SYSTEMIZATION AND EVALUTION OF THE IMPACT OF A PHARMACY TECHNICIAN CAREER LADDER IN A MULTI-HOSPITAL SYSTEM

by

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1 ABSTRACT

Purpose:

Career ladders have been formally designed to assist in the motivation of pharmacy technician employees to undertake more of an active approach in career progression and participate in the advancement of innovative pharmacy leadership practices. The ability to identify organizational benefits and perceptions of a career ladder for technicians will support the imperatives set forth at the 2017 Pharmacy Technician Stakeholder Consensus Conference and in the American Society of Health-System Pharmacists 2018 Pharmacy Forecast.

Methods:

A retrospective multi-center study was performed to evaluate organizational and pharmacy technician-oriented outcomes. The timeframe encompasses a pre-intervention period from January 2013 through December 2015 and a post-intervention period from January 2017 through December 2019. The main intervention was the implementation of a systemized pharmacy technician career ladder. The primary endpoint was to assess the perceptions of pharmacy technicians toward career advancement through a theory of reasoned action survey. Secondary endpoints included new hire pharmacy technician one-year and two-year promotion and turnover rates.

Results:

Survey assessment revealed significance within one domain, leadership and career advancement, indicated by Pharmacy Technician IIs and IIIs (P=0.006). The promotion rate of new hire employees in the post-intervention period was comparatively reduced in a one-year timeframe but

maintained similar to historic information in a two-year timeframe. The turnover rate maintained relatively constant despite a systemized career ladder.

Conclusion:

Pharmacy technicians demonstrate inherent attributes to pursue employment with career advancement and leadership opportunities. An employee's organizational commitment is not linearly associated with the institution of a career ladder or incentivized benefits.

Keywords: [pharmacy technician], [career ladder], [theory of reasoned action], [pharmacy], [American Society of Health-System Pharmacists]

TABLE OF CONTENTS

2 LIST OF TABLES

3 LIST OF FIGURES

4 INTRODUCTION

4.1 BACKGROUND

Pharmacy technicians perform an essential role in the maintenance of effective, quality operations within a pharmacy department, whether in the community or health-system sector.[1] The preparation of pharmacy technicians to partake in the overall outcome of the medication use process requires competency development, internal motivation, and organizational commitment.[2-4] Recommendations from the 2017 Pharmacy Technician Stakeholder Consensus Conference support advanced pharmacy technician practice with correspondence to a more standardized approach for regulatory compliance aligned with an assurance of accredited technician education and licensure.[3] Expert panelists for the American Society of Health-System Pharmacists (ASHP) 2018 Pharmacy Forecast recommend pharmacy leaders to designate priority toward achieving a high level of pharmacy technician professionalization, job satisfaction, and career commitment.[5] Career ladders, career advancement plans, and promotional pathways demonstrate methodologies to motivate employees to further professional development and construct leadership attributes.[2-8] The implementation of a pharmacy technician career ladder aligns with an identified necessity to reassess work-force requirements and realign existing care delivery models within healthcare organizations, while endorsing employee engagement practices.[2]

Employee engagement, described as the relationship between an organization and an employee as it pertains to an employee's work ethic, energy, performance, and satisfaction, was initially introduced by Kahn as a premise that individuals apply various degrees of self to work role

performances.[8,9] Engaged employees thereby exhibit physical, cognitive, and emotional investment within work roles and experience a sense of self-importance, psychological security, and career aptitude.[8,9] The advantages to employers of enhanced employee engagement include increased work productivity, decreased absenteeism, reduced staff turnover, and improved job satisfaction.[8,10] Furthermore, acquired benefits within healthcare organizations correlate to a more efficient, economical workforce with directed focus to improve the quality and safety of patient care provisions.[10] The inability to sufficiently motivate employees may impede staff productivity, evidenced by performance metrics, and minimize individual interest with professional development opportunities and quality-improvement initiatives. The prediction of behavioral intention to positively correlate to workforce motivation exists as an area of opportunity that may be described by the theory of reasoned action (TRA).

The TRA represents a theoretical construct within social psychology to provide explanation for the specific behaviors of individuals based upon delineated motivational factors.[11] With this approach, the best predictor of human behavior is reflected by the intention to perform the task, described by a combination of subjective norms, perceived behavioral control, and attitude toward the behavior.[11,12] This conceptual framework can be further applied to understand employee motivation for workplace behavior through an examination of internal forces. A validated questionnaire developed to measure the predictive intent of an employee toward a career advancement opportunity may outline the extent of influence established by a career ladder as compared to confounders, such as employee opinion surveys, leadership transitions, or other changes within a health-system. To consider, trait affect or individual pattern of life emotionality has also been implicated as an antecedent to employee satisfaction and contribution.[13]

A 2004 national survey to Certified Pharmacy Technicians, identified through the Pharmacy Technician Certification Board (PTCB), specified 169 (21.1%) survey respondents with an intent to leave current employers in the next 12 months.[14] The lack of advancement opportunity was cited by 92 (54.4%) survey respondents as an instrumental reason for employment resignation.[14] According to the 2015 National Pharmacy Technician Workforce Study, 25 (22.8%) survey respondents employed in the hospital setting reported intent to remain in career as a pharmacy technician less than 5 years and 18 (16.4%) planned to keep options open with minimal perceived commitment to the employer.[15] Furthermore, the 2017 ASHP National Survey of Pharmacy Practice in Hospital Settings indicated 6.0% of pharmacy technician full-time equivalent (FTE) positions to be vacant across inpatient facilities.[16] Strozyk and Underwood previously demonstrated in 1992 that implementation of a pharmacy technician career ladder at a nonprofit community hospital decreased employee turnover rate by 18% compared to the pre-implementation phase.[17] Subsequently, with comparison to other hospital employees, employee opinion survey responses from the pharmacy technicians indicated career mobility as the most favorable job characteristic, in addition to answers with regards to more positive views of salary, coworker relationships, and resource utilization.[17]

