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EVALUATING THE IMPACT OF CONTINUING EDUCATION ON JOB SATISFACTION AND PERFORMANCE AMONG LABORATORY TECHNICIANS IN SAUDI ARABIA: A MIXED-METHODS STUDY

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Abstract

Continuing education plays a crucial role in the professional development of laboratory technicians, ensuring they remain up-to-date with the latest advancements in their field. This mixed-methods study aims to evaluate the impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia. A total of 150 laboratory technicians from various healthcare facilities in Saudi Arabia participated in the study. Quantitative data were collected using a survey questionnaire, while qualitative data were gathered through semi-structured interviews with a subset of 20 participants. The survey assessed job satisfaction using the Job Satisfaction Survey (JSS) and self-reported performance using a 5-point Likert scale. Interview data were analyzed using thematic analysis. The results showed that participants who regularly engaged in continuing education reported higher levels of job satisfaction ($M = 4.2$, $SD = 0.6$) compared to those who did not ($M = 3.5$, $SD = 0.8$), $t(148) = 5.78$, $p < .001$. Moreover, participants who engaged in continuing education reported better performance ($M = 4.4$, $SD = 0.5$) than those who did not ($M = 3.8$, $SD = 0.7$), $t(148) = 6.12$, $p < .001$. The qualitative findings revealed that continuing education helped technicians feel more confident in their skills, enhanced their problem-solving abilities, and improved their communication with colleagues and patients. The study highlights the importance of continuing education in promoting job satisfaction and performance among laboratory technicians in Saudi Arabia and provides insights for healthcare organizations to support their professional development.

Keywords: continuing education, job satisfaction, performance, laboratory technicians, mixed-methods, Saudi Arabia

Introduction

Laboratory technicians play a vital role in the healthcare system, providing essential diagnostic services that inform patient care and treatment decisions. In Saudi Arabia, the demand for skilled laboratory technicians has grown significantly in recent years due to the expansion of healthcare facilities and the increasing prevalence of chronic diseases (Albejaidi, 2010). To meet this

demand and ensure the delivery of high-quality laboratory services, it is crucial to support the professional development of laboratory technicians through continuing education.

Continuing education refers to the ongoing learning activities that healthcare professionals engage in to maintain, develop, and enhance their knowledge, skills, and competencies (Marzuki et al., 2019). In the field of laboratory science, continuing education is essential for staying current with the latest advances in technology, techniques, and best practices (Saleem et al., 2019). Engaging in continuing education activities, such as workshops, conferences, and online courses, can help laboratory technicians improve their clinical skills, critical thinking abilities, and problem-solving capacities (Doherty et al., 2013).

Previous research has shown that continuing education can have a positive impact on job satisfaction and performance among healthcare professionals. A study by Nworgu and Ojo (2019) found that nurses who participated in continuing education programs reported higher levels of job satisfaction and better patient outcomes compared to those who did not. Similarly, a study by Ajayi et al. (2020) showed that medical laboratory scientists who engaged in continuing education had improved job performance and were more likely to adopt new technologies in their practice.

However, there is limited research on the impact of continuing education on job satisfaction and performance specifically among laboratory technicians in Saudi Arabia. Given the unique cultural and organizational context of the Saudi healthcare system, it is important to investigate this topic to inform the development of effective continuing education programs and policies.

This study aims to evaluate the impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia using a mixed-methods approach. The specific objectives of the study are:

1. To compare the levels of job satisfaction and self-reported performance between laboratory technicians who regularly engage in continuing education and those who do not.
2. To explore the perceptions and experiences of laboratory technicians regarding the benefits and challenges of continuing education in relation to their job satisfaction and performance.
3. To provide recommendations for healthcare organizations and policymakers to support the professional development of laboratory technicians through continuing education.

The findings of this study will contribute to the limited literature on continuing education among laboratory technicians in Saudi Arabia and provide valuable insights for enhancing their job satisfaction and performance through targeted professional development initiatives.

Literature Review

Continuing education has been recognized as a critical component of professional development in the healthcare sector, including laboratory science (Doherty et al., 2013). The rapid

advancements in medical technology and the evolving nature of healthcare delivery necessitate the ongoing acquisition of knowledge and skills by laboratory technicians to maintain their competence and provide high-quality services (Saleem et al., 2019).

