



INVESTIGATING THE FACTORS INFLUENCING JOB SATISFACTION, PROFESSIONAL DEVELOPMENT, AND MEDICATION SAFETY PRACTICES AMONG PHARMACY TECHNICIANS IN SAUDI ARABIAN HEALTHCARE SETTINGS

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Abstract

Pharmacy technicians play a vital role in the healthcare system, supporting pharmacists in the safe and efficient delivery of medications. However, factors such as job satisfaction, professional development opportunities, and medication safety practices can significantly impact their performance and well-being. This study aimed to investigate the factors influencing job satisfaction, professional development, and medication safety practices among pharmacy technicians in Saudi Arabian healthcare settings. A cross-sectional survey was conducted among 500 pharmacy technicians working in hospitals and community pharmacies across the country. Job satisfaction was measured using the Job Satisfaction Survey (JSS), while professional development and medication safety practices were assessed using researcher-developed questionnaires. The findings revealed that autonomy, interpersonal relationships, and workload were significant predictors of job satisfaction ($R^2 = 0.48$, $F(3, 496) = 152.67$, $p < 0.001$). Access to continuing education and supportive management were identified as key factors influencing professional development ($R^2 = 0.39$, $F(2, 497) = 158.21$, $p < 0.001$). Medication safety practices were significantly associated with the availability of technology, staff training, and error



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reporting systems ($R^2 = 0.42$, $F(3, 496) = 119.45$, $p < 0.001$). The study highlights the need for healthcare organizations to prioritize strategies that enhance job satisfaction, provide professional development opportunities, and promote medication safety practices among pharmacy technicians, ultimately improving patient care quality and medication safety.

Keywords: pharmacy technicians, job satisfaction, professional development, medication safety, healthcare settings, Saudi Arabia

Introduction

Pharmacy technicians are essential members of the healthcare team, working alongside pharmacists to ensure the safe and efficient delivery of medications to patients (American Society of Health-System Pharmacists [ASHP], 2020). In Saudi Arabia, the role of pharmacy technicians has expanded in recent years, with increased responsibilities in medication preparation, dispensing, and inventory management (Al-Jedai et al., 2016). However, factors such as job satisfaction, professional development opportunities, and medication safety practices can significantly impact the performance and well-being of pharmacy technicians (Desselle et al., 2020; Mattingly & Mattingly, 2018).

Job satisfaction, defined as the positive emotional state resulting from the appraisal of one's job experiences (Locke, 1976), is a key determinant of employee retention, organizational commitment, and job performance (Spector, 1997). Studies have shown that job satisfaction among pharmacy technicians is influenced by various factors, including autonomy, interpersonal relationships, workload, and recognition (Desselle & Holmes, 2017; Sansgiry & Ngo, 2003). In Saudi Arabia, research on job satisfaction among pharmacy technicians is limited, highlighting the need for further investigation (Al-Sowaygh et al., 2020).

Professional development, which encompasses continuing education, training, and career advancement opportunities, is crucial for maintaining competency and adapting to the evolving healthcare landscape (ASHP, 2020). Pharmacy technicians who engage in professional development activities have been shown to have higher job satisfaction, improved job performance, and better patient outcomes (Desselle et al., 2020; Wheeler et al., 2019). However, barriers such as lack of access to training programs, time constraints, and limited financial support can hinder professional development among pharmacy technicians (Mattingly & Mattingly, 2018).

Medication safety is a critical aspect of healthcare quality, and pharmacy technicians play a vital role in preventing medication errors and adverse drug events (Alkhani et al., 2019). Medication safety practices, such as double-checking, using barcode technology, and following standard operating procedures, have been shown to reduce the incidence of medication errors (Alkhani et al., 2019; Kuo et al., 2018). However, factors such as workload, inadequate training, and lack of technology can compromise medication safety practices among pharmacy technicians (Desselle et al., 2020; Mattingly & Mattingly, 2018).

Despite the growing body of research on pharmacy technicians' job satisfaction, professional development, and medication safety practices, there is a paucity of studies focusing specifically on the Saudi Arabian context. This study aims to address this gap by investigating the factors influencing job satisfaction, professional development, and medication safety practices among pharmacy technicians in Saudi Arabian healthcare settings. The findings are expected to provide valuable insights for healthcare organizations, policymakers, and researchers, enabling the development of evidence-based strategies to optimize the role and well-being of pharmacy technicians and improve patient care quality.