The pharmacy technician career ladder was essentially developed to improve employee satisfaction, recognize qualified technicians' past accomplishments, and incentivize continued advancement in innovative leadership practices within the pharmacy enterprise.[2,7] With a pharmacy technician career ladder, employees are offered a systematic opportunity for personal and professional advancement with clear delineations between work roles as outlined within the position's job description. Through consideration of job description responsibilities, tech-check-

tech (TCT), approved by select state legislatures, represents one advancement-based modality within a pharmacy technician promotion pathway to provide efficient drug distribution services. As previously described by Shane, key elements of the TCT program construct a foundation for future innovation in pharmacy technician responsibilities.[2] The commencement of recent initiatives to diversify a pharmacy technician's roles to include prior authorization support, patient medication history completion, medication inventory acquisition, and controlled substance diversion audits represents a reposition of the pharmacy profession within the scope of the healthcare framework.[7] With the delegation of more innovative technical tasks to pharmacy technicians, pharmacists are afforded more time to focus on enhanced clinical services, such as transitions of care support, medication reconciliation programs, and therapeutic interventions.[18]

While existing reports focus on the pertinence of advanced workforce role additions and value-based effect on the healthcare institution, the development and standardization of a pharmacy technician career ladder across a multi-hospital system is not well described within literature. Furthermore, information regarding a career ladder's impact on employee morale and human resources metrics is limited. The ability to identify organizational benefits and perceptions of a career ladder for technicians will identify and support the imperatives described in the ASHP 2018 Pharmacy Forecast, ASHP Pharmacy Advancement Initiative (formerly Pharmacy Practice Model Initiative), and 2017 Pharmacy Technician Stakeholder Consensus Conference.[4-6]

4.2 OBJECTIVES

This observational study aims to evaluate the impact of pharmacy technician career ladders and to provide an informational framework to other healthcare organizations about the value or need of a formalized career ladder. This study will introduce a unique approach to the appraisal of perceptions and outcomes of a well-developed pharmacy technician career ladder and competency guide. The innovative approach will identify key metrics that health-systems may want to consider in the development and subsequent assessment of pharmacy career ladders. The rate of turnover, promotions, and interest in career advancement, augmented with a TRA survey, may allow for a more extensive analysis of technician attitudes and perceptions toward career advancement within a geographic area with PTCB or Exam for the Certification of Pharmacy Technicians (ExCPT) certification as an antecedent of registration.

5 METHODS

5.1 GENERAL OVERVIEW

Houston Methodist is an eight-hospital nonprofit health-system that consists of an academic medical center located in the Texas Medical Center, and seven community hospitals within the nearby geographic region. The system contains a workforce of 319 pharmacists and 273 pharmacy technicians with a total of 530 FTEs. Systemization of Houston Methodist occurred through a three-year implementation process finalized in April 2015, which included system pharmacy director selection and pharmacy council development. Each institution previously executed a variant model of a pharmacy technician career advancement pathway based upon a three-tier system. Inconsistencies between the job descriptions within each career level, i.e. HMH Pharmacy

Technician I versus network Pharmacy Technician I, included duties and responsibilities, experience requirements, and certifications, licenses, and registrations. Multiple job titles were also associated with each level. Primary differences in the experience requirements between each institution's equivalent job description pertained to permissible entry-level position, with one entity requiring internal promotion into Level II positions while others allowed for direct hiring into Level II technician roles. Specific training requirements for Pharmacy Technician III were not designated by available entity job descriptions. Furthermore, experiential years required for Pharmacy Technician III varied between HMH and the community institutions

System Pharmacy Council, a stakeholder cohort of system pharmacy leadership and system hospital directors of pharmacy, reviewed facility-specific job descriptions, including those of pharmacy technicians, for consolidation to a single reference source through a series of processes (Table 1). The revised job descriptions delineated the primary job responsibilities within the technician roles and further specified uniform experience requirements. The revised job descriptions to outline a standardized pharmacy technician career ladder were approved by Houston Methodist System Pharmacy Council in November 2016 (Table 2).

5.1.1 STUDY DESIGN AND SETTING

This study was approved as a quality improvement initiative by the Houston Methodist Research Institute Institutional Review Board.

A retrospective multicenter study was performed to evaluate organizational and pharmacy technician-oriented outcomes within Houston Methodist. The main intervention in the investigation was the consistent implementation of a systemized pharmacy technician career ladder. The timeframe of this research study encompasses a pre-intervention period from January 2013 through December 2015 and a post-intervention period from January 2017 through December 2019. A one-year washout period was incorporated to control for potential institution-specific confounders with relation to employment of the newly modified pharmacy technician career ladder. The pharmacy technician workforce was allocated into two cohorts for consideration – staff hired either in the pre-intervention or post-intervention period.

All pharmacy technician new hires employed by Houston Methodist entities during the respective research study timeframes were included in the review. The washout period maintained exclusions of pharmacy technicians that were hired in 2016. Exclusion criterion of a singular pharmacy technician job code designation at an institution was applied toward the TRA questionnaire to both prevent employee identification and maintain response confidentiality.

