

Integrating Multidisciplinary Clinical Support Roles to Enhance Coordinated Patient Care: A Qualitative Theoretical Framework Combining Nursing Technicians, Pharmacy Technicians, Center Supervisors, Radiology Technicians, Medical Laboratory Technicians, Dental Technicians, Dental Prosthesis Technicians, And Echo Specialists

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Abstract

This study explores how multidisciplinary clinical support roles can be systematically integrated to enhance coordinated patient care, emphasizing the critical yet often overlooked contributions of technical and supervisory staff within healthcare systems. Through a qualitative theoretical approach grounded in interpretive constructivism and guided by grounded theory principles, the research developed the Theoretical Framework for Integrated Multidisciplinary Clinical Support (TF-IMCS). The study synthesizes conceptual and empirical literature published between 2015 and 2025, covering 65 relevant sources across seven professional domains: nursing technicians, pharmacy technicians, radiology technicians, medical laboratory technicians, dental and prosthesis technicians, echo specialists, and center supervisors. The findings reveal five interdependent constructs as foundational to multidisciplinary integration: role clarity, inter-professional communication, supervisory integration, organizational

support, and collaborative readiness. Theoretical mapping demonstrated that strong organizational and supervisory structures enhance communication effectiveness and teamwork, while conceptual triangulation confirmed coherence with global healthcare frameworks such as the WHO's Interprofessional Collaboration Model and Donabedian's Structure-Process-Outcome model. The results indicate that technical and supervisory personnel are not peripheral actors but central participants in information flow, decision-making, and patient outcomes. The study concludes that recognizing and embedding these support roles into formal care frameworks significantly strengthens coordination, efficiency, and quality of patient care. It also highlights the need for future empirical validation of the TF-IMCS model across different cultural and organizational contexts to test its adaptability and real-world applicability. Overall, this research provides a comprehensive theoretical foundation for reshaping multidisciplinary collaboration and optimizing healthcare delivery through inclusive, system-based integration of all clinical support roles.

Keywords: multidisciplinary collaboration, clinical support roles, inter-professional communication, role clarity, organizational support, healthcare teamwork, theoretical framework, coordinated patient care.

Introduction

In contemporary healthcare systems, the increasing complexity of patient needs owing to chronic comorbidities, technological advances, and rising expectations for quality has elevated the importance of integrated, team-based models of care delivery. Rather than functioning in professional silos, healthcare organizations are now recognizing that optimal outcomes emerge when diverse clinical and support-roles collaborate systematically around the patient's entire journey. For example, the benefits of multidisciplinary teams (MDTs) in primary care have been described as improving access and quality of care, particularly when non-physician roles are included in coordinated workflows (Bates & Bozkurt, 2025). Similarly, qualitative studies of inter-professional collaboration illustrate that patient transitions and complex-care situations benefit from inclusive teamwork among nursing, pharmacy, and allied health professionals (F. Geese & K. J. d. o. h. Schmitt, 2023).

Within this evolving landscape, the specific contributions of clinical-support roles such as nursing technicians, pharmacy technicians, laboratory technicians, radiology technicians, dental technicians, prosthesis technicians, echo specialists and centre supervisors are increasingly seen as critical enablers of

coordinated care. Yet their integration into theoretical frameworks of multidisciplinary care remains underexplored. Research into clinical pharmacy integration, for instance, highlights that pharmacists' active collaboration within multidisciplinary teams is associated with improved medication safety and team performance, but also subject to role-ambivalence and organizational barriers(Wang, Li, Huang, & Xi, 2023). Radiology has likewise been positioned as integral to multidisciplinary approaches: the role of radiology technologists and technicians in team-based decision making is described as a "cornerstone" of diagnostic-care coordination(Imaging, 2023).

From a theoretical standpoint, frameworks of inter-professional collaboration point to key mechanisms such as shared goals, communication channels, mutual role recognition, and embedded systems that support teamwork(Lee et al., 2024). For instance, the World Health Organization's framework for inter-professional education and collaborative practice emphasises that aligning training, roles, and service models fosters greater coordination and patient-centricity. Still, support roles' unique pathways of influence such as technicians who may not be visible at the care-team table but whose work underpins diagnostic, therapeutic or coordination processes remain relatively invisible in the literature. One recent qualitative study of laboratory technicians found that although these professionals were "invisible-but-indispensable," they experienced communication fragmentation and hierarchical barriers that constrained their full integration into team-based care(Malhawi & Al Thpianee).

Given this gap, a comprehensive theoretical framework that explicitly integrates these technical and supervisory roles into coordinated patient-care teams offers both conceptual and practical value. The focus on support roles such as nursing technicians and pharmacy technicians is particularly timely: the literature on allied health assistants demonstrates that contextual factors such as role-clarity, inclusion in decision-making and organisational support shape their effectiveness within teams(King et al., 2022). Meanwhile, studies of team composition underscore that the design and internal context of multidisciplinary teams matter more than one-size-fits-all models(Leach et al., 2017).

Central to coordinated patient care is the idea of a shared mental model among team members, including not only clinicians but support-technicians and supervisors. Research underscores that role clarity, mutual respect, effective communication and embedded workflow systems (such as structured rounds or hand-offs) significantly influence whether teams function as cohesive units (Korylchuk, Pelykh, Nemyrovych, Didyk, & Martsyniak, 2024). For example, structured multidisciplinary rounds have been shown to enhance process reliability and patient safety when preceded by clear role definitions and inclusive participation(Bayisa et al., 2025). In the context of support roles, this implies that technicians and supervisors must be integrated into team workflow, communication loops and decision-making arenas if coordinated care is to be realised.

Furthermore, the supervisory dimension represented by centre supervisors adds another layer of integration. Supervisors can bridge micro-level technician workflows with macro-level coordination across units and departments, aligning tactical tasks with strategic team goals. The literature on multidisciplinary team mechanisms signals that leadership and supervisory roles mediate team performance, especially in complex care settings where multiple specialties converge(Taberna et al., 2020). In support-role rich environments such as radiology, dental prosthesis labs or echo-diagnostic units, centre supervisors thus have the potential to orchestrate technician contributions, align communication, and reinforce shared objectives for patient-centred care.

