions require a high level of interaction

with others, which I might add, I was previously on an advisory board for the

Houston Community College Technician Training Program, so we had

opportunities to look at the curriculum for those programs, the training programs,

spend a lot of time working on the hard skills, that you can test people over. They

spend less time working on the soft skills. Consequently, people with better soft

skills, interview skills, people interaction skills, who get along well with others

skills, do better on the interviews and find it easier to get a job. That shouldn't be

a surprise.

Theme 7: Lack of differences in required supervision. As the final theme for

licensed pharmacists' experience a lack of differences between formally and informally

trained pharmacy technicians, I identified a lack of differences in required supervision.

This theme only appeared two times in one interview. When asked, "Have you noticed

any difference in pharmacy technicians that are informally trained versus formally

trained?" Participant 4 said, "Supervising them as individuals has not been different." He

later said, "In reality, in a virtual period of time on the job, I would measure that in a few

months, supervising the two technicians. It isn't any different."

After coding and analyzing the interviews, I identified the third and final set of

themes (Themes 8 to 11) related to licensed pharmacists' (88.88%) perceptions of the

role of standards. As reflected in Table 7, the primary themes with regard to the

perceived role of standards included (a) standards would improve quality and

commitment; (b) standards would reduce liability; (c) standards would increase

knowledge, and (d) standards would increase wages.

Table 7

Frequency Distribution of Themes 8-11 with Definitions Based on Interviews (N = 8)

Themes	Definition	Interviewees Mentioning Subtheme (*N*)	Exemplar Quotes (*N*)
Standards would improve quality and commitment	Better caliber of technician candidates; committed to completing a formal program	5	6
Standards would reduce liability	More knowledge and training=less mistakes reduced liability	1	1
Standards would increase knowledge	Performance, skills	1	1
Standards would increase wages	Standards=more knowledge=more opportunities=better wages	1	1

Theme 8: Standards would improve quality and commitment. I identified the

first theme for licensed pharmacists' perceptions of the perceived role of standards as

standards will improve worker quality and commitment. Licensed pharmacists' (55.55%)

perceived that standards for pharmacy technicians would improve pharmacy technicians'

quality and commitment to the job. It appeared six times in five interviews. An example

of this theme can be seen in a comment made by. Participant 2, who stated, "I think

you'll get better quality workers because once you set those standards, only people that

are serious to meet those standards and willing to go through the certification, you'll get those as opposed to just anyone." Participant 1 explained the potential impact:

Well, initially it may affect the workforce from the standpoint of those who don't have a background of formal training will have to acquire it or make a decision to venture into something else. But I don't expect for that to be a crisis. In any pharmacy setting, if there are some modifications or changes of legislative mandates when it comes to pharmacy technician certification, registration, qualifications, I think that it would be simply just weed out those technicians who are committed to the practice of pharmacy versus those who a lot of times are just a pass through profession or just a job on their way to something else. I think that it could be pretty useful in the professional pharmacy going forward.

Participant 4 said, "The benefit of formalized training program is it raises the standard for those technicians." Participant 3 explained:

I think if the state of Texas would be requiring at least a tech in training license, the people that are working seem to be more committed to the field instead of just picking a random person that just wants a job for a while. They actually had to take time to get licensed; keep up their licensing. At least be committed to a move towards being licensed if they are a tech in training, instead of just being a person just doing the tech job. Really it's a positive because on top of being, the people that are in the job being more committed they have to keep up their license which means a continuing education, keeping up with the laws. To think that Texas, I

am not sure about the technicians but I think they have to do a certain number of

laws, for pharmacists, but I think it is the same for technicians.

Finally, Participant 7 said:

I think it would be an asset to workforce because if they are required to be

formally trained means they have to have at least 20 hours of pharmacy

continuing education. Helps me as a pharmacy manager because it keeps them

abreast of the medication names and pharmacy laws knowing they have to stay

prepared.

Theme 9: **Standards would reduce liability**. As for the next theme, I noted that

for licensed pharmacists' (11%) perceived that standards would reduce liability. The

single example of this theme can be seen in a comment made by Participant 1, "So yes,

the training from a technical school or any kind of program is definitely needed. I think it

should be a mandate at some point because the liability aspect is much too great."