A TRA questionnaire was developed to measure employee perception toward a system pharmacy technician career ladder within the context of questions designed to appraise predictive intent and employee motivation for advancement. The questionnaire was validated through a pre-distribution discussion with senior-level pharmacy technicians, or Pharmacy Technician IIIs.

5.1.2 STUDY ENDPOINTS

The primary endpoint was to assess the perceptions of pharmacy technicians toward career advancement through the TRA with a correlation to descriptive patterns of progression through a pharmacy technician career ladder.

Secondary endpoints were related to pharmacy technician turnover, promotion, and voluntary leave details categorized by job description level pre- and post-systemized career ladder implementation, in addition to a descriptive evaluation of the pharmacy technician career ladder with an assessment for optimization opportunity to reflect advanced practice imperatives. Promotion and turnover rates were calculated through division of the number of promotions and turnovers by the number of new hires within the year of consideration, respectively. Pharmacy technicians with prior matriculation in the career ladder, followed by subsequent placement in specialized job description roles, were included to maintain data completeness.

6 DATA COLLECTION

The 12-question TRA survey was constructed with Likert scale format via an online platform and distributed with the support of the Houston Methodist Directors of Pharmacy to the pharmacy technician staff employed at each facility. A 3-week timeframe was established for completion of the survey, which was open to respondents from January 24th through February 14th 2020. Employee response confidentiality was maintained through design of the survey, which did not include questions to solicit the identification of employees, and storage of the resultant data with password accessibility to the research team.

All employee-specific data was obtained from the Methodist Administrative Resource System through collaborative efforts with the Houston Methodist Human Resources (HR) Department. Employee information was presented to the authors of this study in a de-identified format through an arbitrary numerical identification system created by the HR department. Data parameters that were provided per employee include institution affiliation, entry job code, hire date, career progression pathway with job code(s) and associated date(s), gender, and current age range. Information of whether an employee was terminated and the associated termination date was provided when applicable; however, the phrase "termination" refers to any employee dismissal whether voluntary or involuntary. Discrete data available for reasons of voluntary leave from the health-system was provided in an aggregate format by the HR department. Pharmacy technician turnover information was available for each pharmacy-related job code that appeared within the career progression pathway.

7 STATISTICAL ANALYSIS

The Shapiro-Wilk normality test dictated nonparametric analysis of continuous data with the Wilcoxon rank-sum test or Mann-Whitney U test. The chi-squared test or Fisher's exact test was utilized for the analysis of categorical variables, as appropriate based on observation size. Statistical analyses and tests were conducted with Stata/SE (version 15.1, College Station, Texas).

8 RESULTS

8.1 THEORY OF REASONED ACTION SURVEY

A total of 123 (47.49%) pharmacy technicians currently employed throughout Houston Methodist completed the TRA survey (Table 3). Distribution of survey responses presented as a near 1:1 ratio between the academic medical center and community hospital settings. Of the respondents, 21 (17.07%) were a Pharmacy Technician I, 71 (57.72%) were a Pharmacy Technician II, and 31 (25.20%) were a Pharmacy Technician III. The respondent proportions were similar to the career level distribution across Houston Methodist, with 56 (21.62%) Pharmacy Technician Is, 162 (62.55%) Pharmacy Technician IIs, and 41 (15.83%) Pharmacy Technician IIIs, albeit higher representation of Pharmacy Technician III perceptions and beliefs in the survey data.

Assessment of the four domains revealed statistical significance within one domain, leadership and career advancement (Table 4). The significance was directed by the responses of Pharmacy Technician II and Pharmacy Technician III employees with median scores of 4.00 (IQR: 3.67-4.67) and 4.33 (IQR: 4.00-5.00), respectively (P=0.006). Evaluation of the individual questions indicated that the senior-level Pharmacy Technician IIIs were more inclined to seek employment at an institution with opportunities for career advancement (P=0.023) as opposed to the Pharmacy Technician Is who "Strongly Disagree" about the motivational impact of a pharmacy technician career ladder toward promotion merit (P=0.015). However, Pharmacy Technician Is and IIIs were more apt to "Strongly Agree" to prefer an employment position perceived by society as a leadership role (P=0.050). Cross-training within ≥3 areas, a prerequisite for promotion, was cited to be an inadequate available prospect among Pharmacy Technician Is and IIs (P=0.029).

Other results were equitable between the cohorts and represented similar underlying factors among societal expectation, incentivized motivation, and experience and skill-based impact.

8.2 HUMAN RESOURCES DATA

8.2.1 BASELINE DEMOGRAPHICS

Review of employee data identified 249 pharmacy technicians eligible for inclusion in the research study (Table 5). The pre-intervention and post-intervention periods comprised of 104 and 145 pharmacy technicians, respectively. Upon review of the pre-intervention period, the entry pharmacy technician job codes comprised of 46 (44.23%) Pharmacy Technician Is, 28 (26.92%) Pharmacy Technician IIs, 8 (7.69%) Pharmacy Technician IIIs, and 22 (21.15%) PRN employees, as compared to the post-intervention period, with the entry pharmacy technician positions comprised of 71 (48.97%) Pharmacy Technician Is, including two department transfers, and 74 (51.03%) Pharmacy Technician Is. Key differences concerned the recruitment of Pharmacy Technician Is, which increased in the post-intervention period ($P<0.001$) within all institution settings, and Pharmacy Technician IIIs, which decreased in the post-intervention period due to internal promotion requirements ($P=0.001$). Furthermore, PRN employment did not remain a distinct job code following the job description revisions, thereby resulting in 0 apparent events of new PRN hires in the post-intervention period.