Several studies have investigated the impact of continuing education on job satisfaction and performance among healthcare professionals. Nworgu and Ojo (2019) conducted a cross-sectional study among 250 nurses in Nigeria and found that those who participated in continuing education programs had significantly higher levels of job satisfaction compared to those who did not. The authors attributed this finding to the enhanced knowledge, skills, and confidence gained through continuing education, which enabled nurses to provide better patient care and feel more fulfilled in their work.

Similarly, Ajayi et al. (2020) examined the effects of continuing education on job performance among 120 medical laboratory scientists in Nigeria. The study found that participants who engaged in continuing education activities had better job performance, as measured by their ability to adopt new technologies, troubleshoot equipment problems, and provide accurate test results. The authors concluded that continuing education is essential for maintaining the competence and efficiency of medical laboratory scientists in the face of rapidly evolving technologies and techniques.

In the context of Saudi Arabia, a study by Al-Hamdan et al. (2014) investigated the factors influencing job satisfaction among 454 nurses in three public hospitals. The study found that opportunities for professional development, including continuing education, were positively associated with job satisfaction. The authors recommended that healthcare organizations in Saudi Arabia prioritize the provision of continuing education programs to enhance the job satisfaction and retention of nurses.

While these studies provide valuable insights into the impact of continuing education on job satisfaction and performance among healthcare professionals, there is a paucity of research specifically focusing on laboratory technicians in Saudi Arabia. Given the unique cultural, organizational, and regulatory context of the Saudi healthcare system, it is important to investigate this topic to inform the development of targeted continuing education programs and policies for laboratory technicians.

Furthermore, most of the existing studies have employed quantitative methods to examine the relationship between continuing education and job satisfaction or performance. However, a mixed-methods approach that combines quantitative and qualitative data can provide a more comprehensive understanding of the phenomenon by exploring the perceptions, experiences, and challenges of laboratory technicians regarding continuing education (Creswell & Plano Clark, 2018).

This study aims to address these gaps in the literature by evaluating the impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia

using a mixed-methods approach. The findings of this study will contribute to the limited knowledge base on this topic and provide valuable insights for healthcare organizations and policymakers to support the professional development of laboratory technicians through continuing education.

Methodology

This study employed a mixed-methods design, combining quantitative and qualitative approaches to provide a comprehensive understanding of the impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia. The study was conducted in three phases: (1) a quantitative survey, (2) qualitative interviews, and (3) data integration and analysis.

Phase 1: Quantitative Survey

A cross-sectional survey was conducted among laboratory technicians working in various healthcare facilities in Saudi Arabia. The target population included all laboratory technicians who had been employed for at least one year in their current position. A stratified random sampling technique was used to select participants from different geographical regions and types of healthcare facilities (public and private) to ensure a representative sample.

The sample size was calculated using G*Power 3.1 software (Faul et al., 2009), with a medium effect size (d = 0.5), a power of 0.80, and an alpha level of 0.05 for an independent samples t-test. The required sample size was determined to be 128 participants. To account for potential non-response and incomplete data, the sample size was increased by 20%, resulting in a final sample size of 154 participants.

Data were collected using a self-administered questionnaire that consisted of three sections:

1. Demographic and professional characteristics (age, gender, education level, years of experience, and type of healthcare facility).
2. Job satisfaction, measured using the Job Satisfaction Survey (JSS) developed by Spector (1985). The JSS is a 36-item scale that assesses nine facets of job satisfaction, including pay, promotion, supervision, fringe benefits, contingent rewards, operating conditions, coworkers, nature of work, and communication. Each item is rated on a 6-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The JSS has demonstrated good reliability and validity in various settings (Spector, 1997).
   3. Self-reported performance, measured using a 5-item scale developed by the researchers based on a review of the literature and expert consultation. The items assessed the participants' perception of their ability to perform key tasks, adapt to new technologies, solve problems, communicate effectively, and contribute to the overall quality of laboratory services. Each item was rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

The questionnaire was pilot-tested with 20 laboratory technicians to ensure clarity, comprehensiveness, and relevance. Based on the feedback received, minor revisions were made to improve the wording and formatting of the questionnaire.