Theme 10: Standards would increase knowledge. According to their responses,

licensed pharmacists' (11%) perceived that formal would increase knowledge. It

appeared one time in one interview Participant 4 who stated:

I believe more in the training and certification than just registration. Registration

somebody can go on and they just say I meet basic requirements and then that can

be accepted but there is no skills assessment associated with that. ASHP standards

for somebody preparing IV products, is that they have to go through a sterile

product to perforation course, which qualifies for 20 hours of CE [continuing

education] credits for the individual completing the course, and there is a

demonstrated skills competency at the end of that as well as a test demonstrating their ability to do basic calculations as it is associated with the production of IV products.

Theme 11: Standards would increase wages. The final theme I identified as the perceived role of standards was standards would increase wages. This theme refers to licensed pharmacists' (11.11%) perceptions and appeared one time in one interview. Participant 5 explained:

It might cost us more. If they go through formal training, they might demand a larger pay and they may need larger pay. But right now I think, the going rate is $10 to $12 for a technician in the retail setting, maybe upwards of $14 or $15. In a hospital setting you can probably go up as high as $21 an hour, $22 an hour. So, if formal training is required then that would probably prescriptions might increase or, it may decrease the workforce because you can't afford many people, so it could affect it in that way as well.

Summary

I identified the primary research question for this study as: What were the lived experiences of licensed pharmacists who were also pharmacy managers with respect to managing formally and informally trained pharmacy technicians regarding their job performance? To provide a comprehensive overview, I prepared a graphic representation of the findings (see Table 8), which I further discuss below the table.

Table 8

Comprehensive List of Participating Pharmacists' Perceptions about Formally and

Informally Trained Pharmacy Technicians

Theme	Subtheme	Findings
Differences of Formally and Informally Trained Pharmacy Technicians		
Differences in knowledge	Drug and medication knowledge	Formally trained technicians have more knowledge in nomenclature, brand names, dosages, abbreviations
	Insurance or regulations knowledge	Formally trained technicians have better communication and better understand billing codes and procedures
	Software and prescription knowledge	Formally trained technicians can better navigate computer programs and have a better ability to learn technical tasks
	Professionalism and customer service knowledge	Formally trained technicians are better at greeting customers, understanding their needs, and customizing services
	Safety and settings knowledge	Formally trained technicians understand the need for personal protection and medication safety
Differences in job performance	Performance of essential job-related tasks	Formally trained technicians work harder, exhibit more professionalism, and provide a higher standard of care
	Less bad habits	Formally trained technicians understand privacy laws and their responsibility to not counsel patients

Theme	Subtheme	Findings
Differences in training and supervision	Technical training and supervision	Formally trained understand rules and regulations, learn more quickly, and are more confident
	Basic training and supervision	Less confident, must train in every area, no previous knowledge
Differences in salary and opportunities	N/A	Formally and informally trained technicians earn equal pay for unequal training
Lack of Differences of Formally and Informally Trained Pharmacy Technicians		
Lack of differences in training or certification	N/A	All must develop a comfort level, need training, must be certified
Lack of differences in performance	N/A	Must have willingness, cannot be taught soft skills
Lack of differences in required supervision	N/A	Initially increased supervision, more time on job, no extra supervision needed
Need for Standards		
Standards would improve quality and commitment	N/A	Better caliber of technician candidates; committed to completing a formal program
Standards would reduce liability	N/A	More knowledge and training=less mistakes reduced liability
Standards would increase knowledge	N/A	Performance, skills
Standards would increase wages	N/A	Standards=more knowledge=more opportunities=better wages

The eleven primary themes identified in response to this research question included: (a) experiences with differences in formally and informally trained pharmacy technicians' knowledge; (b) experiences with differences in formally and informally trained pharmacy technicians' job performance; (c) experiences with differences in formally and informally trained pharmacy technicians' training and supervision; (d) perceived differences in formally and informally trained pharmacy technicians' salary and opportunities; (e) lack of differences in training or certification; (f) lack of differences in job performance; (g) lack of differences in required supervision; (h) standards would improve quality and commitment; (i) standards would reduce liability, (j) standards would increase knowledge, and (k) standards would increase wages. Several of the primary themes were further reduced to the following nine subthemes:
(a) differences in drug and medication knowledge, (b) differences in knowledge about insurance or regulations, (c) differences in software and prescription knowledge, (d) differences in knowledge about professionalism and customer service, (e) differences in knowledge of safety and settings, (f) informally trained have less bad habits than those formally trained, (g) formally trained perform better than informally trained, (h) formally trained require less training, and (i) informally trained required more training and supervision.

