Institutional Empowerment for Research Capacity Strengthening in Secondary-Level Health Facilities: A Conceptual Model for LMICs

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ABSTRACT
Research capacity building within health systems is fundamental to sustainable development and improved healthcare delivery, especially in low- and middle-income countries (LMICs). This conceptual paper aims to develop a framework for strengthening research capacity at secondary-level health facilities, district and regional hospitals that serve as critical intermediaries between primary care and tertiary institutions. Despite their pivotal role, these facilities often lack the institutional structures, resources, and expertise required to generate and utilize evidence-based knowledge. Drawing on a narrative synthesis of global and regional literature, the paper proposes the Institutional Empowerment for Research (IER) Model, which is anchored on three interconnected pillars: Infrastructure Enhancement, Human Capital Development, and Research Governance. The model outlines context-specific strategies for embedding research into routine clinical practice and promoting equitable partnerships with academic institutions. Emphasizing empowerment rather than dependency, the IER framework aligns with the African Health Strategy (2023–2030) and Ghana's Health Sector Medium-Term Development Plan. The paper concludes by discussing implications for policy, institutional sustainability, and the potential of research-driven innovations to enhance health outcomes within secondary-level healthcare systems.

Keywords
Research capacity building, Secondary-level health facilities, Institutional empowerment, LMICs, Health systems strengthening.

1. INTRODUCTION
Health research serves as the backbone of evidence-informed decision-making and is vital for improving population health outcomes (Kasonde & Campbell, 2023). In sub-Saharan Africa, substantial progress has been made in building national research institutions and tertiary-level centers of excellence. However, research remains underdeveloped at the secondary level, particularly in district and regional hospitals that deliver frontline care and gather valuable clinical data (Akanmu et al., 2022). These facilities represent untapped potential for generating contextually relevant knowledge, yet they often lack research infrastructure, funding, and trained personnel (Boateng et al., 2021). In Ghana, secondary-level health institutions often classified as municipal and regional hospitals form a critical link in the health system hierarchy. They not only deliver clinical services but also supervise primary facilities and train health workers (Ghana Health Service, 2023). Despite this, their research function remains limited, primarily due to inadequate institutional capacity, absence of dedicated research offices, and weak partnerships with academic institutions. Strengthening research capacity at this level can bridge the gap between policy, practice, and evidence generation (Osei et al., 2024). Moreover, it contributes to the broader Sustainable Development Goal 3 (SDG 3), which emphasizes universal health coverage and health system resilience (World Health Organization-WHO, 2022). Globally, there is increasing recognition that health systems cannot depend solely on tertiary research institutions for innovation. Instead, capacity must be distributed across all levels to promote equity and responsiveness (Breman et al., 2020). Secondary facilities, given their proximity to communities and primary care providers, are well-positioned to generate operational research that addresses local health challenges. Building research capacity at this level aligns with the paradigm of *learning health systems* where data-driven insights continuously inform care delivery and policy (Lynn et al., 2023). This paper, therefore, proposes a conceptual model, the Institutional Empowerment for Research (IER) Model designed to guide the strengthening of research capacity in secondary-level health facilities in Ghana and similar LMIC contexts. The model integrates principles of institutional theory, systems thinking, and capacity-building frameworks to promote sustainable, context-driven empowerment rather than externally imposed interventions.

2. LITERATURE REVIEW
2.1 Overview of Research Capacity Building
Research capacity building (RCB) has evolved as a central strategy for improving evidence generation and the translation of knowledge into health policy and practice. It encompasses not only individual skill development but also the strengthening of institutional systems, governance, and infrastructure (Bates et al., 2021). According to the WHO (2023), effective RCB must be multidimensional addressing technical competencies, research culture, and leadership engagement. In LMICs, however, capacity development often remains fragmented, donor-driven, and project-based rather than institutionally

sustained (Moyo et al., 2022). In Africa, the shift from externally led research toward local ownership has prompted a renewed focus on institutional empowerment (Tinto et al., 2020). Initiatives such as the *Health* Research *Capacity Strengthening in Africa (HRCS-Africa)* program emphasize long-term partnerships, mentorship, and the creation of enabling environments for research productivity. Despite these efforts, secondary-level health facilities key implementers of national health policies remain marginalized in these frameworks (Atuguba & Mensah, 2021).

2.2 Challenges Facing Secondary-Level Health Facilities

Secondary-level health facilities, typically district and regional hospitals, face unique challenges that impede their research potential. These include inadequate infrastructure (limited laboratories, internet connectivity, and data management systems), lack of protected time for clinicians to engage in research, and absence of incentives or recognition for scholarly activities (Adjei et al., 2023). Furthermore, limited access to research funding and mentorship contributes to low publication rates and poor translation of findings into clinical practice (Asare et al., 2021). Another significant barrier is the weak linkage between secondary facilities and universities. While tertiary academic institutions lead most health research, they seldom collaborate with district hospitals to co-develop studies or share data systems (Ngwira et al., 2022). This isolation hinders knowledge exchange and contributes to the perception that research is an academic rather than operational activity. In Ghana, the Ministry of Health and the Ghana Health Service have acknowledged this gap and proposed integrating operational research into hospital management frameworks (Ghana Health Service, 2023).