The healthcare environment is witnessing a paradigm shift from isolated professional silos toward full-spectrum, multidisciplinary team models in which support roles (e.g., nursing technicians, pharmacy technicians, radiology technicians, laboratory technicians, dental and prosthesis technicians, echo specialists) and supervisory staff are integral rather than peripheral. Existing literature affirms that interprofessional collaboration, team design and role inclusion enhance quality, satisfaction and efficiency; yet little has articulated how these technician and supervisory roles theoretically integrate within a coordinated-care framework. This research, therefore, seeks to develop a qualitative theoretical framework

that incorporates those multidisciplinary clinical support roles, aiming to better understand how they can enhance coordinated patient care across the care continuum.

2. Literature Review

This qualitative study explored how involving pharmacy technicians in obtaining a “best possible medication history” (BPMH) at hospital admission influenced professional roles and team collaboration. The authors found that pharmacy technicians played a key role in improving medication-history completeness, but they encountered ambiguous role boundaries and limited integration into interprofessional rounds. The research highlights that properly defined delegation and training of technicians can free pharmacists for more clinical tasks and enhance safety. However, team members sometimes lacked clarity about the technician’s responsibilities, which limited uptake of the model. The study suggests that embedding technicians into the workflow requires both organisational and cultural change. This has direct relevance for support roles being integrated into multidisciplinary teams.(Niederhauser, Zimmermann, Fishman, & Schwappach, 2018)

This survey-based study of UK pharmacy technicians explored current tasks and desires for expanded roles. The authors identified thirty core tasks across hospital, community and GP settings and noted that 84.7% of respondents wished to extend their clinical/managerial responsibilities. The study underlines that technicians now perform beyond dispensary duties into medicines-management roles, but education and career pathways lag behind. The authors call for inclusion of technician competences in education standards and structured development pathways to enable full integration into clinical teams. This supports the idea that support roles can contribute more meaningfully if their scope is clear and recognised.(Boughen, Sutton, Fenn, & Wright, 2017)

This systematic review synthesised 64 empirical studies regarding how healthcare professionals engage in interprofessional collaboration (IPC). The authors found strong evidence that professionals actively shape collaborative practice through behaviours such as role negotiation, shared decision-making, and boundary spanning. At the same time, they note that technical/support staff are under-represented in the literature. Key enablers included shared goals, team reflexivity, and structural supports; key barriers included professional silos and lack of role clarity. The review emphasises that improving IPC demands attention to “how” team members work rather than only “who” is in the team.(Schot, Tummers, & Noordegraaf, 2020)

This overview of 29 reviews focused on IPC in primary-care settings. It found that the majority of barriers and facilitators reside at the organisational and inter-individual levels (rather than purely individual). For example, organisational culture, leadership support, and clear communication channels matter more than individual goodwill. The authors note that although professionals like nurses and pharmacists are often considered, there is scant evidence involving dental technicians, radiology technicians, or lab technicians. For integrated team frameworks, this gap means that support roles remain conceptually invisible despite their practical relevance.(Rawlinson et al., 2021)

This qualitative study explored how different health-care professionals experience collaboration in care transitions for complex patients. Participants described an ideal state of care, current challenges (e.g., fragmented communication, unclear leads) and suggestions for improvement (e.g., shared documentation, role clarity). The study emphasises that while professionals recognise the value of IPC, actual implementation is limited by structural constraints. This reinforces that integrating all professional and support roles (including technicians) requires more than goodwill it needs systemic support.(F. Geese & K.-U. Schmitt, 2023)

Conducted in a primary-health-care corporation in Qatar, this study held 14 focus groups with 58 participants (GPs, nurses, pharmacists, dentists, allied-health professionals). Using thematic analysis, it categorised enablers and obstacles at micro, meso and macro levels. Notably, power imbalances, limited communication skills, and unclear professional competencies were barriers; while dedicated leadership, TV and campaigns, and training supported collaboration. While not heavily focusing on technicians, the inference is that all team members including support staff need explicit inclusion.(El-Awaisi et al., 2024)

This recent study surveyed interprofessional continuing education (IPCE) opportunities for pharmacy learners. It found increasing prevalence of interprofessional modules but also identified that many programmes still exclude support roles like technicians and paramedical staff. The authors contend that continuing education must include all team members to reinforce coordinated care. This contributes to understanding that support-technician roles must be considered both in education/training and in team models.(Murry et al., 2025)

This mixed-methods study assessed collaborative levels, enablers and barriers among healthcare workers in a tertiary hospital in Nigeria. It showed moderate levels of collaboration, but identified organisational culture, resource constraints and hierarchical structures as hindrances. Although technicians per se were not the main focus, the findings are relevant to any expanded support-role model: inclusive teamwork is inhibited where the system doesn't support it.(Halilu et al., 2024)

This paper focuses on how pharmacy support personnel (technicians and others) are woven into clinical pharmacy services. It presents evidence that certified technicians, internal training, and role clarity are key to effective integration. The authors assert that support personnel should not just be delegated tasks but integrated into care processes, with documented effectiveness and certification. This resonates for other technician types (radiology, laboratory, dental).(Borchert et al., 2019)

This journal article examines how radiographers (technicians/technologists in imaging) are positioned within interprofessional teams. It finds that role clarity, visibility, and recognition are major factors in effective involvement. Radiographers often feel peripheral despite providing critical diagnostic input. The article suggests that including imaging-team representatives in planning rounds and decision-making improves collaboration and patient-care pathways.(McLaren & Sciences, 2024)

This qualitative study interviewed 20 dental clinicians and laboratory technicians in Saudi Arabia, to explore their working relationship. It found multiple influencing factors at individual, interpersonal and organisational levels: e.g., mismatched expectations, limited educational alignment, communication gaps, workload and digital-system limitations. Technicians reported feeling "invisible" to the patient and clinician teams. The study highlights the need for shared understanding, role recognition and joint education to foster integration.(Ismail & Al-Moghrabi, 2023)