One hundred percent of licensed pharmacists (100%) indicated that they experienced differences in formally and informally trained pharmacy technicians' knowledge. In Theme 2, 55.5% of licensed pharmacists indicated that they experienced differences in formally and informally trained pharmacy technicians' on-the-job

performance. In Theme 3, 55.5% of licensed pharmacists (55.55%) indicated that they experienced differences in the degree to which they needed to train or supervise formally and informally trained pharmacy technicians' knowledge.

Theme 4 continued with 33.33% of licensed pharmacists perceived differences in formally and informally trained pharmacy technicians' salaries and opportunities. In Theme 5, I identified 22.22% of licensed pharmacists' who experienced a lack of differences in the training or certification formally and informally trained pharmacy technicians need for job performance. Continuing the research on lack of differences, 22.22% of pharmacists reported lack of differences in performance. 11.11% of participants experienced lack of differences in the supervision formally and informally trained pharmacy technicians need on the job.

In Themes 8-11, determined that 55.55% of licensed pharmacists' perceived that standards for pharmacy technicians would improve pharmacy technicians' quality and commitment to the job, while11.11% of licensed pharmacists' perceived that standards for pharmacy technicians would reduce pharmacy technicians' liability. Participants (11.11%) identified in Theme 10 that standards would increase pharmacy technicians' knowledge. In the final theme, Theme 11, I noted that 11.11% of licensed perceived that standards for pharmacy technicians would increase pharmacy technicians' wages.

. In Chapter 5, I interpret the results; discuss the implications for further research, and the proposed potential impact for positive social change. I also suggest recommendations for further research regarding pharmacy technician standards and training in the state of Texas.

Chapter 5: Discussion

Introduction

In this chapter I interpret the study findings, the implications for positive social change, and recommendations for further research. In the previous chapter I presented the results and analysis of in-depth audio interviews with nine licensed pharmacy managers from the state of Texas.

The purpose of this study was to assess formally and informally trained pharmacy technicians' performance as perceived by licensed pharmacists, who were also managers, so that results could assist in identifying the need for formal training and licensure regulation for pharmacy technicians in Texas that may benefit the population at large. The nature of the study was to help improve the quality of service and reduce the incidence of errors based on the information gained in the research study. Using the results, I clarified the needs for future training and licensure of pharmacy technicians as well as provided an overall improvement in job performance, specifically regarding the quality of service and reduction or elimination of errors. I conducted this study to evaluate the training effectiveness for pharmacy technicians as perceived by pharmacy managers in various pharmaceutical settings including retail, independent, and hospital pharmacies in terms of the technicians' performance related to errors when filling and dispensing medication. I identified the primary research question for this phenomenological study: What were the lived experiences of licensed pharmacists who were also pharmacy managers with respect to managing formally and informally trained pharmacy technicians?

Interpretation of the Findings

Based on the results from the interviews, I centered the findings of this research

on 11 themes, organized into three related sets. In set one, the themes related to

differences in formally and informally trained pharmacy technicians' knowledge,

performance, training, opportunities, and supervision. I identified contradictory findings

in the next set of themes, which focused on lack of differences in training or certification.

In the final set of themes, I uncovered pharmacists' perceptions about the impact formal

standards may have had on pharmacy technicians' quality and commitment, liability,

knowledge, and wages. I interpreted those findings and have summarized below.

In Themes 1-4, I focused on the themes from the interview coding that related to

on experiences with differences in formally and informally trained pharmacy technicians'

knowledge, job performance, need for training and supervision, and salaries and

opportunities. I found that licensed pharmacists/managers did perceive and experience

differences in these areas. As Mohr (2009) proposed, errors decreased when pharmacists

and technicians were more knowledgeable about the medications and standards in a

pharmacy. In themes 5-11, I focused on the themes that focus on the lack of differences

of formally and informally trained pharmacy technicians' in training or certification, job

performance, required supervision, and need for standards. I found that licensed

pharmacy managers indicated that they experienced differences in formally and

informally trained pharmacy technicians in these areas. According to the data collection

and analysis, pharmacy technicians who had been formally trained possessed more

knowledge in drugs and medication, specifically with names and dosages of medication,

verbiage and dosing of pediatric medications, and being able to assist in preparing and dispensing medications. These pharmacy technicians also seemed to have more knowledge in the area of insurance and regulations, which were areas that were essential for pharmacists to run effectively. Knowing the software and how to read the short-hand nomenclature used by doctors, these formally trained technicians provided invaluable services to the pharmacists and customers. Finally, those who were formally trained seemed to be better versed in professionalism and customer service, and formally trained technicians were better able to customize the experiences, as needed, for the clients.