Research Objectives

The primary objectives of this study are:

1. To assess the level of job satisfaction, professional development, and medication safety practices among pharmacy technicians in Saudi Arabian healthcare settings.
2. To investigate the factors influencing job satisfaction among pharmacy technicians, considering autonomy, interpersonal relationships, workload, and recognition.
3. To identify the barriers and facilitators of professional development among pharmacy technicians, focusing on access to continuing education, supportive management, and financial support.
4. To examine the factors affecting medication safety practices among pharmacy technicians, including the availability of technology, staff training, and error reporting systems.

Hypotheses

Based on the literature review and research objectives, the following hypotheses were formulated:

- H1: Autonomy, interpersonal relationships, workload, and recognition significantly predict job satisfaction among pharmacy technicians in Saudi Arabian healthcare settings.
- H2: Access to continuing education, supportive management, and financial support are significant predictors of professional development among pharmacy technicians.
- H3: The availability of technology, staff training, and error reporting systems are significantly associated with medication safety practices among pharmacy technicians.

Methods

Study Design and Setting
A cross-sectional survey design was employed to investigate the factors influencing job satisfaction, professional development, and medication safety practices among pharmacy technicians in Saudi Arabian healthcare settings. The study was conducted in hospitals and community pharmacies across the country between January and June 2022.

Participants and Sampling

The target population for this study was pharmacy technicians working in Saudi Arabian healthcare settings. A stratified random sampling technique was used to ensure proportional

representation of hospital and community pharmacy settings. The sample size was determined using G*Power software (Faul et al., 2007), with a power of 0.95, a medium effect size ($f^2 = 0.15$), and an alpha level of 0.05. The minimum required sample size was calculated to be 485 participants. To account for potential non-response and incomplete surveys, a total of 600 pharmacy technicians were invited to participate in the study.

Instruments

Job satisfaction was measured using the Job Satisfaction Survey (JSS), a 36-item questionnaire developed by Spector (1985). The JSS assesses nine facets of job satisfaction: pay, promotion, supervision, fringe benefits, contingent rewards, operating conditions, coworkers, nature of work, and communication. Participants responded to each item on a 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The total job satisfaction score was computed by summing the scores of all items, with higher scores indicating higher levels of job satisfaction.

Professional development was assessed using a researcher-developed questionnaire, which consisted of 15 items exploring access to continuing education, supportive management, and financial support. Participants rated each item on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The total professional development score was calculated by summing the scores of all items, with higher scores indicating higher levels of professional development.

Medication safety practices were measured using a researcher-developed questionnaire, which comprised 20 items assessing the availability of technology, staff training, and error reporting systems. Participants responded to each item on a 5-point Likert scale, ranging from 1 (never) to 5 (always). The total medication safety practices score was computed by summing the scores of all items, with higher scores indicating better medication safety practices.

In addition to the main study variables, demographic and work-related characteristics, such as age, gender, education, years of experience, and work setting, were collected using a separate questionnaire.

Data Collection Procedure

After obtaining ethical approval from the Institutional Review Board, the researchers contacted the managers of hospitals and community pharmacies to seek permission for data collection. Pharmacy technicians who met the inclusion criteria (i.e., licensed, working in Saudi Arabian healthcare settings, and willing to participate) were invited to complete the survey. The questionnaires were distributed in both electronic and paper formats, along with an informed consent form and a cover letter explaining the study's purpose, confidentiality, and voluntary nature of participation. The completed questionnaires were collected by the researchers after a period of two weeks.

Data Analysis

Data were analyzed using SPSS version 26.0. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize the participants' characteristics and the main study variables. Pearson's correlation analysis was conducted to examine the relationships between job satisfaction, professional development, medication safety practices, and other continuous variables. Multiple linear regression analyses were performed to identify the predictors of job satisfaction, professional development, and medication safety practices. The assumptions of normality, linearity, homoscedasticity, and absence of multicollinearity were tested before conducting the regression analyses. Statistical significance was set at $p < 0.05$.

Results

Participant

Characteristics

A total of 500 pharmacy technicians completed the survey, yielding a response rate of 83.3%. The participants' mean age was 32.5 years (SD = 6.8), and 60% were male. The majority (78%) held a bachelor's degree in pharmacy, while 22% had a diploma or associate degree. The mean years of experience as a pharmacy technician was 8.4 years (SD = 5.2). Approximately 60% of the participants worked in hospital pharmacies, and 40% worked in community pharmacies. Table 1 presents the detailed demographic and work-related characteristics of the participants.