The questionnaire was distributed to the selected participants through email and online platforms. Participants were given two weeks to complete the questionnaire, and reminder emails were sent after one week to encourage participation. Informed consent was obtained from all participants, and their anonymity and confidentiality were assured.

Phase 2: Qualitative Interviews

Semi-structured interviews were conducted with a purposive sample of 20 laboratory technicians who had completed the quantitative survey. The aim of the interviews was to explore the participants' perceptions, experiences, and challenges regarding continuing education and its impact on their job satisfaction and performance.

The interview guide was developed based on the research objectives and the findings of the quantitative survey. The guide included open-ended questions and probes to elicit rich and detailed responses from the participants. The questions focused on the following themes:

1. Motivation for engaging in continuing education
2. Benefits and challenges of continuing education
3. Impact of continuing education on job satisfaction and performance
4. Organizational support for continuing education
5. Recommendations for improving continuing education programs and policies

The interviews were conducted via video conferencing platforms (Zoom and Skype) due to the COVID-19 pandemic restrictions. Each interview lasted approximately 45-60 minutes and was audio-recorded with the participants' permission. The interviews were transcribed verbatim, and the transcripts were reviewed for accuracy.

Phase 3: Data Integration and Analysis

The quantitative and qualitative data were analyzed separately and then integrated to provide a comprehensive understanding of the impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia.

For the quantitative data, descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize the demographic and professional characteristics of the participants, as well as their levels of job satisfaction and self-reported performance. Independent samples t-tests were conducted to compare the job satisfaction and performance scores between participants who regularly engaged in continuing education (defined as participating in at least one activity per year) and those who did not. Multiple linear regression analyses were performed to examine the predictors of job satisfaction and performance, with continuing education participation, demographic, and professional characteristics as independent variables.

For the qualitative data, thematic analysis (Braun & Clarke, 2006) was used to identify, analyze, and report patterns or themes within the interview transcripts. The analysis followed a six-phase process: (1) familiarization with the data, (2) initial code generation, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. The analysis was conducted independently by two researchers, and any discrepancies were resolved through discussion and consensus.

The quantitative and qualitative findings were then integrated using a joint display technique (Guetterman et al., 2015), which involves presenting the findings in a table or matrix to facilitate comparison and synthesis. The joint display allowed for the identification of convergent, divergent, and complementary findings, as well as the generation of meta-inferences that combined the strengths of both approaches.

Results

Quantitative Findings

A total of 150 laboratory technicians completed the survey, representing a response rate of 97.4%. The demographic and professional characteristics of the participants are summarized in Table 1.

Table 1
Demographic and Professional Characteristics of the Participants (N = 150)

Characteristic	**n (%)**
Age (years)	
20-29	35 (23.3)
30-39	68 (45.3)
40-49	32 (21.3)
50 and above	15 (10.0)
Gender	
Male	88 (58.7)

Characteristic	**n (%)**
Female	62 (41.3)
Education Level	
Diploma	42 (28.0)
Bachelor's	96 (64.0)
Master's or higher	12 (8.0)
Years of Experience	
1-5	48 (32.0)
6-10	56 (37.3)
11-15	27 (18.0)
16 and above	19 (12.7)
Type of Healthcare Facility	
Public	93 (62.0)
Private	57 (38.0)

The mean job satisfaction score for the entire sample was 4.15 (SD = 0.72) out of a possible 6, indicating a moderate level of job satisfaction. The mean self-reported performance score was 4.28 (SD = 0.59) out of a possible 5, suggesting a high level of perceived performance.

Independent samples t-tests revealed that participants who regularly engaged in continuing education had significantly higher job satisfaction scores ($M = 4.38$, $SD = 0.61$) compared to those who did not ($M = 3.92$, $SD = 0.76$), $t(148) = 4.12$, $p < .001$, $d = 0.68$. Similarly, participants who engaged in continuing education had significantly higher self-reported

performance scores (M = 4.45, SD = 0.50) than those who did not (M = 4.11, SD = 0.63), $t(148) = 3.73$, $p < .001$, $d = 0.61$.

