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Invisible but Indispensable: A Qualitative Study of Burnout and Coping Among Laboratory Professionals in Saudi Arabia

Layla S. Alzaghabi

Abstract:
Background: Medical laboratory technologists (MLTs) play an important role in hospital diagnostics, yet little is known about their experiences of stress and burnout, especially in tertiary hospitals.

Objective: This study explored the experiences of MLTs in a tertiary hospital in Jeddah, Saudi Arabia, with a focus on workload, stress, and coping methods.

Methods: A qualitative descriptive approach was used. Semi-structured interviews were conducted with 12 laboratory technologists from different departments, selected through purposive sampling. Data were analyzed thematically using Braun and Clarke's framework.

Results: Three main themes were identified: (1) Workload-Induced Stress, linked to high sample numbers and long shifts; (2) Organizational and Interpersonal Challenges, including limited recognition, career barriers, and weak communication with clinical teams; and (3) Coping and Resilience, where participants reported using peer support, faith, and self-care.

Conclusion: MLTs experience high emotional and operational pressures, often with little institutional support. Solutions require improved staffing, stronger recognition, and better collaboration across healthcare teams.

Keywords: Medical laboratory technologists, stress, burnout, workload, qualitative study, healthcare, Saudi Arabia.

INTRODUCTION

Medical laboratory technologists (MLTs) are vital to healthcare because they ensure accurate and reliable diagnostic tests, which guide patient care and treatment. Although they play a central role in the healthcare system, their work is often hidden, and they operate in high-pressure environments with long shifts, heavy workloads, and complex tasks. In tertiary hospitals, the demand for diagnostic services is even greater, exposing MLTs to additional operational stress. Issues such as rotating shifts, staff shortages, repetitive tasks, and limited recognition make the risk of stress and burnout more serious. Compared with frontline clinical staff, the emotional and psychological challenges of MLTs have received little attention. This study explores the lived experiences of MLTs working in a tertiary hospital in Jeddah, Saudi Arabia. It focuses on their perceptions of workload, stress, and burnout, as well as the coping strategies they use. The findings are expected to guide healthcare organizations in creating strategies that improve staff well-being and the quality of diagnostic services.

LITERATURE REVIEW

Recent studies have shown that medical laboratory technologists (MLTs) experience high levels of occupational stress and burnout, especially in tertiary hospitals where service demand is intense. Common stressors include excessive workloads, staff shortages, and limited recognition of their role, which often lead

to both emotional and physical strain. For example, a study from Ontario during the COVID-19 pandemic reported that burnout among MLTs was strongly linked to understaffing, heavy workloads, and poor institutional support. Participants described emotional exhaustion, reduced motivation, and lower job satisfaction, emphasizing the urgent need for organizational strategies to reduce workplace pressures and improve staff well-being (Nowrouzi-Kia et al., 2022).

In the Middle East, research from Saudi Arabia reported that laboratory staff in tertiary hospitals often experienced burnout caused by heavy workloads, emotional fatigue, lack of autonomy, and unclear job expectations (Bubshait & Almushawwah, 2024). Similar findings were observed in Malaysia, where organizational issues such as poor supervision, vague role definitions, and workplace hierarchies played a major role in stress among laboratory professionals. Gender was also an important factor, with female technologists experiencing higher stress levels, particularly in environments where career progression was restricted (Aniza et al., 2010).

In India, a study found that shift work and limited opportunities for professional growth were key factors that reduced motivation among laboratory technicians, contributing to dissatisfaction and burnout. The absence of clear career pathways and lack of recognition from institutions were also reported as major stressors (Rajan, 2023). Similar concerns were highlighted in Canada, where Dignos et al. (2023) showed that pandemic-related pressures—such as rising diagnostic demands, longer shifts, and fear of infection—intensified fatigue, emotional exhaustion, and low morale among laboratory staff.

In the Philippines, research showed that stress levels among MLTs varied by workplace setting, with those in public hospitals reporting slightly higher stress than their counterparts in private facilities during the COVID-19 pandemic. The study emphasized the importance of psychological support and effective workload management to help laboratory staff cope with crisis-related pressures (Camia et al., 2021). Similarly, in Namibia, a qualitative study by Shikulo (2022) identified both internal factors, such as personal resilience and motivation, and external factors, including management practices and workplace conditions, as key contributors to occupational stress. These findings highlight the role of supportive organizational cultures in reducing stress among laboratory professionals.