Recruitment and hiring strategies overall differed throughout Houston Methodist, particularly between HMH and the community institutions. HMH historically hired an external applicant as a

Pharmacy Technician I compared to the community institutions, with external applicants previously hired at any career level contingent upon prior hospital pharmacy experience and demonstrated competency (Table 5). Standardization of the career ladder preserved entry to the Pharmacy Technician II position but revised experience requirements resulted in no further direct entry to Pharmacy Technician III within the community institution settings (P=0.001).

The gender of pharmacy technicians comparatively differed among the two cohorts. There was an overall increase of females with entrance into the pharmacy workforce (P<0.001). Review of the age at time of hire indicated that there was not statistical significance associated with the age range of employees prior to and following the implementation of a standardized career ladder.

8.2.2 CAREER ADVANCEMENT

A total of 56 career promotions were indicated by the data, including 12 attributed to multiple promotion events within 6 individuals' employment history. With pre-intervention hires, there were 42 system-wide promotions identified – 31 (73.81%) pharmacy technicians progressed from Pharmacy Technician I to Pharmacy Technician II and 11 (26.19%) pharmacy technician progressed from Pharmacy Technician II to Pharmacy Technician III. Four employees hired in 2015 changed positions from PRN to Pharmacy Technician I, thereby formally entering the career ladder in 2016 and eligible for promotion. The post-intervention hires revealed 14 system-wide promotions, with 12 (85.71%) promotions to Pharmacy Technician II and 2 (14.29%) promotions to Pharmacy Technician III. Over half of all promotions occurred following career ladder standardization in 2016

The promotion pathway within the pre-intervention and post-intervention periods were further evaluated to both identify the time to position attainment from the initial hire date and promotion rates of new hires in a one-year and two-year review snapshot. Statistical significance was not present with promotion timing secondary to the intervention (Table 6). The promotion rate of new hire employees in the post-intervention period was comparatively reduced in a one-year timeframe but maintained similar to historic rates in a two-year timeframe (Figure 1). To note, new hires in 2014 had promotion rates of 0.20 and 0.30 in a one-year and two-year promotion timeframe, respectively, paralleled to new hires in 2017 with promotion rates of 0.07 and 0.26 in a one-year and two-year promotion timeframe, respectively.

8.2.3 EMPLOYEE TURNOVER

The termination volume in the pre-and post-intervention cohorts was 59 (56.73%) and 42 (28.97%), respectively. Of the terminated employees, the length of employment tenure decreased from a median of 1.87 years (IQR: 0.49-3.21) to 0.57 years (IQR: 0.36-1.19). Failure to promote was weakly correlated to a termination event with the pre-intervention hires (r^2=0.217; P≤0.001) but absent in both correlation and statistical significance with the post-intervention hires (r^2=0.003; P=0.546). Employee turnover within a one-year and two-year timeframe following the initial hire date was further investigated. The new hire turnover rate maintained relatively constant despite the implementation of a standardized career ladder (Figure 2).

Investigation of voluntary leaves highlighted the distribution of the HR-reported leave reasons (Table 7). Of the voluntary leaves, 52 (85.25%) occurred in the post-intervention timeframe.

Regardless of the intervention, Pharmacy Technician IIIs were most likely to maintain continued employment within the system. Voluntary leave for pursuit of an advancement opportunity was reported by 4 (7.69%) Pharmacy Technician Is and 6 (11.54%) Pharmacy Technician IIs in the post-intervention timeframe. The highest voluntary leave volume occurred within the Pharmacy Technician IIs in the post-intervention timeframe, reflective of the established hiring practice of direct entry into the role (Table 5).

9 DISCUSSION

The TRA survey demonstrated the intention of pharmacy technicians toward pursuit of a career with advancement prospects to most correlate to the personal fulfillment received with the assumption of high-level responsibilities, a contrast to the aim resultant from societal expectations or experiential practice. The findings are congruent to a prior study that explicated pharmacy technician need for self-actualization and recognition of organizational value to serve as promoters of well-being and effectiveness.[19] Financial incentives are perceived to be effective motivators to a workforce, as a low salary may exhibit linear correspondence to disengagement and dissatisfaction. However, increases in an individual's pay offer incremental, transient benefits with an eventual adaptation effect.[20] In a 2009 *McKinsey Quarterly* survey of worldwide executives, managers, and employees, respondents reported three key domains, managerial praise, leadership attention, and leadership tasks, to be more effective motivators than high-rated financial incentives.[21] The survey responses of the pharmacy technicians aligned with the impact invalidation of financial incentives per the career level perspective. The survey domain of leadership and career advancement highlighted the intrinsic factors that motivate high-performing

employees, particularly amongst Pharmacy Technician II and III staff with more time vested in the organization. In a delineated three-tier career ladder system, the inclusion of specialist positions, such as investigational drug services and medication reconciliation, into each model, while preserving select specialist positions, such as pharmacy buyer and quality-assurance analyst, external from the model may construct the perception of career advancement with narrow scope and limited versatility. The value proposition of the existent framework implies pertinence to the implication associated with any promotion or position event, with equitable levels of satisfaction attainable through structured onboarding, organizational culture, and comprehensive employee engagement strategies.[19,22,23]