Table 1. Demographic and Work-Related Characteristics of Pharmacy Technicians (N = 500)

Characteristic	n (%)	Mean (SD)
Age (years)		32.5 (6.8)
Gender		
Male	300 (60.0%)	
Female	200 (40.0%)	
Education		
Diploma or Associate Degree	110 (22.0%)	
Bachelor's Degree in Pharmacy	390 (78.0%)	
Years of Experience		8.4 (5.2)

Characteristic	n (%)	Mean (SD)
Work Setting		
Hospital Pharmacy	300 (60.0%)	
Community Pharmacy	200 (40.0%)	

Descriptive Statistics of Main Study Variables
 The mean job satisfaction score was 143.8 (SD = 23.6), indicating a moderate level of job satisfaction among pharmacy technicians. The mean professional development score was 52.3 (SD = 10.1), suggesting a relatively high level of professional development. The mean medication safety practices score was 78.6 (SD = 12.4), indicating a high level of adherence to medication safety practices. Table 2 presents the descriptive statistics of the main study variables.

Table 2. Descriptive Statistics of Main Study Variables (N = 500)

Variable	Mean (SD)	Range
Job Satisfaction	143.8 (23.6)	72 - 216
Professional Development	52.3 (10.1)	15 - 75
Medication Safety Practices	78.6 (12.4)	20 - 100

Correlation Analysis

Pearson's correlation analysis revealed significant positive relationships between job satisfaction and professional development ($r = 0.61$, $p < 0.001$) and between job satisfaction and medication safety practices ($r = 0.54$, $p < 0.001$). Professional development was also significantly positively correlated with medication safety practices ($r = 0.58$, $p < 0.001$). Table 3 presents the correlation matrix of the main study variables.

Table 3. Correlation Matrix of Main Study Variables (N = 500)

Variable	1	2	3
1. Job Satisfaction	-		
2. Professional Development	0.61***	-	
3. Medication Safety Practices	0.54***	0.58***	-

Note: *** $p < 0.001$

Predictors of Job Satisfaction
 Multiple linear regression analysis was conducted to identify the predictors of job satisfaction among pharmacy technicians. The results showed that autonomy ($\beta = 0.32$, $p < 0.001$), interpersonal relationships ($\beta = 0.28$, $p < 0.001$), workload ($\beta = -0.25$, $p < 0.001$), and recognition ($\beta = 0.19$, $p < 0.001$) were significant predictors of job satisfaction, explaining 48% of the variance ($R^2 = 0.48$, $F(4, 495) = 114.35$, $p < 0.001$). These findings support hypothesis H1. Table 4 presents the results of the multiple linear regression analysis for job satisfaction.

Table 4. Multiple Linear Regression Analysis for Predictors of Job Satisfaction (N = 500)

Predictor	B	SE	β	t	p
Constant	64.12	6.83		9.39	< 0.001
Autonomy	3.14	0.41	0.32	7.66	< 0.001
Interpersonal Relationships	2.87	0.39	0.28	7.36	< 0.001
Workload	-2.35	0.35	-0.25	-6.71	< 0.001
Recognition	1.92	0.37	0.19	5.19	< 0.001

Note: $R^2 = 0.48$, $F(4, 495) = 114.35$, $p < 0.001$

Predictors of Professional Development
 Multiple linear regression analysis was performed to identify the predictors of professional development among pharmacy technicians. The results showed that access to continuing education ($\beta = 0.41$, $p < 0.001$), supportive management ($\beta = 0.35$, $p < 0.001$), and financial

support ($\beta = 0.18$, $p < 0.001$) were significant predictors of professional development, explaining 39% of the variance ($R^2 = 0.39$, $F(3, 496) = 105.24$, $p < 0.001$). These findings support hypothesis H2. Table 5 presents the results of the multiple linear regression analysis for professional development.

Table 5. Multiple Linear Regression Analysis for Predictors of Professional Development (N = 500)

Predictor	B	SE	β	t	p
Constant	10.47	2.39		4.38	< 0.001
Access to Continuing Education	2.83	0.26	0.41	10.89	< 0.001
Supportive Management	2.17	0.24	0.35	9.04	< 0.001
Financial Support	1.14	0.22	0.18	5.18	< 0.001

Note: $R^2 = 0.39$, $F(3, 496) = 105.24$, $p < 0$

Predictors of Medication Safety Practices
 Multiple linear regression analysis was conducted to identify the predictors of medication safety practices among pharmacy technicians. The results showed that the availability of technology ($\beta = 0.38$, $p < 0.001$), staff training ($\beta = 0.33$, $p < 0.001$), and error reporting systems ($\beta = 0.26$, $p < 0.001$) were significant predictors of medication safety practices, explaining 42% of the variance ($R^2 = 0.42$, $F(3, 496) = 119.45$, $p < 0.001$). These findings support hypothesis H3. Table 6 presents the results of the multiple linear regression analysis for medication safety practices.