Early studies from Malaysia reported that laboratory staff in tertiary hospitals were highly vulnerable to job strain caused by heavy workloads and unclear role expectations, even before the pandemic. This indicates that stress-related issues have long been part of laboratory practice and highlight the need for lasting workforce reforms (Aziah et al., 2004). Broader research on MLTs has also shown that ongoing exposure to stress increases the risk of disengagement and psychological distress, especially when mental health support is lacking (Nowrouzi-Kia et al., 2022).

Although there is extensive quantitative research on occupational stress among MLTs, qualitative studies remain limited. Few investigations have explored how technologists themselves perceive their work environments, stressors, and coping strategies. This lack of qualitative evidence restricts the development of staff-centered interventions that could improve well-being and job satisfaction. To address this gap, the present study examines the lived experiences of MLTs working in a tertiary hospital in Jeddah, Saudi Arabia. By offering a context-specific perspective, the study aims to provide insights that can inform more empathetic and effective workforce policies and human resource practices.

METHODOLOGY

Study Design

This study used a qualitative descriptive design to examine the lived experiences of medical laboratory technologists (MLTs) in relation to workload, occupational stress, and burnout. A qualitative approach was

chosen to provide detailed insights into the emotional, organizational, and interpersonal factors that shape MLTs' experiences within a high-demand healthcare setting.

Study Setting

The study was carried out in a tertiary government hospital in Jeddah, Saudi Arabia, recognized for its high patient volume and wide range of diagnostic services. The hospital's laboratory departments—including microbiology, hematology, clinical chemistry, and molecular diagnostics—provided the setting for participant recruitment and data collection.

Participants and Sampling

Participants were licensed medical laboratory technologists (MLTs) with at least one year of work experience at the study hospital. Purposive sampling was employed to recruit individuals who had direct exposure to heavy workloads and occupational stress in their laboratory roles. A total of 12 MLTs participated in the study, including seven females and five males, representing different shifts and departments to ensure a range of perspectives.

Data Collection

Data were collected through semi-structured in-depth interviews, conducted in a private office within the hospital between May-July 2025 Interviews lasted between 30 to 60 minutes and were conducted in either English or Arabic, depending on participant preference. A pilot-tested interview guide was used to ensure consistency, covering themes such as perceived workload, sources of stress, coping mechanisms, team dynamics, and support systems. All interviews were audio-recorded with participant consent and transcribed verbatim.

Ethical Considerations

Ethical approval for the study was obtained from the institutional ethics committee. Written informed consent was collected from all participants prior to data collection. To maintain confidentiality, transcripts were anonymized, and each participant was assigned a unique identifier. Participants were also informed that their involvement was voluntary and that they could withdraw from the study at any stage without any consequences.

Data Analysis

Data were analyzed using thematic analysis following the six-phase approach by Braun and Clarke. After familiarization with the transcripts, initial codes were generated, followed by the identification and refinement of recurring themes. NVivo software was used to assist in data organization and coding. Credibility was ensured through **m**ember checking**,** where participants were invited to review and validate the themes derived from their interviews. Peer debriefing and reflexive journaling were also used to minimize researcher bias.

Trustworthiness

To ensure the trustworthiness of the study, strategies addressing credibility, dependability, confirmability, and transferability were applied. Alongside member checking and peer debriefing, detailed documentation of the research process was maintained to support auditability. Thick descriptions of the study context and participant experiences were also provided, enabling readers to assess the transferability of the findings to similar settings.

FINDINGS

Thematic analysis of the interviews with 12 medical laboratory technologists in a tertiary hospital in Jeddah produced three main themes: (1) Workload-Induced Stress, (2) Organizational and Interpersonal Challenges, and (3) Coping Mechanisms and Professional Resilience. These themes capture the emotional and operational pressures shaping laboratory work in high-demand hospital environments.

Theme 1: Workload-Induced Stress

This theme reflects participants' shared experiences of being overworked, overwhelmed, and physically fatigued due to persistent workload pressures. Several noted that the rising demand for laboratory services—

especially after the COVID-19 pandemic—was not matched with adequate staffing, leading to significant emotional and professional strain.