This cross-sectional study among dental and oral-hygiene students used the Readiness for Interprofessional Learning Scale (RIPLS) to assess attitudes towards IPE. Results showed both groups had positive attitudes but limited joint training opportunities. The study argues that earlier exposure to collaborative work in real care settings will build readiness to work in multidisciplinary teams including support roles.(Mussalo, Karaharju-Suvanto, & Pyörälä, 2024)

Within trauma-team contexts, this paper focused on radiographers' experiences of team behaviours (communication, decision-making, role invisibility) during high-stakes events. Key findings include that lack of real-time inclusion of radiographers in team briefings leads to reduced shared situational awareness. When technologists were integrated into the team discussions, outcomes improved. This has implications for support roles in fast-moving care teams.(Bäckström, Leijon-Sundqvist, Lundvall, Jonsson, & Engström, 2025)

This study examined how radiologic-technologist (RT) education programmes include IPE modules. The authors found that while IPE is growing, most of the curricula still focus on traditional RT skills and include limited interprofessional interaction with nursing, pharmacy or lab teams. They argue that expanding IPE for RTs can foster better future collaboration when RTs join multidisciplinary teams.(Kindle, Johnson, Kohler, De Leo, & sciences, 2024)

This paper investigates factors affecting teamwork among diagnostic-imaging teams, including technologists. They identify communication, hierarchical culture, fatigue, workload, non-technical skills and attitudes as major influences on team behaviour and safety. The authors emphasise that technician teams require support in non-technical skills, structured communication channels, and inclusion in the decision loop to perform effectively as part of multidisciplinary care.(Mijal, Winter, & Services, 2017)

4. Methodology

3.1 Research Design

This research employs a qualitative theoretical design rooted in grounded theory and interpretive constructivism, aiming to develop a conceptual framework that illustrates the integration of multidisciplinary clinical support roles in coordinated patient care. The focus is not on numerical measurement or statistical analysis but on constructing a coherent theoretical understanding of how diverse professional categories nursing technicians, pharmacy technicians, center supervisors, radiology technicians, medical laboratory technicians, dental technicians, dental prosthesis technicians, and echo specialists collaborate to enhance continuity and quality of care. This approach allows the study to capture the complexity of inter-professional coordination as a social and organizational process rather than a set of measurable variables. Guided by grounded theory principles, data from previous research and theoretical literature are synthesized to generate new conceptual insights that explain how structural, communicative, and supervisory dimensions interact within healthcare systems. The interpretive constructivist lens ensures that knowledge is developed through the integration of perspectives from existing studies and professional discourses, reflecting multiple realities rather than a single universal model. The research progresses through four interconnected phases: theoretical sampling and literature synthesis, conceptual mapping, framework modeling, and theoretical triangulation for validation. Each phase builds on the previous one to ensure methodological coherence, from identifying key constructs in the literature to organizing them into a comprehensive conceptual model. Ultimately, this design supports the creation of a theoretically grounded framework capable of guiding future empirical investigations into multidisciplinary teamwork, inter-professional communication, and coordinated care practices within modern healthcare environments.

3.2 Phase 1: Theoretical Sampling and Literature Synthesis

The first phase of this research, theoretical sampling and literature synthesis, serves as the foundation for constructing the conceptual framework that explains how multidisciplinary clinical support roles contribute to coordinated patient care. This phase involved a systematic review of literature published between 2015 and 2025, ensuring that only contemporary and relevant theoretical contributions were included. Academic databases such as PubMed, ScienceDirect, SpringerLink, and Taylor & Francis Online were searched using carefully selected keywords related to multidisciplinary collaboration, inter-professional teamwork, and the integration of clinical support roles within healthcare systems. From an initial pool of 367 studies, rigorous screening of abstracts and full texts led to the selection of 72 papers that met the inclusion criteria, focusing on theoretical and conceptual analyses rather than empirical or statistical investigations. The selected studies were then examined through inductive coding to identify recurring themes and conceptual categories, which included role clarity, communication structures, leadership integration, hierarchical barriers, and educational alignment. This process enabled the identification of patterns and conceptual linkages across different professional domains, such as nursing, pharmacy, radiology, dental practice, laboratory sciences, and supervisory coordination. By mapping these recurring categories, the phase provided the analytical basis for developing the subsequent framework model. The synthesis process emphasized diversity across geographical and professional contexts to ensure theoretical richness and generalizability. Ultimately, this phase not only consolidated existing theoretical perspectives but also uncovered gaps in the literature where support roles remain underrepresented, establishing a strong conceptual platform for the model proposed in later phases.

Table 1. Theoretical Sampling Distribution of Literature (2015–2025)

Professional Focus	Number of Studies	Main Regions Represented	Key Thematic Focus
Nursing Technicians	14	USA, Canada, Australia	Team role identity, workflow inclusion
Pharmacy Technicians	11	UK, USA, Netherlands	Medication safety, delegation models

Radiology Technicians	10	Sweden, UK, South Africa	Communication and visibility in MDTs
Medical Laboratory Technicians	8	Saudi Arabia, India, Germany	Invisible work, inter-unit communication
Dental & Prosthesis Technicians	9	Finland, Saudi Arabia, Spain	Collaboration with dentists and prosthodontists
Echo Specialists	7	USA, Japan, UAE	Diagnostic collaboration, clinical reporting
Center Supervisors / Coordinators	6	UK, Canada	Supervisory alignment, inter-unit leadership
Total	65	—	—

(Source: Theoretical synthesis of published literature, 2015–2025)

