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Invisible but Indispensable: A Qualitative Study of Laboratory Technicians' Roles in Interdisciplinary Patient Care

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Abstract
This qualitative study investigated the interdisciplinary collaboration within a tertiary hospital in Saudi Arabia from the perspectives of the laboratory technicians. Through semi-structured interviews with 15 technicians, five key themes emerged: invisibility despite indispensability; fragmented communication streams; and hierarchical barriers, alongside a desire for inclusion and commitment towards professional participation while prioritizing patient care. Participants reported having robust professional identity and motivation but encountered systemic barriers that constrained their role in collaborative care. The results emphasize the gaps in defined communication roles, active inclusivity within team practices, interprofessional education frameworks, as well as integrated role facilitation of laboratory professionals within the healthcare teams.

Introduction
In modern healthcare ecosystems, the necessity for interdisciplinary cooperation has sharpened with patient complexity and care requirements. One of the most neglected yet critical interdisciplinary participants within this scope is laboratory technicians whose diagnostis are pivotal for clinical decision making. Their contributions, however, are submerged in silence when issues of interdisciplinary cooperation and collaboration are deliberated in healthcare settings.

It has been established that effective collaboration with other health professionals, particularly involving laboratory personnel, enhances patient safety, decreases medical errors and improves overall care coordination. For example, Alqarny and Algarni (2024) highlighted the collaborative role laboratory teams undertake with nurses, anesthetists, and other members of the surgical team towards achieving better clinical outcomes through cooperative planning and prompt diagnostic services. Also, integrated collaborative teamwork as underscored by Alanazi et al. (2024) involving clinical pharmacy, nursing, and laboratory services fosters greater healthcare by enhancing its responsiveness through timely and comprehensive delivery of patient management.

Alshammari et al. (2024) stated that pharmacists, nurses, and lab technicians often misunderstand one another, which results in delays in patient treatment, loss of patient trust, and damage to interdisciplinary standardized protocol productivity. Moreover, Ames (2020) says that several laboratory professionals were not well integrated into the clinical discussions, resulting in feelings of being undervalued even when they were integral to the diagnostic processes. Elucidate any two references in more detail here. Illustrate why these references are important to your thesis.

Qualitative research on the laboratory technician's perception of interdisciplinary teamwork within the context of Saudi Arabia's tertiary hospitals which offer rapidly-paced, hierarchical, tiered healthcare services is quite limited. This study, therefore, seeks to explore the experiences, perspectives, and challenges of lab technicians to facilitate healthcare collaboration by developing participatory frameworks to support integrated models of care.

Literature Review

The last few decades have seen an increase in focus given towards interdisciplinary collaboration within healthcare owing to enhanced patient safety, better diagnostic precision, and streamlined resource allocation. Despite the emphasis placed on physicians, nurses, and pharmacists, the contributions of laboratory technicians is gaining attention, particularly in tertiary care settings.

Alqarni and Algarni (2024) provided an in-depth analysis of the interdisciplinary cooperation in tertiary hospitals, stating that laboratory personnel often act as the initial clinical warning signal for abnormal results. Within the same study, the authors highlight the importance of communication between lab technicians and other surgical or emergency staff for timely action during trauma and critical care situations.

Put forth an interdisciplinary review, Alanazi et al. (2023) evaluated the integrated healthcare systems with a special focus on the laboratory services and put forth their recommendations. As a result of interrelationships among medical laboratories, nursing, and pharmacy, the authors believe the overall diagnostic accuracy and patient satisfaction greatly increased. However, the authors also highlighted that laboratory staff often worked far away from the center of interactions and clinical conversations, preventing them from making more active contributions to patient-focused decisions.

Alshammari et al. (2024) tackled the communicative gaps that pharmacists have with nurses and laboratory techs. Their results show that lack of communication frameworks and not having decision-making systems where everyone contributes leads to the possibility of medical errors, treatment holdups, and staff discontent. The authors suggest designing interdisciplinary protocols to facilitate step-by-step involvement of all healthcare team members, including those with laboratory roles.

Al Turki et al. (2024) investigated nurse and laboratory technician interfaces regarding the oversight of essential lab values. It was found that although nurses depend heavily on laboratory results to determine the next action, and even though communication is usually one way— where nurses give instructions without nurses get feedback— there is significant lag or error, which highlights the importance of a sophisticated communication system.

Earlier, Ames (2020) examined how laboratory personnel viewed their collaboration with practice-level trained peers, such as Doctors of Clinical Laboratory Science (DCLS). Ames noted that many laboratory personnel felt sidelined in the healthcare dialogue and strongly expressed the need to be actively involved in strategy planning and inter-professional education.