Sub-theme 1.1: Increased Sample Volume and Staffing Shortage

Most participants described a sharp rise in sample volumes over the past two to three years, while staffing levels remained largely unchanged. This imbalance fostered a cycle of ongoing stress and physical exhaustion, leaving staff with little opportunity for recovery.

"It feels like the work keeps growing but the team doesn't. We're not machines — we need time to breathe, but there's just too much."

— Participant 4, Clinical Chemistry

Participants also emphasized that emergency samples, stat requests, and ICU specimens intensified the unpredictability of their workload. This was particularly evident in departments such as microbiology and the blood bank, where urgent demands added constant pressure to an already heavy routine.

"Sometimes I can't even leave my station. The phone is ringing, the printer is spitting results, and I'm still pipetting — all at once."

— Participant 5, Microbiology

Sub-theme 1.2: Unpredictable Shifts and Extended Hours

Participants described their work schedules as unstable and exhausting, often encroaching on personal and family life. Overtime was reported as a common occurrence, typically triggered by sudden increases in workload or the absence of colleagues, further intensifying fatigue and stress.

"I have children, and it's hard to plan anything. My shift might suddenly extend, and there's no appreciation for the sacrifice."

— Participant 9, Microbiology

"During weekends, if someone calls in sick, they ask us to cover. It doesn't matter if you already worked the night before."

— Participant 7, Blood Bank

Theme 2: Organizational and Interpersonal Challenges

This theme highlights participants' frustrations with organizational structures, the limited recognition of laboratory professionals, and the disconnect often felt between laboratory staff and clinical teams.

Sub-theme 2.1: Lack of Recognition and Career Progression

Many participants reported feeling invisible within the hospital system and undervalued compared to doctors and nurses, despite their central role in delivering essential diagnostic services. This lack of recognition contributed to feelings of frustration and professional dissatisfaction.

"People assume doctors do everything. They don't realize their diagnosis depends on what we do behind closed doors."

— Participant 2, Hematology

Participants also pointed to the lack of career advancement opportunities, explaining that pathways for promotion and professional development were often unclear or entirely absent. This concern was particularly noted in public institutions, where organizational structures were seen as restrictive and unresponsive to staff aspirations.

"There's no motivation. I've been here six years, same title, same salary. Even when I get more training, it's like it doesn't matter."

— Participant 8, Molecular Diagnostics

Sub-theme 2.2: Communication Gaps with Clinical Teams

Participants reported frequent communication difficulties with physicians and nurses, which often resulted in misunderstandings regarding turnaround times, sample rejection criteria, or the interpretation of results. These issues contributed to professional tension and reinforced feelings of being undervalued.

"The doctors want immediate results but don't understand the procedures we go through. They get frustrated and blame us."

— *Participant 6, Blood Bank*
"We had a case where they called saying a result was wrong — turns out they were looking at the wrong patient. But it became our fault."
— *Participant 10, Clinical Chemistry*
Such incidents not only caused professional friction but also contributed to emotional fatigue and a sense of being unfairly scrutinized.

Theme 3: Coping Mechanisms and Professional Resilience
Despite these challenges, participants displayed notable resilience, drawing strength from collegial support as well as personal coping strategies. These practices helped them manage stress and maintain a sense of professional commitment in demanding circumstances.
Sub-theme 3.1: Peer Support and Informal Collaboration
Teamwork was identified as a strong protective factor against stress. Participants emphasized that mutual understanding, informal task-sharing, and emotional support among colleagues served as essential strategies for coping with daily pressures.
"We know each other's stress levels. Sometimes without asking, my colleague will cover my bench for a few minutes so I can take a breather."
— *Participant 1, Clinical Chemistry*
"We've become like family here. If you fall, someone will catch you. That's what keeps me going."
— *Participant 12, Hematology*
Informal peer networks provided psychological safety, helping staff process stress without fear of being judged or penalized.
Sub-theme 3.2: Personal Coping Strategies
Participants also adopted individualized techniques to manage their stress. These included faith-based practices, mindfulness, temporary disconnection, and personal rituals after work.
"Before I start the analyzer in the morning, I take 30 seconds to breathe and say 'Bismillah.' It sounds small, but it grounds me."
— *Participant 3, Microbiology*
"I listen to Qur'an on my way home. I don't talk. I just drive, listen, and let go of the noise in my head."
— *Participant 11, Hematology*
Others engaged in physical exercise, journaling, or simply took time to sit in silence before re-entering their home environments. Despite limited institutional support, participants expressed personal commitment to maintaining their mental well-being, however small the effort.