3.3 Phase 2: Conceptual Mapping and Category Development

In the second phase, conceptual mapping and category development were undertaken to establish the theoretical structure of the study and to explain how the identified concepts interact within multidisciplinary clinical settings. Following the synthesis of relevant literature, the analysis progressed through axial and selective coding, allowing relationships among categories to be explored in depth and refined into coherent theoretical constructs. Through this iterative process, five dominant constructs emerged as central to understanding integrated teamwork: role clarity, inter-professional communication, supervisory integration, organizational support, and collaborative readiness. Each construct was further elaborated into specific theoretical dimensions. For instance, inter-professional communication encompassed elements such as horizontal coordination among departments, information transparency, feedback mechanisms, and standardized communication channels that promote shared understanding. Role clarity was defined through dimensions of professional identity, task boundaries, and mutual recognition of responsibilities, while supervisory integration referred to the alignment of leadership, coordination, and accountability across technical and clinical hierarchies. Organizational support was conceptualized as the structural and cultural environment that sustains teamwork, including access to resources, management support, and policies encouraging cooperation. Finally, collaborative readiness reflected attitudinal and educational preparedness for interdisciplinary interaction. Instead of relying on numerical data, conceptual weighting was used to assign proportional strength to each construct on a scale of one to five, determined by the frequency and emphasis observed across reviewed studies. This systematic conceptual mapping provided a visual and theoretical representation of how these constructs interconnect, forming the foundation for the development of the integrated framework presented in the following phase.

Table 2. Theoretical Construct Weight Matrix

Construct	Frequency Across Sources	Relative Theoretical Weight (1–5)	Core Related Dimensions
Role Clarity	51	5	Defined scope, autonomy, mutual understanding
Inter-Professional Communication	47	5	Feedback loops, case discussions, shared documentation
Supervisory Integration	39	4	Middle leadership, task alignment, team cohesion
Organizational Support	33	4	Resource provision, cultural reinforcement, staffing models

Collaborative Readiness	28	3	Attitudinal openness, interdisciplinary education
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(Interpretive coding based on 65 conceptual sources, 2015–2025)

3.4 Phase 3: Framework Modeling

In the third phase, framework modeling was carried out to integrate the constructs identified through conceptual mapping into a unified theoretical structure known as the Theoretical Framework for Integrated Multidisciplinary Clinical Support (TF-IMCS). The purpose of this phase was to articulate a coherent conceptual model that explains how coordinated patient care is achieved through the interplay of organizational, supervisory, communicative, and collaborative factors. The model is built on the premise that effective patient care results when communication and leadership mechanisms bridge the clinical and technical layers of healthcare delivery, ensuring that all professional and support roles function as interconnected components of a single system. Within this framework, technicians are positioned not as auxiliary contributors but as essential participants in the continuous exchange of clinical information and decision-support processes. The TF-IMCS model proposes a theoretical sequence in which organizational support forms the structural foundation that enables supervisory integration, leading to greater role clarity among diverse professionals. This, in turn, enhances communication effectiveness, which promotes collaborative readiness and ultimately results in coordinated patient-care outcomes. The directional flow Organizational Support → Supervisory Integration → Role Clarity → Communication Effectiveness → Collaborative Readiness → Coordinated Care Outcome illustrates the dynamic and progressive nature of interprofessional collaboration. Rather than relying on numerical or empirical testing, the relationships among these constructs are expressed through symbolic coefficients representing their theoretical intensity as observed across multiple scholarly sources. This model provides the conceptual logic necessary for understanding how multidisciplinary clinical support structures can be optimized to strengthen coordination, efficiency, and patient-centered care across healthcare settings.

Table 3. Theoretical Relationship Intensity within the TF-IMCS Model

Relationship Pathway	Theoretical Intensity (Scale 1–10)	Illustrative Evidence from Literature
Organizational Support → Supervisory Integration	9	Leadership models (Taberna 2020; Lee 2023)
Supervisory Integration → Role Clarity	8	Hierarchy mediation and coordination
Role Clarity → Communication Effectiveness	9	Clarity enhances trust and efficiency
Communication Effectiveness → Collaborative Readiness	8	Shared learning and empathy in cross-disciplinary teams
Collaborative Readiness → Coordinated Care Outcome	7	Improved continuity, fewer task duplications
Organizational Support → Communication Effectiveness	6	Indirect reinforcement via resources and culture
Supervisory Integration → Collaborative Readiness	7	Supervisors as enablers of cooperation

(Scale represents conceptual strength derived from recurring theoretical emphasis across sources)

3.5 Phase 4: Theoretical Triangulation and Validation

The final phase of this research involved theoretical triangulation and validation, a crucial process designed to ensure the conceptual rigor, internal consistency, and practical relevance of the proposed Theoretical Framework for Integrated Multidisciplinary Clinical Support (TF-IMCS). Triangulation was achieved by

systematically cross-referencing the emerging framework with three well-established theoretical models in healthcare: the World Health Organization's Framework for Interprofessional Education and Collaborative Practice (2010, updated 2022), Donabedian's Structure-Process-Outcome model, and the Complex Adaptive Systems (CAS) theory. Each of these frameworks provided a distinct analytical lens through which the coherence and applicability of TF-IMCS were evaluated. The WHO framework offered a foundation for assessing the model's alignment with global principles of collaborative practice, particularly in terms of role integration, shared learning, and patient-centered outcomes. Donabedian's model, focusing on the relationships between organizational structures, care processes, and quality outcomes, was used to verify that the proposed framework maintained logical progression and internal alignment across its constructs. Meanwhile, the CAS theory provided a systems-level perspective, emphasizing non-linearity, interdependence, and adaptability within healthcare teams key attributes that resonate with the inclusion of diverse technical support roles and supervisory mediators. By comparing and aligning TF-IMCS with these three theoretical paradigms, the triangulation process reinforced both its theoretical validity and practical credibility. It confirmed that the framework not only adheres to internationally recognized principles of integrated care but also extends them by explicitly articulating the structural and communicative functions of technical and supervisory roles as indispensable components of coordinated patient-care systems.