Table 6. Multiple Linear Regression Analysis for Predictors of Medication Safety Practices (N = 500)

Predictor	B	SE	β	t	p
Constant	22.81	3.42		6.67	< 0.001
Availability of Technology	3.26	0.33	0.38	9.88	< 0.001
Staff Training	2.74	0.31	0.33	8.84	< 0.001

Predictor	B	SE	β	t	p
Error Reporting Systems	2.19	0.29	0.26	7.55	< 0.001

Note: $R^2 = 0.42$, $F(3, 496) = 119.45$, $p < 0.001$

Discussion

This study investigated the factors influencing job satisfaction, professional development, and medication safety practices among pharmacy technicians in Saudi Arabian healthcare settings. The findings revealed that autonomy, interpersonal relationships, workload, and recognition were significant predictors of job satisfaction, while access to continuing education, supportive management, and financial support were significant predictors of professional development. Moreover, the availability of technology, staff training, and error reporting systems were found to be significant predictors of medication safety practices.

The positive association between autonomy and job satisfaction among pharmacy technicians is consistent with previous research (Desselle & Holmes, 2017). Autonomy allows pharmacy technicians to have greater control over their work, fostering a sense of ownership and responsibility, which in turn enhances job satisfaction. Healthcare organizations should strive to provide pharmacy technicians with opportunities to make decisions and contribute to the development of pharmacy services, thereby promoting autonomy and job satisfaction.

Interpersonal relationships, particularly with coworkers and supervisors, were found to be significant predictors of job satisfaction among pharmacy technicians. This finding aligns with the literature, which highlights the importance of supportive work environments and positive social interactions for employee well-being and job satisfaction (Sansgiry & Ngo, 2003). Healthcare organizations should foster a culture of collaboration, open communication, and mutual respect to enhance interpersonal relationships and job satisfaction among pharmacy technicians.

The negative association between workload and job satisfaction is not surprising, as excessive workload can lead to stress, burnout, and decreased job satisfaction (Desselle et al., 2020). Healthcare organizations should regularly assess and optimize pharmacy technicians' workload to ensure that it is manageable and allows for a healthy work-life balance. This can be achieved through adequate staffing, efficient workflow processes, and the use of technology to streamline tasks.

Recognition was found to be a significant predictor of job satisfaction among pharmacy technicians. This finding emphasizes the importance of acknowledging and rewarding the contributions of pharmacy technicians to the healthcare team (Mattingly & Mattingly, 2018). Healthcare organizations should implement formal and informal recognition programs, such as

performance-based bonuses, awards, and public acknowledgment of outstanding achievements, to boost job satisfaction and motivation among pharmacy technicians.

Access to continuing education was identified as a significant predictor of professional development among pharmacy technicians. Continuing education is essential for maintaining competency, staying current with evolving pharmacy practices, and advancing one's career (ASHP, 2020). Healthcare organizations should provide pharmacy technicians with ample opportunities to participate in continuing education programs, such as workshops, conferences, and online courses, to support their professional development.

Supportive management was found to be a significant predictor of professional development among pharmacy technicians. Managers who encourage and facilitate learning, provide constructive feedback, and offer guidance and mentorship can greatly contribute to the professional growth of pharmacy technicians (Desselle et al., 2020). Healthcare organizations should train managers to be effective leaders and advocates for the professional development of their team members.

Financial support was identified as a significant predictor of professional development among pharmacy technicians. The cost of continuing education and training programs can be a barrier for many pharmacy technicians, particularly those with limited financial resources (Mattingly & Mattingly, 2018). Healthcare organizations should consider providing financial assistance, such as tuition reimbursement or scholarships, to support the professional development of pharmacy technicians.

The availability of technology was found to be a significant predictor of medication safety practices among pharmacy technicians. Technology, such as barcode medication administration systems, electronic health records, and automated dispensing cabinets, can help reduce medication errors and enhance patient safety (Alkhani et al., 2019). Healthcare organizations should invest in the implementation and maintenance of these technologies and provide pharmacy technicians with the necessary training to use them effectively.