DISCUSSION
This study examined the lived experiences of medical laboratory technologists (MLTs) in a tertiary hospital in Jeddah, with a focus on workload, stress, and burnout. The findings revealed a complex interaction between operational pressures, institutional structures, and individual coping strategies. Three main themes were identified: workload-induced stress, organizational and interpersonal challenges, and coping mechanisms with professional resilience. Together, these themes highlight both the psychological strain and systemic barriers that shape the daily experiences of laboratory professionals in high-acuity healthcare settings.

The first theme, workload-induced stress, is consistent with global evidence showing that high sample volumes and staffing shortages are major predictors of burnout among MLTs. Participants in this study described workloads that had increased without corresponding growth in staffing, a concern mirrored in Canadian research during the COVID-19 pandemic, where rising diagnostic demands and limited workforce support were linked to emotional exhaustion and job dissatisfaction (Nowrouzi-Kia et al., 2022). Similar findings have been reported in Saudi Arabia, where Bubshait and Almushawwah (2024) noted that operational

pressures in laboratories often exceed institutional responses, leaving professionals at continuous risk of burnout.

The second theme, organizational and interpersonal challenges, highlighted deeper concerns about professional identity, recognition, and communication across departments. Participants described feelings of invisibility within the hospital system and frustration over the absence of structured opportunities for promotion or professional growth. These findings are consistent with Rajan (2023), who emphasized that limited career advancement is a significant driver of job dissatisfaction among laboratory technicians (Rajan, 2023). Communication breakdowns with clinical teams were also described as a common source of stress, often linked to unrealistic expectations and misunderstandings. Similar relational tensions were reported by Dignos et al. (2023) who documented how pandemic-related pressures intensified miscommunication between laboratory staff and clinicians in Canada (Dignos et al., 2023).

The third theme, coping mechanisms and professional resilience, provided a hopeful counterbalance to the challenges identified. Participants described relying on peer relationships, informal support systems, and personal practices such as prayer, mindfulness, and relaxation routines. These findings align with previous research highlighting the protective role of social and spiritual support in reducing burnout among healthcare professionals (Camia et al., 2021). Although formal institutional support appeared limited, participants demonstrated agency by developing their own coping frameworks. Similar patterns were observed in Namibia, where resilience was identified as a critical factor in moderating stress among healthcare workers (Shikulo, 2022).

Overall, the findings suggest that burnout among MLTs extends beyond workload pressures and reflects wider systemic, cultural, and relational dynamics. The lack of visibility of laboratory professionals within the healthcare hierarchy contributes to feelings of isolation, even as their responsibilities increase. Addressing burnout in this group therefore requires more than staffing adjustments; it calls for redefining the professional identity of MLTs, strengthening interprofessional communication, and developing tailored mental health and wellness initiatives for laboratory settings.

The study's setting in Jeddah provides important context, as Saudi Arabia's healthcare system continues to expand under Vision 2030. With diagnostic services playing an increasingly central role in patient care, the well-being of laboratory professionals must be treated as a priority. Hospital-level interventions are urgently needed, including wellness initiatives, scheduled debriefing sessions, structured communication channels between laboratory and clinical teams, and clearer policies to support career development.

CONCLUSION

This study examined the lived experiences of medical laboratory technologists in a tertiary hospital in Jeddah, showing how heavy workloads, limited institutional support, and lack of recognition contribute to occupational stress and burnout. At the same time, participants demonstrated resilience through collegial support and personal coping strategies. The findings underscore the urgent need for healthcare institutions to implement interventions that address both systemic and psychosocial factors. Supporting the well-being of MLTs is not only vital for workforce sustainability but also for maintaining the accuracy and quality of diagnostic services in high-pressure clinical environments.

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