The advancement of pharmacy technicians to innovative roles has been well-established to supplement the expansion of health-system pharmacy services and the capability of pharmacists to practice at the full extent of licensure. A 2018 meta-analysis identified the direct and indirect benefits to the pharmacist and technician to concern increased technician salaries, improved job satisfaction for both pharmacists and technicians, a strengthened career ladder, and increased technician confidence and aptitude.[24] At Houston Methodist, career ladder standardization resulted in enhanced movement of pharmacy technicians to advanced roles, within the respective career level tier, albeit with a more deliberate interpretation of promotion standards. The comparatively stringent criteria correspond to an observed decline of the one-year new hire promotion rate in the post-intervention period. To note, pharmacy technicians, irrespective of career level, disagreed about a loss of advancement motivation without a concomitant increase in hourly pay rate. In 2017, the American Pharmacists Association adopted a policy calling for the development of compensation models to sustain pharmacy technician career opportunities.[25] Although the long-

term effects of financial incentives to current employees may be questionable, a competitive, hourly entry-level rate and annual salary may create substantial appeal for the recruitment of high-level, qualified candidates.

The intention of the Houston Methodist pharmacy technician career ladder was to preemptively lessen the potential for technicians' workplace dissatisfaction, including insufficient advancement opportunity, while concomitantly expanding prospects for pharmacy practice enhancement. Between 2013 through 2018, the two-year pharmacy technician turnover rate at Houston Methodist ranged from 34% to 42% of new hires, regardless of a promotion event or opportunity to further career advancement and associate merits. According to the Center for American Progress, the cost of turnover is anticipated to be 20% of an annual salary less than $50,000.[26] The costs include direct costs, such as overtime or temporary staffing, recruitment, and training, in addition to indirect costs, such as lost productivity, reduced morale, and lost institutional competencies. The subsequent challenge that presents to a pharmacy leadership team pertains to the timely recruitment and integration of a competitive, qualified pharmacy technician prepared for the assumption of advanced technician roles, whether in pharmacy operations, supply chain management, or patient care.

Per the recommendations of the 2010 Pharmacy Practice Model Summit, recent national initiatives directed efforts toward the standardization and improvement of pharmacy technician workforce training and education requirements.[4] PTCB updated eligibility requirements to start January 2020 with two eligibility pathways for certification application, either achievement of 500 work hours with attestation of specified knowledge requirements or completion of a PTCB-recognized

education and training program.[27] To supplement traditional pharmacy technician education and training programs for better alignment with advanced pharmacy practice, health-systems pursued the establishment of institution-based programs. The structures present as a formalized training system either in the framework of residency program curriculum or didactic education with experiential modules.[28-30] The investment imparted by health-systems toward the support of pharmacy technician development would be expected to yield a favorable return secondary to increased employee retention, improved workforce competency, and enhanced employer commitment perception. Furthermore, pharmacists would be more strategically positioned to focus available time on direct patient care activities and interprofessional consultations through the redirection of pharmacy technician support to innovative roles.

The optimal structure of an institution's pharmacy technician career ladder may be best represented by an initial progression pathway in a tier system (Table 10). Dependent upon organizational framework, a two-tier system with an adjunct technician specialist position presents the prospect for more substantial benefit compared to a three-tier system, elucidated within the research study to not necessarily correspond to decreased employee turnover and increased employee satisfaction but rather contributory to job description reiteration. The primary recruitment to an institution with an entry-level position affords opportunity for an employee to acclimate to operational workflows and activities; however, candidates with acquired skillset and expertise at external facilities of equitable work responsibilities would be incentivized to new employment locations, with consideration that competitive pay and benefits with mid-range position entry were also available. Successive modalities to confer professional advancement present through the specialist positions, which serve as motivation for employees via career extension, personal fulfilment, and societal

recognition.[19, 30, 31] The subset of specialist roles would permit institutions to leverage the strengths of an advancing pharmacy technician workforce for an expansion of available services. Pharmacy technician specialists may further develop supervisory and administrative functions, thereby elevating the perception of employees with regard to career advancement.

This research study was subject to limitations attributed to study design and cohort availability. The constructed TRA survey assessed pharmacy technician perceptions and motivators for career advancement amongst current Houston Methodist staff, therefore developing a cohort of individuals separate from data provided by the HR department, which may underrepresent perspective of prior employees no longer with the organization. The survey responses of pharmacy technician workforce hires prior to 2013 provide considerable value to the research but similarly represent individuals with intentional absence in the analysis of HR data. In addition, although a pharmacy technician promotion pathway was standardized between the seven Houston Methodist institutions, each institution maintains a separate, variant application period for promotion consideration, thereby creating discrepancy for the exact determination of eligible employees in a retrospective review. The reported promotion rate information in the post-intervention period may be influenced by multifactorial variables without complete measurement capability. Despite employee eligibility for promotion, a promotion may not occur secondary to a number of reasons, including an employee's personal decision to not apply for promotion, management discretion due to employee performance, or failure of the entity TCT examination, a prerequisite for advancement to Pharmacy Technician III. Data availability restrictions primarily presented with review of employee terminations, as data was only available in aggregate for voluntary termination reasons due to confidentiality maintenance.

10 CONCLUSION

Pharmacy technicians demonstrate inherent attributes to pursue employment with career advancement and leadership opportunities. An employee's organizational commitment may not be linearly associated with career ladder institution or incentivized benefits but may be improved through an intentional restructure of an existent career ladder model designed to best reflect pharmacy department essentials.