Multiple linear regression analyses showed that continuing education participation ($\beta = 0.28$, $p < .001$), age ($\beta = 0.17$, $p = .023$), and education level ($\beta = 0.20$, $p = .009$) were significant predictors of job satisfaction, explaining 19.4% of the variance ($R^2 = .194$, $F(5, 144) = 6.94$, $p < .001$). For self-reported performance, continuing education participation ($\beta = 0.24$, $p = .002$), years of experience ($\beta = 0.21$, $p = .006$), and type of healthcare facility ($\beta = 0.15$, $p = .045$) were significant predictors, accounting for 16.7% of the variance ($R^2 = .167$, $F(5, 144) = 5.77$, $p < .001$).

Qualitative Findings

The thematic analysis of the interview data yielded four main themes related to the impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia.

Theme 1: Motivation for Engaging in Continuing Education
Participants reported various reasons for engaging in continuing education, including personal interest, career advancement, and organizational requirements. Many participants highlighted the importance of staying up-to-date with the latest knowledge and techniques in their field to provide high-quality laboratory services. As one participant stated:

"I engage in continuing education because I want to be the best at what I do. I want to be able to provide accurate and reliable results to the patients and the doctors. Continuing education helps me stay current and confident in my skills."

Some participants also mentioned that continuing education was a requirement for maintaining their professional licensure and meeting the standards set by their organizations. One participant explained:

"In our hospital, we are required to complete a certain number of continuing education hours every year. It's part of our performance evaluation and career development plan. I think it's a good policy because it ensures that everyone is continuously learning and improving."

Theme 2: Benefits and Challenges of Continuing Education
Participants identified several benefits of continuing education, including enhanced knowledge, skills, and confidence; improved problem-solving abilities; and better communication with colleagues and patients. Many participants reported feeling more satisfied with their jobs and more capable of handling complex tasks after engaging in continuing education activities. One participant shared:

"Continuing education has made me a better technician. I feel more confident in my abilities, and I'm able to troubleshoot problems more effectively. I also feel more connected to my colleagues because we can share what we've learned and support each other."

However, participants also acknowledged some challenges associated with continuing education, such as time constraints, financial costs, and limited access to relevant programs. Some participants mentioned that attending conferences or workshops often required taking time off work and arranging for travel, which could be difficult to manage. Others reported that the cost of some continuing education activities was a barrier, particularly for those working in private healthcare facilities with limited support from their employers. One participant expressed:

"Sometimes it's hard to find the time and money to attend continuing education events. I have to balance my work responsibilities, family commitments, and personal life. I wish there were more online options or in-house training programs that were easier to access."

Theme 3: Impact of Continuing Education on Job Satisfaction and Performance
Participants generally agreed that continuing education had a positive impact on their job satisfaction and performance. Many participants reported feeling more engaged and motivated in their work after acquiring new knowledge and skills through continuing education. They also described how continuing education helped them provide better quality services and contribute to the overall success of their laboratories. One participant stated:

"When I learn something new and apply it in my work, I feel a sense of accomplishment and pride. It makes me feel more satisfied with my job because I know I'm making a difference in patient care. I also receive positive feedback from my supervisors and colleagues, which boosts my morale."

Participants also highlighted the role of continuing education in improving their performance by enhancing their accuracy, efficiency, and problem-solving abilities. They provided examples of how they were able to implement new techniques, streamline processes, and resolve complex issues as a result of the knowledge gained through continuing education. One participant shared:

"After attending a workshop on quality control, I was able to identify and correct some errors in our laboratory's procedures. It improved the reliability of our results and reduced the turnaround time for tests. My supervisor praised me for my initiative and problem-solving skills, which I had developed through continuing education."

Theme 4: Organizational Support for Continuing Education
Participants emphasized the importance of organizational support for continuing education in promoting job satisfaction and performance among laboratory technicians. They identified several ways in which healthcare organizations could support their professional development, such as providing funding for continuing education activities, offering in-house training programs, and recognizing the achievements of technicians who engage in continuing education. One participant suggested:

"Healthcare organizations should prioritize continuing education for laboratory technicians. They can provide funding for conference attendance, subscribe to online learning platforms, and invite

experts to conduct workshops. They should also acknowledge and reward technicians who continuously improve their skills and contribute to the organization's goals."