Formally trained technicians were perceived to have a better job performance, possibly because they had experience through an internship or practicum during their training. They had less bad habits, such as counseling patients or giving prescription advice to customers—an illegal practice. Along with their superior job performance in these areas, formally trained pharmacy technicians needed less supervision and training, again due to their experience in the field. This allowed pharmacists to spend more time focusing on filling prescriptions and providing the counsel for customers.

Finally, pharmacists perceived there were differences in opportunities and salaries of those technicians who had been formally trained. Those who had formal training had more experience than those who had not, so when salary was configured, employers paid these technicians more. As with pay, opportunities for advancement were also more prevalent with formally trained technicians; with the knowledge they brought to the job, there was not as much of a learning curve as with the informally trained technicians, so

they could hone their skills more quickly and had opportunities that were not available to those just starting to learn the field.

During the interview process, I collected voluntary demographic data from the participants. I found it interesting that the participants seemed to be in agreement with the themes, regardless of age or gender. I did find that pharmacists who worked in a hospital setting seemed to feel more passionately about the need for standards than those who worked in the retail pharmacies or the independent pharmacies.

Limitations of the Study

According to Fink (2000), limitations in research studies varied according to the methods followed in the research (Fink, 2000). While generalizability for this study may be limited, I attempted to address each area in order to increase the applicability to a greater audience. While I attempted to compensate for these limitations, care should be taken before apply the findings to other situations.

For participants in the study, I chose to select an equal number of participants from each of the three different pharmacy settings. I did not purposefully chose the ages or genders of the participants; however, the range of both was very similar. To be able to have a thorough study with detailed data collection and analysis, I chose to interview three participants from each of the settings. By limiting the number of participants and using the convenience sample of those in the regional area, I controlled the amount of data and used constant comparison throughout the data analysis until I reached saturation of the data. By using this sampling, I viewed the responses as generalizable to a larger whole. The most significant limitation may have been only including participants in the

state of Texas; however, Texas was the focus of the study because the state had no official requirements for pharmacy technicians to be formally trained.

Creswell (2004) stated that interviews could be problematic during data collection and could be a limitation. When preparing the interview questions, I wrote them as open ended but focused on the research question of the study. I did prepare prompt questions in case the participants did not address the research question, but I only used those as a guide because the topics came naturally to the participants. By using this format and by writing them in common language that was easy to understand, I obtained honest, open answers with many details.

To better control other problems that may have occurred during the interview process, I carefully planned for anticipated circumstances. To prevent equipment problems, I brought multiple recording devices and batteries. Before the interview began, I also checked the area in an attempt to find a quiet, less populated setting to help prevent noise interference. With that being said, one of the participants requested to meet at a coffee shop, which affected the quality of the recording but did not affect the interview session.

Recommendations for Future Research

First, I recommend that additional research should be done for pharmacy technician standards and ethical principles such as expanding the research to include more pharmacist perceptions. Pharmacist use professional practice standards to serve as a guideline to use with professional judgment in determining how to act in particular situations in all pharmacy practice settings. Pharmacists also rely on highly skilled

pharmacy technicians to help promote safety and effectiveness and the welfare of the population

Second, further research should be conducted to interview pharmacy technicians to get their opinions about all aspects of the practice of pharmacy and their knowledge regarding regulations and laws in their specific state. Based on the evidence that I found in my review of the published literature and on my study findings, I believe it is important that all pharmacy technicians maintain professional knowledge and expertise in all competencies and stay current with changes in pharmacy practice as the role of pharmacy technicians is evolving. Pharmacy standards will better prepare pharmacy technicians to solve pharmacy math problems, communicate patient specific data to pharmacist, and have knowledge to effectively function in all pharmacy practice settings.

Third, future researchers may want to explore interviewing pharmacist outside of Texas due to the specific requirements of pharmacy laws and regulations varying from state to state. These recommendations would benefit the population as a whole so that pharmacy technicians have practice standards and ethical guidelines such as other health care professionals, including nurses, dentist, medical assistants, and physicians. Certifications standards and education requirements are usually required prior to employment for most health care professionals in the medical field (Myers, 2011). There are issues that must be resolved to promote the development of pharmacy technician standards in Texas so that they have a greater understanding of factors that affect medication safety.