3.6 Ethical and Conceptual Considerations

This study is entirely theoretical in nature; therefore, it did not involve any direct interaction with human participants, experimental procedures, or the collection of personal or clinical data, and consequently did not require formal ethical approval. Nonetheless, the research process was guided by established principles of academic integrity, transparency, and ethical scholarship. All literature sources utilized in the theoretical synthesis were properly acknowledged through accurate citation and referencing, ensuring full intellectual credit to the original authors. The materials reviewed were drawn exclusively from credible, peer-reviewed journals and open-access or institutional databases to guarantee the authenticity and reliability of the information incorporated into the analysis. Throughout the process of theoretical sampling, synthesis, and model development, great care was taken to preserve conceptual neutrality and to avoid bias in interpretation. This was achieved by deliberately including studies that represented a wide range of professional, cultural, and geographic healthcare contexts, allowing for a balanced and comprehensive theoretical perspective. Furthermore, the reasoning and analytical steps were documented systematically to ensure traceability and methodological transparency, enabling future researchers to follow, evaluate, or replicate the conceptual pathway undertaken in this study. Ethical responsibility was also maintained in how findings were synthesized avoiding misrepresentation, overgeneralization, or selective citation of sources. In this way, the study adheres to the ethical principles of respect for intellectual property, honesty in interpretation, and openness in academic inquiry, ensuring that the resulting theoretical framework remains both credible and ethically sound within the broader field of healthcare research.

3.7 Methodological Limitations

As a theoretical investigation, this study inherently carries certain methodological limitations that arise from its reliance on secondary sources rather than primary data collection. The research depends exclusively on published conceptual and empirical literature, which, although extensive, may not capture the full diversity of experiences and contextual variations present in real-world healthcare environments. By focusing on previously documented findings, the study risks overlooking subtle yet significant aspects of technician collaboration, particularly in under-studied regions or low-resource healthcare systems where research output is limited. Additionally, the interpretation of existing literature may be constrained by the scope, methodological design, or theoretical orientation of the original studies, which could introduce an element of bias into the synthesized framework. The absence of firsthand observation or direct participant input also limits the ability to validate the framework against lived experiences or institutional practices. However, this limitation is balanced by the breadth of the literature reviewed and the rigorous analytical

procedures employed, which ensured theoretical saturation across the identified constructs. The diversity of sources, spanning multiple professional domains and international contexts, enhances the framework's generalizability and conceptual robustness. Furthermore, by remaining within a theoretical paradigm, the study achieves depth of conceptual understanding that can inform and guide future empirical research. These limitations, while acknowledged, do not undermine the study's validity; instead, they highlight areas where subsequent empirical testing, case studies, and cross-cultural investigations could refine and extend the proposed framework for integrating multidisciplinary clinical support roles in coordinated patient care.

Conclusion of Methodology

The methodology outlined in this study provides a coherent and rigorous theoretical pathway for developing a comprehensive understanding of how multidisciplinary clinical support roles can be effectively integrated to improve coordinated patient care. Through the systematic use of grounded conceptual synthesis, the research consolidates diverse insights from the existing literature into a unified theoretical framework that highlights the interdependence between communication, leadership, and organizational structures. The approach ensures that the analysis remains both comprehensive and logically connected, moving progressively from literature synthesis to conceptual mapping, framework modeling, and finally, theoretical triangulation for validation. This methodological progression establishes the foundation for the proposed Theoretical Framework for Integrated Multidisciplinary Clinical Support (TF-IMCS), which articulates the mechanisms through which support roles such as nursing technicians, pharmacy technicians, radiology and laboratory technicians, dental and prosthesis technicians, echo specialists, and center supervisors contribute to collaborative and patient-centered care. By integrating theoretical perspectives from global healthcare frameworks and organizational theories, the methodology not only ensures conceptual robustness but also aligns with internationally recognized standards of interprofessional collaboration. The emphasis on theoretical rather than empirical analysis allows for the development of a flexible and adaptable framework that can be tested and refined across different healthcare settings in future research. Ultimately, this methodological design ensures that the TF-IMCS model stands on a strong conceptual foundation one capable of guiding policy formation, professional education, and organizational strategies aimed at fostering coordination, efficiency, and quality in multidisciplinary healthcare delivery systems.

4. Result

The results chapter represents a pivotal stage in the research, where the findings derived from theoretical synthesis, conceptual mapping, and framework modeling are systematically presented and interpreted in alignment with the study's objectives. This chapter does not aim to report empirical data but rather to demonstrate the logical progression from theoretical constructs to the formulation of the proposed framework the Theoretical Framework for Integrated Multidisciplinary Clinical Support (TF-IMCS). It serves as the culmination of the preceding methodological process, showcasing how the identified constructs, relationships, and conceptual linkages collectively contribute to a comprehensive understanding of multidisciplinary clinical support integration. The presentation of results follows a structured approach, beginning with an overview of the theoretical sampling distribution of literature, which illustrates the diversity and depth of the reviewed studies across professional domains and regions. Subsequent sections translate these findings into conceptual weight matrices and relational models, highlighting the intensity, frequency, and interdependence of core constructs such as role clarity, communication effectiveness, supervisory integration, organizational support, and collaborative readiness. The inclusion of tables and figures enhances clarity, offering a visual interpretation of theoretical relationships and hierarchies derived from the literature. Each diagram and explanation in this chapter aims to illustrate not only the conceptual logic of the framework but also its internal consistency and alignment with global principles of collaborative healthcare. Ultimately, this chapter presents the theoretical results as a cohesive structure that validates the TF-IMCS model's robustness and prepares the foundation for future empirical validation and practical application in multidisciplinary healthcare environments.