Moreover, Alalwan et al. (2024) broadened the boundaries of scope collaborative care by incorporating phlebotomists and physical therapists into their model, maintaining that patient-centered care would be reflective of all patients only if it included all contributions, visible, and non-visible roles.

Together, these studies indicate that clinical laboratory professionals, and particularly laboratory technicians, are caught within systemic barriers, including communication gaps, hierarchical exclusion, and limited involvement in direct patient care. Addressing these challenges will require proactive approaches such as the development of interdisciplinary training, standardization of enduring systems and protocols, as well as structural shifts that facilitate the functional visibility of clinical laboratory professionals in the healthcare system.

Methodology

Study Design

The goal of this study was to understand the preconceived notions held by laboratory technicians about interdisciplinary collaboration in regard to patient care. To achieve this, a qualitative descriptive design was employed. The primary rational behind utilizing this method was to elicit rich contextual understanding of the participants' experiences, interactions, and attitudes within the multidisciplinary healthcare framework of a tertiary hospital in Saudi Arabia.

Setting

The study was located at one of the largest tertiary hospitals in Saudi Arabia that acts as a referral center for complicated medical cases. The hospital has an extensive clinical workforce that includes, but is not limited to, laboratory technicians, nurses, pharmacists and physicians.

Participants

Using maximum variation sampling, purposive sampling was utilized to gather a total of 15 laboratory technicians to achieve diversity across several demographics, such as, but not limited to, hematology, microbiology, clinical chemistry, years of experience, and gender. Inclusion criteria were:

- Worked as a laboratory technician in the hospital for a minimum of one year,
- Actively participated in diagnostic processes that aid in supporting patient care,
- Agreed to be interviewed on record.

Data Collection

Data collection was carried out through semi-structured deep interviews, each of which took 30-45 minutes. The interviews were held in a private room in the hospital and were audio recorded with the patient's consent. An interview guide was created drawing from evidence-based literature which helped to focus on the participant's interprofessional communication experiences, the barriers encountered, and recommendations for improvement. Progressively deeper follow-up probes were utilized.

Ethical Considerations

Approvals of the ethics for the study were granted by the hospital's ethical committee. The participants received an informational sheet and provided signed informed consents prior to the start of the study. Their identity was not linked with the responses, thus anonymity and confidentiality was maintained throughout the study.

Data Analysis

All interviews were transcribed, and the transcripts were analyzed thematically. The analysis was done following Braun and Clarke's six-step method which included: familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and final report production. Coding was performed manually and cross-checked with a second researcher to establish inter-coder reliability. Themes were identified inductively and were corroborated with participant quotes.

Trustworthiness

To the boost the credibility of the results, the study integrated member checking, which allowed participants the opportunity to verify their transcripts. Moreover, two independent qualitative researchers were brought in for peer debriefing to finalize the themes and interpretations. An audit trail concerning the specified methodological decisions was kept for the entire duration of the research process.

Findings

Thematic analysis of interviews with 15 laboratory technicians revealed five key themes that reflect their perceptions and experiences with interdisciplinary collaboration in patient care:

1. **Invisible but Indispensable**
2. **Fragmented Communication Channels**
3. **Hierarchical Barriers to Collaboration**
4. **Desire for Professional Inclusion and Recognition**
5. **Commitment to Patient Outcomes Despite Systemic Gaps**

Theme 1: Invisible but Indispensable

The laboratory technicians displayed a significant amount of professional pride, recognizing the importance of their role. They pointed out, however, that their contributions were hardly acknowledged outside the confines of the lab.

"Our results guide the doctors' decisions, but no one knows who we are. We're behind the scenes, yet at the core of it all." — **Participant 3**, Clinical Chemistry

"If there's a delay in testing, the whole system slows down. Still, we don't have a seat at the table." — **Participant 12**, Microbiology

Theme 2: Fragmented Communication Channels

Many participants reported the absence of face-to-face communication with nurses and doctors as an obstacle to effective care; thus, reporting various forms of communication breakdowns.

"The communication is mostly one-way. We send out results, but we don't get feedback unless something goes wrong." — **Participant 5**, Hematology

"We often use unofficial tools like WhatsApp to fill the gaps, but that's risky and unstructured." — **Participant 9**, Blood Bank

This fragmentation caused delays, errors in interpretation, and professional frustration.

Theme 3: Hierarchical Barriers to Collaboration

The hospital's vertical organizational schema is repeatedly mentioned as an obstacle to collaboration. Laboratory personnel considered themselves as less important than physicians and other operational staff.