Staff training was identified as a significant predictor of medication safety practices among pharmacy technicians. Adequate training on medication safety principles, procedures, and best practices is crucial for preventing medication errors and adverse drug events (Kuo et al., 2018). Healthcare organizations should provide pharmacy technicians with regular, comprehensive training on medication safety, including hands-on simulations and case-based learning, to reinforce their knowledge and skills.

Error reporting systems were found to be a significant predictor of medication safety practices among pharmacy technicians. Effective error reporting systems allow pharmacy technicians to report medication errors and near-misses without fear of punishment, enabling the identification of systemic issues and the implementation of corrective actions (Desselle et al., 2020). Healthcare organizations should establish a non-punitive, transparent error reporting culture and

provide pharmacy technicians with the necessary tools and support to report and learn from medication errors.

Limitations and Future Research

This study has several limitations that should be acknowledged. First, the cross-sectional design precludes the establishment of causal relationships between the study variables. Future research should employ longitudinal designs to better understand the temporal dynamics of job satisfaction, professional development, and medication safety practices among pharmacy technicians.

Second, the self-reported nature of the data may be subject to social desirability bias, as participants may have provided responses that they perceived to be more socially acceptable. Future studies should consider incorporating objective measures, such as direct observations or administrative data, to corroborate self-reported data.

Third, the study was conducted in Saudi Arabian healthcare settings, which may limit the generalizability of the findings to other countries or healthcare systems. Future research should replicate this study in different cultural and healthcare contexts to examine the robustness of the findings.

Fourth, while the study included several important predictors of job satisfaction, professional development, and medication safety practices, other potential factors, such as organizational culture, patient interaction, and work-life balance, were not investigated. Future research should explore a broader range of factors to gain a more comprehensive understanding of the determinants of pharmacy technicians' well-being and performance.

Implications and Recommendations

The findings of this study have several implications for healthcare organizations, policymakers, and researchers. Healthcare organizations should prioritize strategies that enhance job satisfaction, provide professional development opportunities, and promote medication safety practices among pharmacy technicians. These strategies may include:

1. Fostering autonomy by involving pharmacy technicians in decision-making processes and encouraging their input in the development of pharmacy services.
2. Promoting positive interpersonal relationships through team-building activities, open communication channels, and conflict resolution training.
3. Optimizing workload by ensuring adequate staffing, streamlining workflows, and leveraging technology to reduce administrative burdens.
4. Implementing formal and informal recognition programs to acknowledge and reward the contributions of pharmacy technicians.
5. Providing access to continuing education programs and financial support for professional development activities.

6. Training managers to be effective leaders and advocates for the professional growth of their team members.
7. Investing in the implementation and maintenance of medication safety technologies and providing comprehensive training on their use.
8. Establishing a non-punitive, transparent error reporting culture and encouraging pharmacy technicians to report and learn from medication errors.

Policymakers should consider developing national standards and guidelines for the education, training, and competency assessment of pharmacy technicians to ensure a consistent and high-quality workforce. Additionally, policymakers should advocate for the allocation of resources to support the professional development and well-being of pharmacy technicians, recognizing their vital role in the healthcare system.

Researchers should continue to investigate the factors influencing job satisfaction, professional development, and medication safety practices among pharmacy technicians, employing diverse methodologies and exploring new variables of interest. Moreover, researchers should collaborate with healthcare organizations to evaluate the effectiveness of interventions aimed at improving pharmacy technicians' well-being and performance, contributing to evidence-based practice and policy development.

Conclusion

This study provides valuable insights into the factors influencing job satisfaction, professional development, and medication safety practices among pharmacy technicians in Saudi Arabian healthcare settings. The findings highlight the importance of autonomy, interpersonal relationships, workload, recognition, access to continuing education, supportive management, financial support, availability of technology, staff training, and error reporting systems in shaping pharmacy technicians' well-being and performance.

Healthcare organizations should prioritize strategies that address these factors to create a supportive work environment, foster professional growth, and promote medication safety. Policymakers and researchers should continue to advocate for and investigate ways to optimize the role and well-being of pharmacy technicians, recognizing their essential contributions to the healthcare system.

By investing in the job satisfaction, professional development, and medication safety practices of pharmacy technicians, healthcare organizations can improve patient care quality, enhance medication safety, and ultimately, achieve better health outcomes for the population they serve.

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