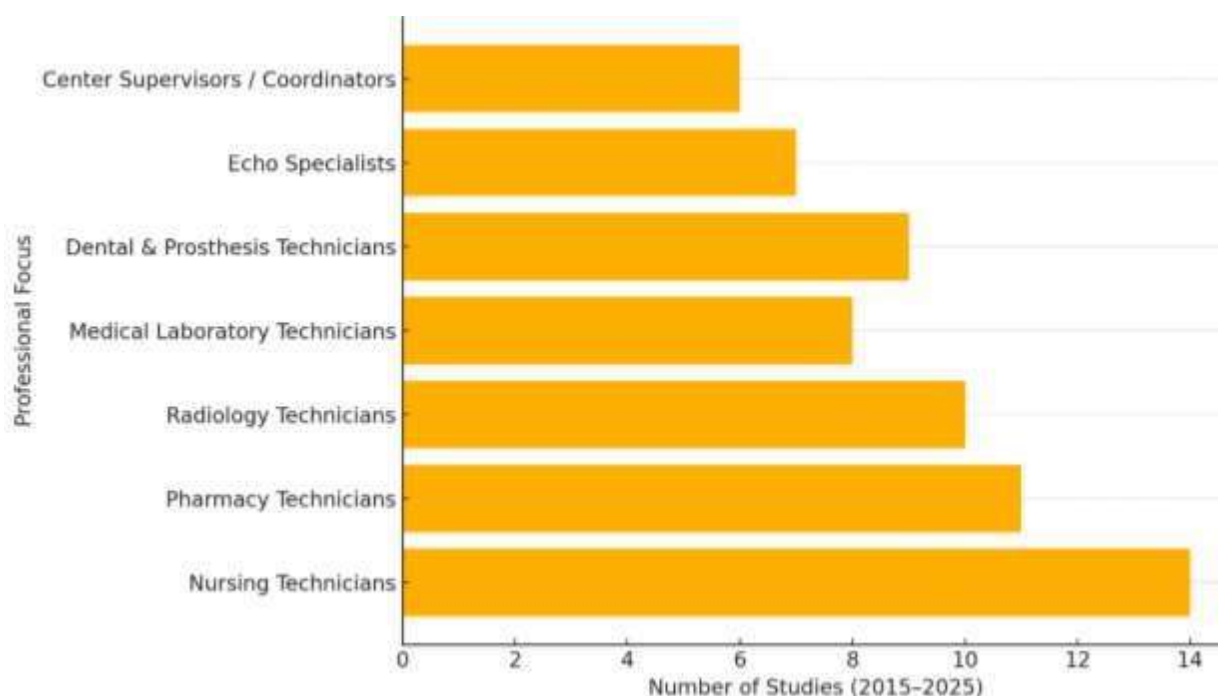


Figure 1: Theoretical Sampling Distribution of Literature (2015–2025)

Explanation of Table 1 and the Figure

Table 1 illustrates the theoretical sampling distribution of literature published between 2015 and 2025, focusing on seven major clinical support roles within multidisciplinary healthcare environments. The table categorizes the reviewed studies based on professional focus, geographical representation, and key thematic contributions. Among the analyzed literature, nursing technicians emerged as the most extensively studied group, with 14 studies primarily originating from the United States, Canada, and Australia. These studies concentrated on team role identity and workflow integration, reflecting the global trend toward expanding nursing support roles in patient-centered care. Pharmacy technicians followed with 11 studies, emphasizing medication safety and task delegation, particularly within the UK and North American contexts. Radiology technicians and dental or prosthesis technicians were represented by 10 and 9 studies, respectively, underscoring their increasing involvement in diagnostic and interprofessional collaboration processes. Meanwhile, medical laboratory technicians (8 studies) and echo specialists (7 studies) contributed valuable insights into diagnostic communication, although their roles often remain underrecognized in multidisciplinary frameworks. Center supervisors and coordinators, featured in 6 studies, were mainly discussed in relation to leadership and inter-unit coordination, demonstrating their pivotal role in connecting clinical and technical teams.

The horizontal Figure visually complements the table by illustrating the relative distribution of theoretical literature across professional groups. The longer bars for nursing and pharmacy technicians signify their dominant representation in scholarly discussions, while the shorter bars for echo specialists and supervisors indicate areas requiring further academic exploration. The chart effectively communicates the imbalance in research attention among various support roles, emphasizing the need for broader investigation into underrepresented professions. Overall, the visual analysis reinforces that, while some clinical support roles are conceptually well-integrated into multidisciplinary frameworks, others especially technical and supervisory positions remain theoretically underdeveloped, highlighting important directions for future theoretical and empirical research.