"Doctors are at the top, and we're just expected to deliver. There's no real collaboration, just compliance." — **Participant 1**, Molecular Diagnostics

"Sometimes it feels like we're not supposed to speak up, even if we see something unusual in the results." — **Participant 14**, Histopathology

These dynamics contributed to a sense of professional inferiority and reluctance to initiate interdisciplinary dialogue.

Theme 4: Desire for Professional Inclusion and Recognition

All participants wanted to a greater impact in intra- and interdisciplinary processes like case reviews, ward rounds and joint teaching sessions.

"I'd love to sit in on morning rounds—even just once a week. It would help us understand how our work fits in the big picture." — **Participant 7**, Clinical Pathology

"We want to feel like part of the team, not just a service department." — **Participant 10**, Immunology

Participants believed that such inclusion would foster respect and mutual understanding.

Theme 5: Commitment to Patient Outcomes Despite Systemic Gaps

Notwithstanding structural constraints, every participant exhibited notable diligence towards providing optimal care to their patients. They articulated a professional moral conviction grounded in service, even amidst erasure and a lack of proper acknowledgment.
"Even if we're not acknowledged, we know that what we do saves lives. That's why we keep doing it." — **Participant 6**, Clinical Chemistry
"We work quietly, but we work hard because we know patients are waiting for our results." — **Participant 15**, Microbiology
This sense of intrinsic motivation contrasted with the institutional gaps in collaboration and recognition.

Discussion
This investigation analyzed the viewpoints of laboratory technicians in relation to interdisciplinary collaboration within a tertiary hospital in Saudi Arabia. The results show an intricate relationship between professional dedication and integration challenges within clinical teamwork frameworks.

Recognition of Role and Professional Identity

The theme "Invisible but Indispensable" captures the paradox described in previous literature: while laboratory technicians are critical to the formulation of clinical decisions, they remain largely absent from interdisciplinary discussions. This is consistent with Ames (2020), who stated that lab professionals tend to be actively overlooked in collaborative frameworks despite their roles in diagnostics (Ames, 2020). This form of invisibility undermines morale, in addition to restricting the information exchange that improves care processes.

Communication Gaps as a Structural Weakness

The theme "Fragmented Communication Channels" addresses underlying systematic deficiencies regarding the flow of information across different sectors. Participants' dependence on unofficial communication channels such as WhatsApp demonstrates the lack of a formal communication framework or system .This, too, has been highlighted by Alshammari et al. (2024) in their plea for more standardized interdisciplinary intercommunication (Alshammari et al., 2024). Poor communication doesn't only affect the workflow; it can endanger patients, especially when critical results are sent later than expected or misinterpreted.

Barrier Caused by Organizational Structure

The theme "Hierarchical Barriers to Collaboration" identifies culture within the organization as a constraining element. In a manner identical to Al Turki et al. (2024), who observed that nurses do not communicate with laboratory staff and intra-network communication is sparse (Al Turki et al., 2024), this study found that laboratory technicians have a tendency to feel subordinate and silenced, even when their opinions matter clinically. Established hierarchies stifle not only collaboration but also initiative from people beyond the traditional core of decision-makers.

Goals for Inclusion and Collective Knowledge Advancement

The theme "Desire for Professional Inclusion and Recognition" describes the active stance of laboratory practitioners. Their participation and interest in attending round ward meetings, participating in case discussions, and engaging in interdisciplinary training resonates with the collaborative frameworks suggested by Alanazi et al. (2024) which depicted integrated lab, pharmacy, and nursing services as a value-driven addition to care (Alanazi et al., 2024). The absence of structured dialogue among professionals likely leads to erosion of professional esteem, perpetuation of stereotypes, and suboptimal teamwork.

Intrinsic Motivation Within Gaps in the System

Finally, the "Commitment to Patient Outcomes Despite Systemic Gaps," speaks to the gaps in systems and frameworks that demonstrate the perseverance and intrinsic motivation of laboratory technicians. Systemic structures tend not to support, let alone encourage, interdisciplinary collaboration due to a lack of supportive frameworks and ethos at the level of the organization (Alalwan et al., 2024).

Implications for Practice and Policy

From these findings, the following steps can be taken as practices and policies with impact:

- Designate and maintain official communication pathways between clinical and laboratory.
- Integrate laboratory personnel into interdisciplinary case discussions and rounds.
- Create educational IPE modules pertaining to the lab.
- Combat hierarchical barriers through leadership training and policy reform.

Through these changes, healthcare institutions will be better positioned to leverage the full collaborative capability of laboratory technicians which will result in improved safety, speed, and cohesiveness of patient care.

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