11 DISCLOSURES

This research study was awarded the American Society of Health-System Pharmacists Foundation New Practitioner Leadership Development Research Grant in 2019. The authors have declared no other potential conflicts of interest to share.

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13 TABLES

Table 1. Health-System Career Ladder Review Process

Health-System Career Ladder Review Process	
1.	Initiate the formal review process with key pharmacy department stakeholders.
2.	Collect all pharmacy technician job descriptions through the Human Resources Department.
3.	Conduct an in-depth review of the job descriptions to compare similarities and differences.
4.	Reflect upon the operational needs of the entity pharmacy department(s).
5.	Engage with key department stakeholders to identify absolute inclusions and potential exclusions of job description components, with discretion dependent upon institutional operative needs and/or hiring departments.
6.	Refine career ladder tiers to be reflective of departmental needs and required job functions.
7.	Define the tier categories – Tier 1 to correlate to an entry-level pharmacy technician, Tier 2 to correspond to a mid-range, experienced pharmacy technician, and Tier 3 to equate to a senior-level, advanced pharmacy technician available through internal promotion.
8.	Collate the modified job descriptions with revisions into single reference documents that are developed for each career ladder tier.
9.	Modify the revised job descriptions per pharmacy department stakeholder feedback.
10.	Conduct a formal vote among pharmacy department stakeholders to approve the standardized career ladder.

Table 2. Houston Methodist System Pharmacy Technician Standardized Career Ladder Job Descriptions

Characteristic	Pharmacy Technician Career Designation		
	Technician I	Technician II	Technician III
Minimum education requirements			
High school diploma/general equivalency degree	Yes	Yes	Yes
≥2 years of college	…[a]	…[a]	…[a]
Minimum certification requirements			
Texas technician or intern license	Yes	Yes	Yes
Accreditation Council for Pharmacy Education (ACPE) intravenous (IV) certification	Yes	Yes	Yes
Houston Methodist tech-check-tech certification	…[b]	…[b]	…[a]
Work experience requirements			
Minimum hospital experience			
Number of years	1*	2	Promotion only
Minimum Houston Methodist practice experience			
Number of years	0	1	2
Minimum practice experience for consideration of promotion			
One year as a Pharmacy Technician I with above average performance and meets technician promotion criteria	…[b]	Yes	…[b]
Two plus years of experience with above average performance, passage of tech-check-tech examination, and meeting technician promotion criteria	…[b]	…[b]	Yes
Job responsibilities			
Proficient in work areas	<3	≥3	≥5
Trains new staff	…[b]	Yes	Yes
Participation in workgroups/committees related to quality-improvement projects	Yes	Yes	Yes
Assists with planning, implementing, and monitoring pharmacy programs/technology	…[b]	Yes	Yes
Assists in coordinating workflow within pharmacy operations	…[b]	…[b]	Yes

[a]Denotes preferred employer attainment level and not a job description requirement.
[b]Not a component of the HR-approved job description for the designated career level.

Table 3. Pharmacy Technician Theory of Reasoned Action Survey Results

Domains with Question Assignments	Response, no. (%) (*n* = 123)				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Leadership and career advancement					
Employment at a location with potential for career advancement is important during consideration of available job opportunities.	4 (3.25)	1 (0.81)	12 (9.76)	41 (33.33)	65 (52.85)
A pharmacy technician career ladder motivates me to qualify for promotion.	7 (5.69)	11 (8.94)	19 (15.45)	38 (30.89)	48 (39.02)
I prefer an employment position that is perceived as a leadership role at my institution.	3 (2.44)	6 (4.88)	21 (17.07)	50 (40.65)	43 (34.96)
Societal expectations					
I would like for work peers to perceive me as a responsible, trustworthy individual.	2 (1.63)	0 (0.00)	4 (3.25)	32 (26.02)	85 (69.11)
Most people that I work with would agree that I enjoy roles with increased responsibility and expectations.	3 (2.44)	2 (1.63)	20 (16.26)	55 (44.72)	43 (34.96)
It is expected of me that I participate in a pharmacy technician career ladder.	3 (2.44)	13 (10.57)	37 (30.08)	38 (30.89)	32 (26.02)
Experience and skill-based					
Years of employment will likely contribute to promotion consideration by pharmacy management.	17 (13.82)	8 (6.50)	20 (16.26)	43 (34.96)	35 (28.46)
I feel that I receive adequate opportunities for training to support advancement within the pharmacy technician career ladder.	15 (12.20)	13 (10.57)	26 (21.14)	41 (31.33)	28 (22.76)
Incentivized motivation					
Pharmacy technicians would not want to participate in a career ladder without an increase in pay rate and/or employee benefits.	7 (5.69)	6 (4.88)	13 (10.57)	42 (34.15)	55 (44.72)
Once I reached my desired career level, I lose motivation to progress further with responsibilities and leadership roles without an associated increase in hourly pay rate.	22 (17.89)	34 (27.64)	22 (17.89)	23 (18.70)	22 (17.89)

Table 4. Theory of Reasoned Action Domain Scores

Domains	Pharmacy Technician I (*n* = 21)	Pharmacy Technician II (*n* = 71)	Pharmacy Technician III (*n* = 31)	P-Value
Leadership and career advancement	4.33 (3.67-4.67)	4.00 (3.67-4.67)	4.33 (4.00-5.00)	0.006
Societal expectations	4.33 (4.00-4.33)	4.00 (3.67-4.33)	4.33 (4.00-5.00)	0.122
Experience and skill-based	3.50 (3.00-4.50)	3.50 (3.00-4.00)	4.00 (3.50-5.00)	0.071
Incentivized motivation	3.50 (3.00-5.00)	3.50 (3.00-4.50)	3.00 (3.00-4.00)	0.397

[a]Scores are presented as median values with associated interquartile range.