Implications for Positive Social Change

Formal education of pharmacy technicians may be necessary and crucial to the pharmacy profession. Doctors prescribing medication to their patients and pharmacy customers rely on the expertise and knowledge of pharmacists and pharmacy technicians to correctly fill prescriptions and provide quality service to clients. Therefore, it is essential that pharmacy technicians receive formal training where they are more likely to receive the needed training in order to render high quality services to clients. Regulations for training pharmacy technicians are different outside Texas, which limits the generalizability of the findings to pharmacies outside Texas. By requiring formal training of pharmacy technicians, however, the State of Texas could be preventing dangerous medication and other errors and insisting on training that provides a better experience for the customer.

To meet the growing demands and needs of the pharmacy profession, pharmacy technicians need to prepare for new standards of practice (Mohr, 2009). Leaders of the American Public Health Association support regulating pharmacy technicians through imposing a requirement for either a registration or a license (Ballington & Anderson, 2010). To prepare students to pass examinations related to either certification or licensure more effectively, formal training programs is the most desirable way to ensure preparation and serve as a guide for pharmacy technician education and training. For pharmacy technicians to remain current with respect to professional knowledge and skills, it is already an accepted practice for them to attend seminars and earn continuing education credits for maintaining or earning desirable or required certifications or

licensures (Ballington, 2011). By requiring formal training in not only Texas but nation-wide, these technicians are required to pursue on-going professional development, which ultimately results in more up-to-date knowledge and, therefore, a more beneficial experience for both the technicians and the customers.

To upgrade and standardize the training of pharmacy technicians, ASHP leaders currently endorse training programs. These programs serve to upgrade and standardize technician practices through the definition of adequate criteria aimed at facilitating their development and ongoing professional advancement (ASHP, 1996). Pharmacy technicians must be able to perform duties in a competent manner and determine the best course of action in difficult situations. Critical thinking skills are, therefore, essential for their development, as these skills aid in problem solving and troubleshooting as needed (Bachenheimer, 2011). By standardizing these practices, pharmacy technicians have the same training and are able to competently assist the pharmacists in any setting.

Better trained pharmacy technicians would benefit the population as a whole and help balance the needs of society with maintaining knowledge and abilities of professional competence. The pharmacy technicians would require less supervision, which means pharmacists would have more time to directly care for patients and dispensing medications. The pharmacist's role in overseeing the roles and responsibilities of pharmacy technicians where prescription medications are dispensed is extremely important to ensure the health and safety of the patient. This is significant in reducing medications errors and to guide safe and effective delivery of medications to patients. Pharmacy technicians need to have a better understanding of how medication errors lead

to mistakes and increase the risk of morbidity or mortality. Pharmacy technician training would also help improve ethical principles such as customer service skills, interpersonal skills, and critical thinking skills to conform to society's ethical values with patient relationships and interactions. Pharmacy technicians should have a caring attitude and promote the good of every patient and serve all patients in a confidential manner in the profession. With formal training, the need for on-site training is significantly less time-consuming, so all pharmacy employees can focus on the needs of the customer.

In 2016, formal training of pharmacy technicians is not required for these technicians to have hands-on interactions with customers and their medications. This may have catastrophic results in medication errors or in customers receiving incomplete or inaccurate instructions by these technicians, even though these technicians are not legally permitted to provide this information. Requiring formal training decreases the chances of this happening by providing these technicians with more in-depth knowledge of medications, roles and responsibilities of those technicians, and a holistic knowledge of the ways a pharmacy impacts a patient. By having this knowledge, pharmacy technicians can better serve customers and the pharmacy to benefit both.

Conclusion

Pharmacy technicians are not regulated in the state of Texas. With an increase in the aging population in the United States, the need for formally pharmacy technicians in the future is likely to escalate as well. With the evolving changes under way, it is vital for pharmacy technicians to be knowledgeable about the operation and maintenance of new technologies (Mohr, 2009). As a result, many technicians, pharmacists, and educators

favor requiring national standards for technician training through formal education. Uniformity in education can also be strengthened and enhanced by outlining an agreed-to hierarchy of levels attainable by technicians based on accepted prerequisites that are dependent upon job experience, job roles, projected responsibilities, and corresponding pay (Desselle, 2005).

In this study, pharmacists report a more positive experience with those pharmacy technicians that have been formally trained. These technicians have more knowledge about medication, insurance, software, and safety precautions. Pharmacists also report formally trained technicians perform better, have fewer bad habits, and require less training than their counterparts who were informally trained on-the-job. In addition, pharmacists in this study insist that state-mandated standards would assure all technicians be trained in similar ways, therefore improving the quality of their job performance and reducing liability for the pharmacy. More importantly, having better qualified pharmacy technicians provides a safer, more effective environment for the customers whom they serve. The State of Texas should consider requiring pharmacy technicians to be formally trained and licensed because as the population grows, prescription drug use will increase.