Participants also mentioned the need for a supportive learning culture within their organizations, where knowledge sharing, mentoring, and collaboration are encouraged. They believed that creating opportunities for technicians to learn from each other and apply their new knowledge in practice could enhance job satisfaction and performance. One participant stated:

"In our laboratory, we have a monthly journal club where we discuss recent research and innovations in our field. We also have a mentoring program that pairs experienced technicians with new hires. These initiatives create a positive learning environment and help us feel more connected and supported in our professional growth."

Integration of Quantitative and Qualitative Findings

The joint display in Table 2 presents the integration of the quantitative and qualitative findings, highlighting the convergent, divergent, and complementary aspects of the impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia.

Table 2
Joint Display of Quantitative and Qualitative Findings

Quantitative Findings	**Qualitative Findings**	**Integration**
Participants who regularly engaged in continuing education had significantly higher job satisfaction scores compared to those who did not.	Participants reported feeling more satisfied with their jobs after acquiring new knowledge and skills through continuing education. They described a sense of accomplishment, pride, and motivation in their work.	Convergent: Both quantitative and qualitative findings support the positive impact of continuing education on job satisfaction among laboratory technicians.
Participants who engaged in continuing education had significantly higher self-reported performance scores than those who did not.	Participants provided examples of how continuing education improved their accuracy, efficiency, and problem-solving abilities in the laboratory. They were able to implement new techniques, streamline processes, and resolve complex issues.	Convergent: Both quantitative and qualitative findings demonstrate the positive impact of continuing education on the performance of laboratory technicians.

Quantitative Findings	Qualitative Findings	Integration
Continuing education participation, age, and education level were significant predictors of job satisfaction.	Participants identified personal interest, career advancement, and organizational requirements as motivators for engaging in continuing education. They also acknowledged challenges such as time constraints, financial costs, and limited access to relevant programs.	Complementary: The qualitative findings provide context and explanations for the quantitative predictors of job satisfaction, highlighting the factors that influence technicians' engagement in continuing education.
Continuing education participation, years of experience, and type of healthcare facility were significant predictors of self-reported performance.	Participants emphasized the importance of organizational support for continuing education, such as providing funding, offering in-house training, and recognizing achievements. They also mentioned the need for a supportive learning culture that encourages knowledge sharing, mentoring, and collaboration.	Complementary: The qualitative findings offer insights into the organizational factors that contribute to the performance of laboratory technicians, beyond the individual predictors identified in the quantitative analysis.

The integration of the quantitative and qualitative findings reveals a consistent positive impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia. The qualitative findings provide a deeper understanding of the mechanisms through which continuing education enhances technicians' motivation, skills, and problem-solving abilities, leading to improved job satisfaction and performance. The qualitative findings also highlight the importance of organizational support and a positive learning culture in facilitating the engagement and benefits of continuing education for laboratory technicians.

Discussion

This mixed-methods study aimed to evaluate the impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia. The findings suggest that continuing education plays a significant role in enhancing the job satisfaction and performance of laboratory technicians, consistent with previous research in other healthcare professions (Ajayi et al., 2020; Nworgu & Ojo, 2019).

The quantitative results showed that laboratory technicians who regularly engaged in continuing education had significantly higher levels of job satisfaction and self-reported performance

compared to those who did not. These findings support the notion that continuing education provides technicians with the knowledge, skills, and confidence necessary to perform their roles effectively and feel fulfilled in their work (Doherty et al., 2013; Saleem et al., 2019). The regression analyses further identified continuing education participation as a significant predictor of both job satisfaction and performance, highlighting its importance in the professional development of laboratory technicians.

The qualitative findings provided a deeper understanding of the motivations, benefits, challenges, and organizational factors related to continuing education among laboratory technicians in Saudi Arabia. Participants reported engaging in continuing education for personal interest, career advancement, and meeting organizational requirements, reflecting the diverse drivers of professional development (Marzuki et al., 2019). They described the benefits of continuing education in terms of enhanced knowledge, skills, confidence, problem-solving abilities, and communication, which contributed to their job satisfaction and performance. These findings align with the literature on the positive outcomes of continuing education in healthcare (Ajayi et al., 2020; Nworgu & Ojo, 2019).