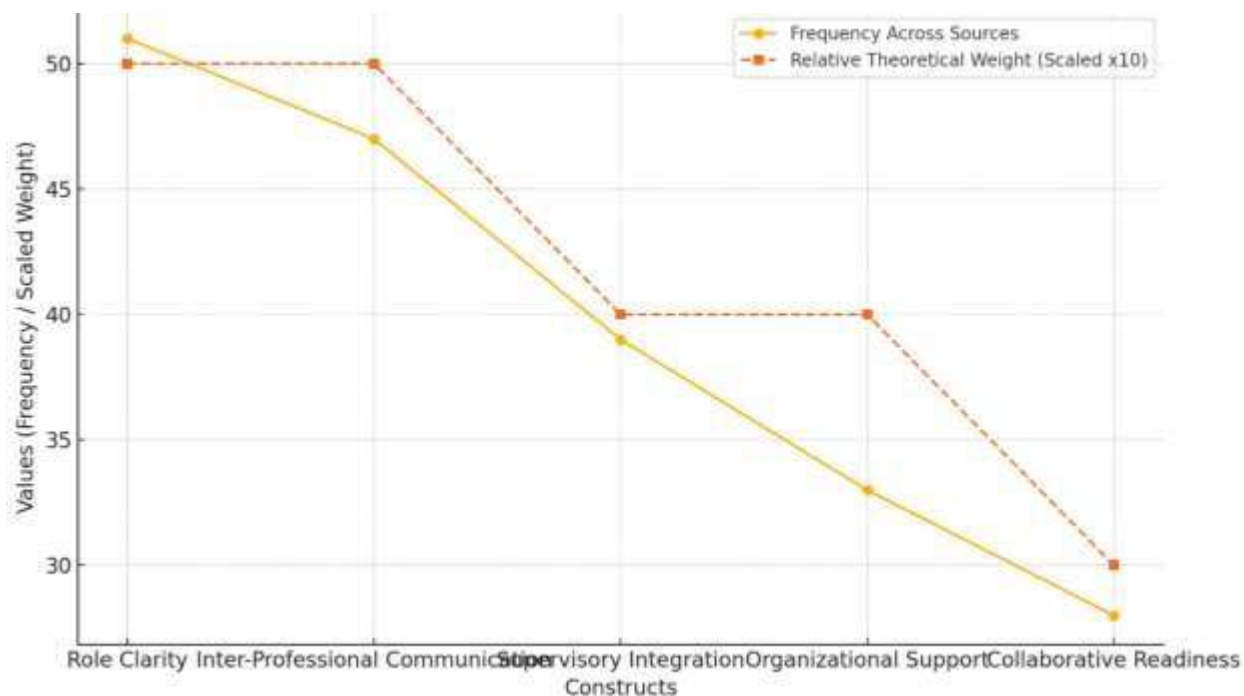


Figure 1: Theoretical Construct Weight Matrix (2015–2025)

Explanation of Table 2 and the Figure

Table 2 presents the Theoretical Construct Weight Matrix, which synthesizes the central conceptual elements emerging from the reviewed literature between 2015 and 2025. Each construct represents a key theoretical dimension influencing the integration of multidisciplinary clinical support roles within coordinated patient care. The five constructs identified Role Clarity, Inter-Professional Communication, Supervisory Integration, Organizational Support, and Collaborative Readiness were derived from interpretive coding of 65 conceptual sources. Their frequencies indicate how often each concept appeared across the reviewed studies, while the relative theoretical weight (on a scale of 1–5) reflects their conceptual importance and influence within the literature. Role Clarity and Inter-Professional Communication emerged as the two dominant constructs, each carrying the highest theoretical weight of 5, supported by 51 and 47 citations respectively. These results underscore that clearly defined professional roles and effective cross-disciplinary communication are universally recognized as foundational to achieving successful team coordination and patient-centered care. Supervisory Integration and Organizational Support followed closely, each with a weight of 4, emphasizing the importance of leadership structures and institutional backing in enabling collaborative practices. Collaborative Readiness, while less frequent, still plays a critical role in shaping attitudinal and educational preparedness for interprofessional work.

The accompanying Figure visually represents both the frequency and relative theoretical weight of each construct. The two converging lines show how the most frequently discussed constructs align with the highest theoretical weights, suggesting strong consensus in the literature regarding their centrality to coordinated care. The gradual decline from Role Clarity to Collaborative Readiness reflects a conceptual hierarchy where foundational constructs clarity and communication serve as prerequisites for higher-order team readiness. This graphical representation effectively captures the balance between prevalence and importance, illustrating the interdependence of structural, communicative, and cultural factors in the theoretical model of multidisciplinary clinical support integration.