Table 5. Pharmacy Technician Baseline Demographics

Characteristic, no. (%)	Pre-Intervention (*n* = 104)	Post-Intervention (*n* = 145)	P-Value
Age, years[a]			
18-25	0 (0.00)	5 (3.45)	0.065
26-35	47 (45.19)	72 (49.66)	0.487
36-40	17 (17.31)	23 (15.86)	0.918
40+	39 (37.50)	45 (31.03)	0.287
Gender			
Male	53 (33.65)	42 (28.97)	<0.001
Community institutions			
Pharmacy Technician I	24 (23.08)	28 (19.31)	0.471
Pharmacy Technician II	28 (26.92)	70 (48.28)	0.001
Pharmacy Technician III	8 (7.69)	0 (0.00)	0.001
PRN employees	17 (16.35)	0 (0.00)	<0.001
Academic medical center			
Pharmacy Technician I	22 (21.15)	43 (29.66)	0.132
Pharmacy Technician II	0 (0.00)	4 (2.76)	0.113
Pharmacy Technician III	0 (0.00)	0 (0.00)	…[b]
PRN employees	5 (4.81)	0 (0.00)	0.012

[a]Represents age range at time of initial hire.
[b]Unable to calculate due to zero observations between all research populations.

Table 6. Pharmacy Technician Promotion Time to Occurrence from Initial Hire Date[a]

Characteristic [a]	Pre-Intervention (*n* = 42)	Post-Intervention (*n* = 14)	P-Value
Pharmacy Technician II	1.46 (1.17-2.18)	1.42 (1.05-1.82)	0.357
Pharmacy Technician III	3.01 (2.15-4.04)	2.07 (2.07-2.07)	0.166

[a]Time is formatted in years with median and interquartile range.

Table 7. Pharmacy Technician Voluntary Turnover

Characteristic, no. (%)	2013-2015 Voluntary Turnover (*n* = 9)			2017-2019 Voluntary Turnover (*n* = 52)		
Reported leave reason	Pharmacy Technician I	Pharmacy Technician II	Pharmacy Technician III	Pharmacy Technician I	Pharmacy Technician II	Pharmacy Technician III
Family reasons	1 (11.11)	0 (0.00)	0 (0.00)	3 (5.77)	8 (15.38)	0 (0.00)
Advancement opportunity	0 (0.00)	0 (0.00)	0 (0.00)	4 (7.69)	6 (11.54)	0 (0.00)
Job fit/challenge	0 (0.00)	0 (0.00)	0 (0.00)	3 (5.77)	3 (5.77)	0 (0.00)
Relocation	1 (11.11)	0 (0.00)	0 (0.00)	2 (3.85)	0 (0.00)	0 (0.00)
Dissatisfied with work conditions	1 (11.11)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Dissatisfied with location	1 (11.11)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Health reasons	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.92)	0 (0.00)	0 (0.00)
Dissatisfied with hours	0 (0.00)	1 (11.11)	1 (11.11)	1 (1.92)	1 (1.92)	0 (0.00)
Completion of training program	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	2 (3.85)	0 (0.00)
Return to school	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.92)	2 (3.85)	0 (0.00)
Dissatisfied with fellow employee	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.92)	0 (0.00)	0 (0.00)
Opportunity for training in an area of specialty practice	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.92)	1 (1.92)	0 (0.00)
Opportunity to work an area of specialty practice	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (1.92)	0 (0.00)
Other employment	2 (22.22)	1 (11.11)	0 (0.00)	4 (7.69)	7 (13.46)	0 (0.00)

Table 8. Pharmacy Technician New Hire Turnover

Characteristic	Pre-Intervention (*n* = 38)			Post-Intervention (*n* = 42)		
Year	2013	2014	2015	2017	2018	2019
One-year turnover rate	0.29	0.20	0.21	0.21	0.27	0.11[a]
Two-year turnover rate	0.42	0.36	0.34	0.42	0.37[a]	…[a]

[a]Unable to sufficiently establish or determine secondary to data outside of study timeframe.

Table 9. Pharmacy Technician Promotion Association with Termination

Characteristic, no. (%)	Promotion Occurrence		P-Value
	Yes	No	
Termination	12 (11.88)	89 (88.12)	<0.001
No Termination	38 (25.68)	110 (74.32)	<0.001

Table 10. Literature Review of Pharmacy Technician Career Ladders

Characteristic	Strozyk and Underwood, 1994	Deyhim et al., 2020
Recruitment requirements and job responsibility descriptions		
Pharmacy Technician I	- High school diploma - Demonstrated typing skills - Proficient performance of the following activities: o Medication delivery o Medication dispenses o Cash register operation o Medication repackaging o Floor-stock maintenance o Inventory management	- High school diploma or equivalency with at least two years of college preferred - Greater than one year of hospital pharmacy experience preferred - Certified pharmacy technician by the Texas State Board of Pharmacy with maintained board requirements for Pharmacy Technician registration or Pharmacist Intern licensure - ACPE-accredited training and IV certification with maintained board of pharmacy sterile compounding requirements - Proficient in performing accurate calculations required for usual dosage determinations. - Must be proficient in the use of personal computers and related software, drug preparation pumps/devices, packaging and labeling machines; automated drug dispensing equipment; prescription balances; portable data processing units. - Must be able to use Microsoft® Office and pharmaceutical equipment - Sufficient proficiency in speaking, reading, and writing the English language necessary to perform the essential functions of this job, especially with regard to activities impacting patient or employee safety or security - Ability to effectively communicate with patients, physicians, family members and co-workers in a manner consistent with a customer service focus and application of positive language principles