However, participants also identified challenges such as time constraints, financial costs, and limited access to relevant programs, which may hinder their engagement in continuing education. These barriers have been reported in previous studies (Doherty et al., 2013; Saleem et al., 2019) and underscore the need for organizational support in facilitating the professional development of laboratory technicians. Participants emphasized the importance of providing funding, offering in-house training, recognizing achievements, and fostering a supportive learning culture to promote continuing education and its benefits for job satisfaction and performance.

The integration of the quantitative and qualitative findings through a joint display allowed for a more comprehensive understanding of the impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia. The convergent findings strengthened the evidence for the positive role of continuing education, while the complementary findings provided context and explanations for the quantitative results. The organizational factors identified in the qualitative findings, such as support and learning culture, extend the understanding of the predictors of job satisfaction and performance beyond individual characteristics.

Implications for Practice and Policy

The findings of this study have important implications for healthcare organizations and policymakers in Saudi Arabia to support the professional development of laboratory technicians through continuing education. Healthcare organizations should prioritize the provision of continuing education opportunities for technicians by allocating resources, offering in-house training programs, and facilitating access to external learning activities. They should also recognize and reward technicians who engage in continuing education and demonstrate improved performance and job satisfaction.

Healthcare organizations should foster a supportive learning culture that encourages knowledge sharing, mentoring, and collaboration among technicians. This can be achieved through initiatives such as journal clubs, peer-to-peer learning sessions, and mentoring programs that create opportunities for technicians to learn from each other and apply their new knowledge in practice.

Policymakers should consider establishing guidelines and standards for continuing education in laboratory science, ensuring that technicians have access to high-quality and relevant learning activities. They should also provide funding and incentives for healthcare organizations to support the professional development of their laboratory workforce, recognizing the critical role of technicians in delivering high-quality diagnostic services.

Furthermore, educational institutions and professional associations should collaborate with healthcare organizations to design and deliver continuing education programs that meet the evolving needs of laboratory technicians. These programs should be accessible, affordable, and flexible to accommodate the diverse learning preferences and work schedules of technicians.

Limitations and Future Research

This study has some limitations that should be considered when interpreting the findings. First, the study was conducted in a specific context of laboratory technicians in Saudi Arabia, and the results may not be generalizable to other healthcare professions or settings. Future research should explore the impact of continuing education on job satisfaction and performance in different healthcare disciplines and cultural contexts.

Second, the study relied on self-reported measures of job satisfaction and performance, which may be subject to social desirability bias. Future studies could incorporate objective measures of performance, such as supervisor ratings or patient outcomes, to provide a more comprehensive assessment of the impact of continuing education.

Third, the cross-sectional design of the study does not allow for causal inferences about the relationship between continuing education and job satisfaction or performance. Longitudinal studies that track the professional development and outcomes of laboratory technicians over time could provide stronger evidence for the causal impact of continuing education.

Future research should also investigate the specific characteristics and formats of continuing education programs that are most effective in enhancing job satisfaction and performance among laboratory technicians. Studies could compare the outcomes of different types of learning activities, such as workshops, online courses, and simulation-based training, to identify best practices in continuing education.

Finally, future research should explore the organizational and policy factors that facilitate or hinder the engagement and benefits of continuing education for laboratory technicians. Studies could examine the impact of different organizational support mechanisms, such as funding, recognition, and learning culture, on the professional development and outcomes of technicians. Research could also evaluate the effectiveness of policy interventions, such as mandatory

continuing education requirements or incentive programs, in promoting the uptake and impact of continuing education.

Conclusion

This mixed-methods study provides evidence for the positive impact of continuing education on job satisfaction and performance among laboratory technicians in Saudi Arabia. The findings highlight the importance of supporting the professional development of technicians through accessible, relevant, and high-quality continuing education programs. Healthcare organizations and policymakers should prioritize the provision of continuing education opportunities and foster a supportive learning culture to enhance the job satisfaction and performance of laboratory technicians, ultimately contributing to the delivery of high-quality diagnostic services and patient care. Future research should explore the specific characteristics and formats of effective continuing education programs, as well as the organizational and policy factors that facilitate their uptake and impact, to inform evidence-based practices and policies in laboratory science education and workforce development.

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