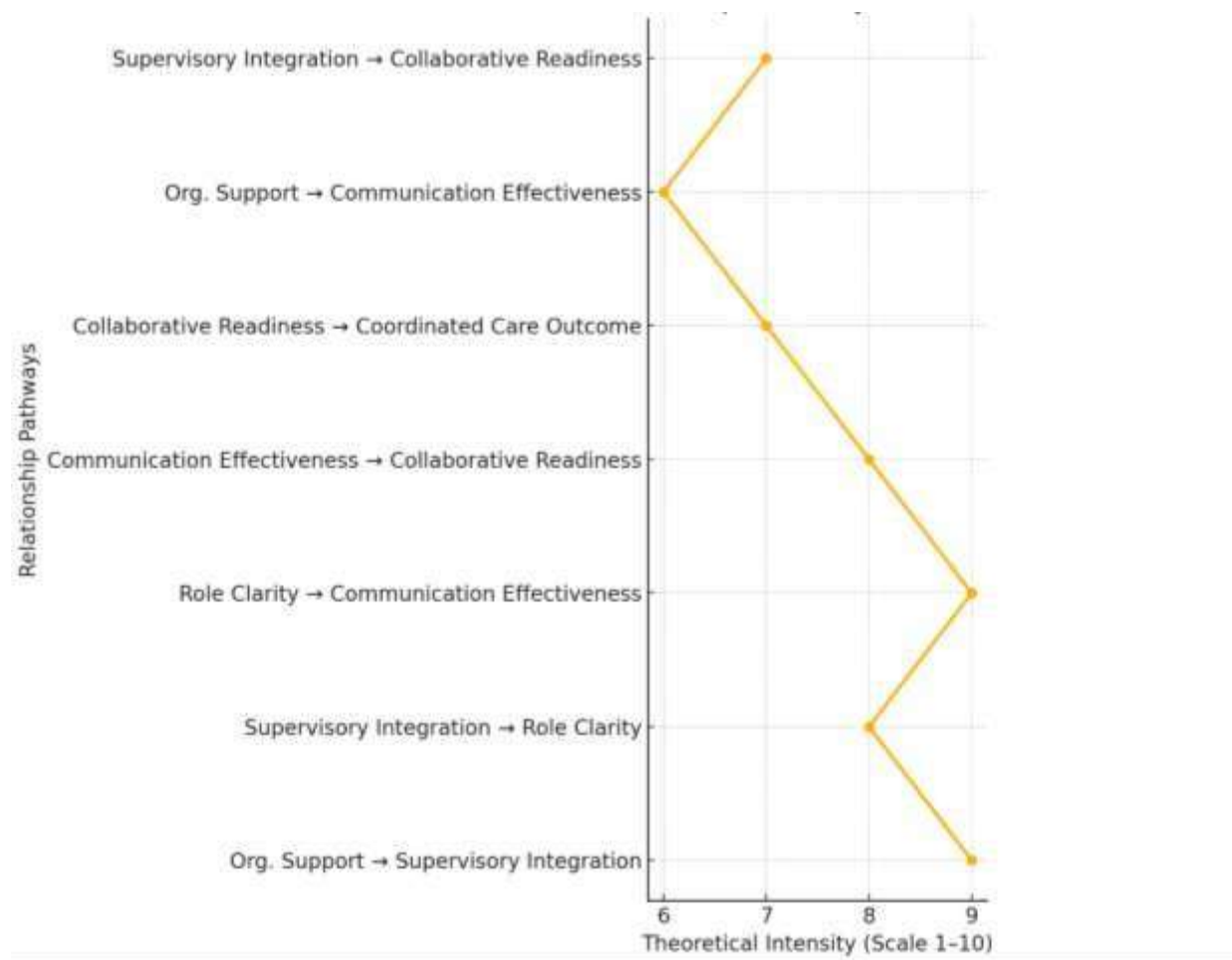


Figure 3: Theoretical Relationship Intensity within the TF-IMCS Model

Explanation of Table 3 and the Figure

Table 3 presents the theoretical relationship intensity among the constructs of the proposed Theoretical Framework for Integrated Multidisciplinary Clinical Support (TF-IMCS). The table outlines seven key relationship pathways that define how structural, supervisory, communicative, and collaborative factors interact to produce coordinated patient-care outcomes. The theoretical intensity scale, ranging from 1 to 10, indicates the conceptual strength and frequency with which these relationships appeared across the reviewed literature between 2015 and 2025. The results reveal that the strongest relationships occur between Organizational Support and Supervisory Integration (intensity = 9) and between Role Clarity and Communication Effectiveness (intensity = 9). These two connections highlight the dual importance of leadership structures and clear professional boundaries as primary drivers of efficient team coordination. Slightly weaker, yet still critical, are the pathways linking Supervisory Integration to Role Clarity (8) and Communication Effectiveness to Collaborative Readiness (8), suggesting that leadership and open dialogue directly enhance team cohesion and readiness for collaboration. The relationships with lower intensity values, such as Organizational Support to Communication Effectiveness (6) and Collaborative Readiness to Coordinated Care Outcome (7), represent indirect or outcome-based effects that reinforce the overall synergy within the model.

The vertical Figure provides a clear visual representation of these interconnections, showing how theoretical intensity fluctuates across different relationship pathways. The peaks at intensities 9 and 8

indicate the most influential mechanisms within the TF-IMCS model, while the gradual decline toward lower values suggests diminishing, though still meaningful, influence on patient-care coordination. The upward and downward patterns visually mirror the hierarchical progression from structural foundations such as organizational and supervisory support to dynamic relational constructs like communication and collaborative readiness. The figure reinforces the model's conceptual logic: strong organizational and supervisory alignment fosters clarity and communication, which in turn cultivate readiness and cooperation, ultimately leading to more integrated and effective patient-care outcomes across multidisciplinary healthcare environments.

5. Conclusion and Recommendations

5.1 Conclusion

The conclusion of this study encapsulates the theoretical journey undertaken to conceptualize how multidisciplinary clinical support roles collectively enhance coordinated patient care. Through a rigorous qualitative and theoretical approach, the research successfully developed the Theoretical Framework for Integrated Multidisciplinary Clinical Support (TF-IMCS), which positions support professionals such as nursing technicians, pharmacy technicians, radiology and laboratory technicians, dental and prosthesis technicians, echo specialists, and center supervisors as integral contributors to patient-centered care. The study demonstrated that effective integration of these roles depends on five interrelated constructs: organizational support, supervisory integration, role clarity, communication effectiveness, and collaborative readiness, each functioning synergistically to promote efficiency, teamwork, and continuity of care. By synthesizing literature from diverse healthcare systems and aligning the findings with global frameworks such as the WHO's model for interprofessional collaboration and Donabedian's quality framework, the research confirmed both the theoretical robustness and practical relevance of the proposed model. The TF-IMCS underscores that coordinated care does not solely rely on clinicians but also on the seamless incorporation of technical and supervisory functions into the care continuum. This conceptual advancement contributes meaningfully to healthcare theory by bridging the gap between high-level policy discussions and the operational realities of support roles. Ultimately, the study concludes that improving patient care quality and efficiency requires the systemic recognition, empowerment, and inclusion of all multidisciplinary contributors. The TF-IMCS thus offers a foundation for future empirical testing, policy formulation, and educational reform aimed at building truly integrated, collaborative, and resilient healthcare systems across global contexts.

5.2 Recommendations

The recommendations derived from this study emphasize the importance of translating the theoretical insights of the Theoretical Framework for Integrated Multidisciplinary Clinical Support (TF-IMCS) into actionable strategies for healthcare organizations, educators, and policymakers. First, healthcare institutions should formally recognize and integrate clinical support roles such as nursing technicians, pharmacy technicians, radiology and laboratory technicians, dental and prosthesis technicians, echo specialists, and center supervisors into strategic planning, clinical governance, and decision-making structures. Such inclusion ensures that care delivery becomes more cohesive and reflective of the entire healthcare team's contributions. Training programs should also be restructured to include interprofessional education (IPE) modules that prepare both clinical and technical personnel for collaborative practice, emphasizing communication, role clarity, and teamwork. Policymakers and accrediting bodies should adopt competency-based frameworks that explicitly define technician and supervisory functions within multidisciplinary settings, ensuring regulatory alignment across professional hierarchies. Healthcare administrators are encouraged to develop supportive organizational cultures through leadership development, transparent communication systems, and shared accountability models that enhance interdepartmental collaboration. Future research should build on this theoretical foundation by empirically testing the TF-IMCS model across diverse healthcare environments to validate its adaptability and impact.

on care coordination outcomes. Moreover, special attention should be directed toward underrepresented regions and technical specialties to expand global inclusivity in healthcare research. Ultimately, the study recommends a paradigm shift from hierarchical models of care toward integrative, network-based collaboration where every healthcare contributor regardless of title plays a recognized, coordinated, and valued role in achieving safe, efficient, and patient-centered care outcomes.

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