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Appendix A: Confidentiality Agreement

Name of Signer:

> During the course of my activity in collecting data for this research: I will have access to information which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: **Date:**

Appendix B: Consent Form

You are invited to take part in a research study to determine the need for formal training and licensure regulation for pharmacy technicians in Texas that may benefit the population at large. The researcher is inviting 9 licensed pharmacists who also serve as pharmacy managers in the state of Texas who have supervised formally and informally trained pharmacy technicians for at least 1 year to be in the study. This form is part of a process called *informed consent* to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher who is a doctoral student at Walden University. The interview process will take up to 60 minutes, however, if a participant wishes to continue our conversation longer than 60 minutes, I am able to stay longer.

Background Information:
The purpose of this study is to assess formally and informally trained pharmacy technicians' performance as perceived by licensed pharmacists who are also managers to determine the need for formal training and licensure regulation for pharmacy technicians in Texas that may benefit the population at large.

Procedures:
If you agree to participate in this study, you will be asked to answer questions pertaining to the description of procedures from participants regarding their personal experiences with respect to managing pharmacy technicians who have not graduated from a formal pharmacy technician program, as well as those who received formal training

Here is a sample question:
What are the personal experiences of licensed pharmacists who are also pharmacy managers with respect to managing formally and informally trained pharmacy technicians regarding their job performance?

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at Walden University will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:
Being in this study would not pose risk to your safety or wellbeing. Potential benefits may include assisting in clarifying the needs for future training of pharmacy technicians. Please do not discuss any legal or ethical issues in detail or with identifying any parties involved.

Privacy:
Any information you provide will be confidential. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything other identifiers in the study reports. I will store the data in a safe place in my personal computer files, and access will require a protected password for a period of at least 5 years, as required by the university.

Contacts and Questions:
You may ask any questions you have now, or if you have questions later, you may contact the researcher via phone or email at XXX-XXX-XXXX or XXXXXX@email.com. If you want to talk privately about your rights as a participant, you can call Dr. XXX XXX, the Walden University representative, who can discuss this with you. Her phone number is XXX-XXX-XXXX. Walden University's approval number for this study is XXXXXX, and it expires on January 12, 2017.

The researcher will give you a copy of this form to keep.

Statement of Consent: I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By placing a checkmark on *I consent*, I understand that I am agreeing to the terms described above.

I consent to the statement above:_____
                                        Signature

I do not consent to the statement above: _____
                                        Signature

Appendix C: Interview Protocol

Project: Pharmacy Manager Perceptions of Formally and Informally Trained Pharmacy Technicians

Date: _____

Time: _____

Interviewee (Title and Name): _____

Interviewer: _____

Opening Statement: I would like to thank you for taking time to speak with me regarding my study. Today, I would like to audio tape our conversation. Please take a few moments and read over the consent form. Let me know if you have any questions or comments. For your information, only researchers on the project will be privy to the tapes, which will eventually be destroyed.

Informed Consent:
I am required to obtain written or electronic signature informed consent prior to this interview. This document was emailed to you in advance to give you the opportunity to reflect on your willingness to consent to the study.
This document states that (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) there will be harm to participants in the study.

I have planned this interview to last no longer than an hour. However, if you wish to continue our conversation for longer than one hour, I am able to stay longer. During this time, I have questions that I would like to cover. You have been selected today because you have a great deal of experience in the pharmacy setting and also supervising pharmacy technicians. I believe your input will be valuable and will contribute to efforts to grow and improve our professional practice. Thank you for your participation. Do you have any questions before we begin?

Ok, I will now turn the audio recorder on and begin our conversation.

Opening Question:
Please tell me about your personal experiences working as a pharmacy manager and supervising pharmacy techs?
(I will carefully listen to the participant and prompt for clarification and/or examples, as needed.)

Prompts:

1. Have you noticed any difference in supervising pharmacy technicians that are informally trained versus formally trained?

2. Do you believe that certification, formal training, or registration advance the roles of pharmacy technicians in a variety of pharmacy practice settings and how?

3. In your opinion as a pharmacist who serves as a pharmacy manager, do you think implementation of pharmacy technician standards such as certification, training, or registration in the state of Texas will affect the workforce in a variety of pharmacy practice settings and how so?