Pharmacy Technician II	- Two years of hospital pharmacy experience or certification by state board of pharmacy; direct, external entry permissible - Proficient performance of level one activities and the following: o Inventory management o Maintenance of crash carts o Preparation of IV admixtures o Narcotic floor-stock distribution o Participation in quality-assurance activities	- Education requirements and certificates, licenses, and registration requirements of Pharmacy Technician I - Two or more years of hospital pharmacy technician experience at external facility or one year of internal hospital pharmacy experience - Knowledge, skills, and abilities and primary job responsibilities to include Pharmacy Technician I designations - Proficiency in at least three pharmacy work areas - Activities may be inclusive of the following: o Participates/leads quality-assurance activities o Participates in workgroups and committees o Develops/implements educational activities for technical staff o Trains new employees and other learners o Controlled substance management, chemotherapy compounding, unit dose dispensing technology, satellite operating room and intensive care unit pharmacy assignments, medication histories, or advanced medication compounding
Pharmacy Technician III	- Four years of hospital pharmacy experience or certification and three years of experience - Proficient performance of level two activities and the following: o Coordinates the introduction of new technologies o Develops methods to improve efficiency o Efficient performance of all technical tasks o Successful implementation or revision of a policy and procedure	- Education requirements and certificates, licenses, and registration requirements of Pharmacy Technician I and II - Two or more years of internal hospital pharmacy technician experience - Knowledge, skills, and abilities and primary job responsibilities to include Pharmacy Technician I and II designations - Proficiency in at least five pharmacy work areas - Passage of TCT examination - Activities may be further inclusive of the following: o TCT

		○ Leads workgroups and committees and develops/implements educational activities for technical staff ○ Trains Pharmacy Technician I and II staff and other learners ○ Participates/leads of quality-assurance activities
Pharmacy Technician IV	- Six years of hospital pharmacy experience or certification and five years of experience - Proficient performance of level three activities and the following: ○ Demonstrates leadership characteristics ○ Actively participates in educational activities ○ Develops problem-solving and effective oral and written communication skills	…[a]

[a]Career lavel does not exist at the reference institution for description.

14 FIGURES

Figure 1. Pharmacy Technician New Hire Promotions

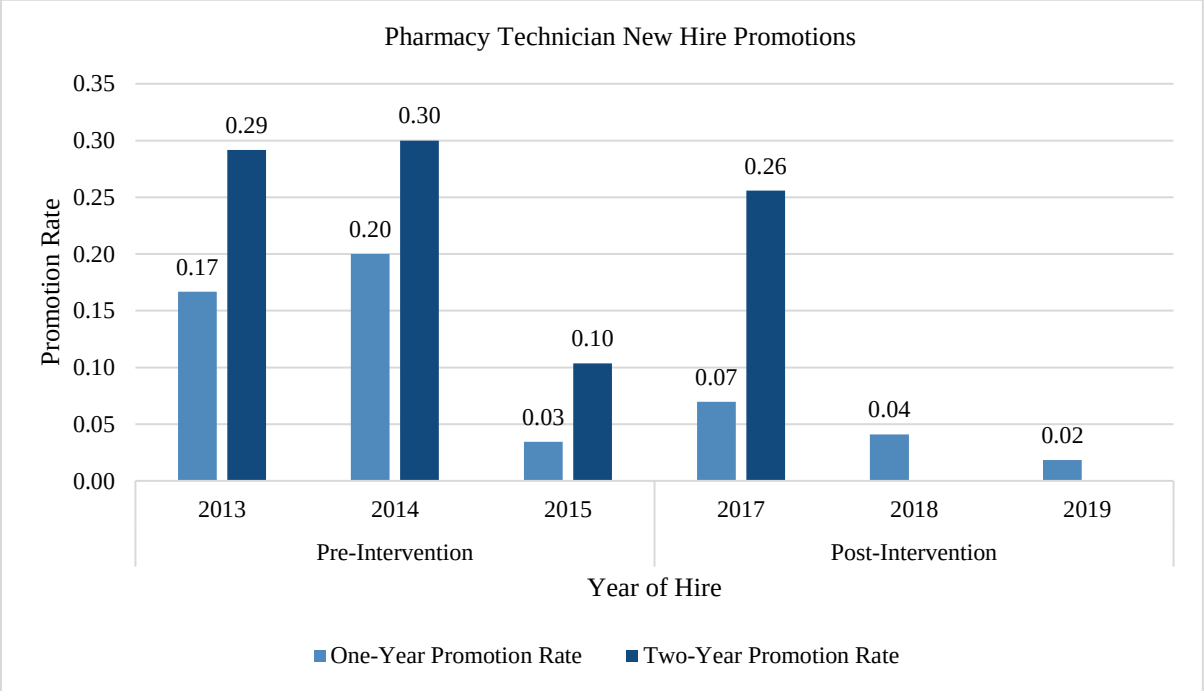

Figure 2. Pharmacy Technician New Hire Turnover