2.3 Conceptual Trends in Research Capacity Frameworks

Several frameworks inform the conceptualization of research capacity strengthening. The *Cooke Framework* (Cooke et al., 2019) highlights six principles: skill development, linkages, infrastructure, dissemination, sustainability, and partnership. Similarly, *ESSENCE on Health Research* (2021) emphasizes alignment with national priorities, monitoring outcomes, and fostering equity. More recent scholarship advocates for *empowerment-based approaches* that view capacity as endogenous built through self-determination, internal leadership, and contextually relevant strategies (Munyua et al., 2020). The emerging consensus suggests that sustainable research capacity requires institutional transformation rather than ad hoc training programs (Tabong et al., 2024). Empowerment involves developing an enabling environment where staff feel ownership of research processes, governance structures support inquiry, and leadership prioritizes learning. This conceptual orientation forms the foundation for the Institutional Empowerment for Research (IER) Model proposed in this paper.

3. CONCEPTUAL FRAMEWORK: THE INSTITUTIONAL EMPOWERMENT FOR RESEARCH (IER) MODEL

3.1 Institutional Empowerment for Research (IER) Model

The Institutional Empowerment for Research (IER) Model illustrates how organizational structures, resources, and empowerment mechanisms collectively strengthen research capacity and productivity within academic and research institutions. It emphasizes that sustainable research advancement depends not only on individual effort but on an institution's ability to create an enabling environment that fosters empowerment and innovation.

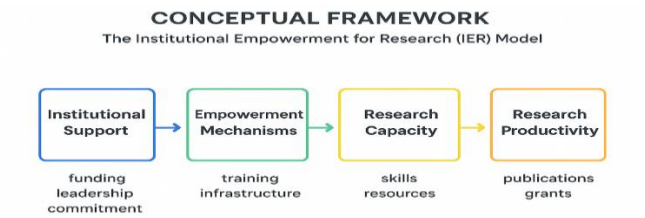

Figure 1: Conceptual Frame of Institutional Empowerment for Research Model

The Institutional Empowerment for Research (IER) Model is grounded on the idea that effective research development begins with strong institutional support and progresses through empowerment mechanisms to enhance research capacity, ultimately leading to increased research productivity.

At its foundation, institutional support reflects the extent to which an institution dedicates resources, leadership, and policy frameworks to foster a vibrant research culture. This includes funding for research projects and conferences, leadership commitment to research priorities and mentorship, and policies that encourage academic freedom, collaboration, and innovation. When such support is robust, it signals that research is a core institutional priority, motivating staff and faculty to engage actively in scholarly work. Building on this foundation, empowerment mechanisms provide the structures and opportunities that allow researchers to take ownership of their professional growth and contributions. These mechanisms include capacity-building initiatives such as training in research design, data analysis, and academic writing; development of infrastructure like laboratories, digital repositories, and research management systems; and the creation of collaborative networks that link researchers to funding bodies and international peers. Through these empowerment efforts, institutions translate support into practical tools that strengthen research capability. The next stage, research capacity, represents the institution's and individuals' collective ability to effectively conduct and manage research activities. This capacity is enhanced through improved skills, methodological expertise, and access to vital resources such as research tools, databases, and administrative assistance. As researchers become more empowered, they develop confidence and competence, which lead to more rigorous, innovative, and high-quality studies. Finally, research productivity emerges as the ultimate outcome of this process. It encompasses tangible outputs such as publications in reputable journals, acquisition of competitive research grants, and contributions to policy and societal advancement. Sustained empowerment and capacity building create a self-reinforcing cycle of productivity, establishing a dynamic research ecosystem where institutional commitment and researcher motivation collectively drive continuous growth and innovation.

3.2 Rationale and Theoretical Basis

The IER Model integrates three theoretical lenses:

1. **Institutional Theory**, which posits that organizational behavior is shaped by norms, rules, and shared beliefs (Eitrem, 2024; Silva, 2024; Schildt, 2025).
2. **Systems Thinking**, which recognizes that research performance is influenced by interrelated components within health systems (Adam et al., 2020).

3. **Empowerment Theory**, emphasizing autonomy, participation, and capacity for self-directed change (Batool, 2024; Chompukum & Vanichbuncha, 2025; Taylor et al., 2025).

Applying these perspectives, the IER Model frames research capacity as an emergent property of institutional empowerment rather than individual competence alone. It assumes that sustainable research cultures arise when health facilities develop internal systems that value inquiry, allocate resources for research, and institutionalize learning.

3.3 Structure of the IER Model

The IER Model comprises three interconnected pillars Infrastructure Enhancement, Human Capital Development, and Research Governance supported by cross-cutting enablers such as partnerships and monitoring.

3.3.1 Infrastructure Enhancement

Infrastructure goes beyond physical resources to include digital tools, data systems, and administrative processes. Investment in laboratory facilities, internet access, research offices, and ethics committees provides the foundation for evidence-based practice. In Ghana, pilot programs under the Health *Research Capacity Development Strategy* have demonstrated that modest infrastructural investments can substantially improve research productivity (Ministry of Health, 2022).

3.3.2. Human Capital Development

Empowering individuals through training, mentorship, and career pathways is critical. Capacity building should be continuous and aligned with institutional needs. This includes training clinicians in research design, data analysis, and scientific writing; establishing mentorship programs with universities; and recognizing research output in performance appraisals. Studies show that when staff perceive research as integral to their professional identity, engagement increases significantly (Kasonde & Campbell, 2023).

3.3.3. Research Governance

Governance structures determine how research is prioritized, approved, and disseminated. An empowered facility has a functional research committee, ethical oversight mechanisms, and transparent decision-making processes. Governance also involves resource mobilization and accountability for research outcomes. Embedding research into management processes ensures that findings are used to improve service delivery (Osei et al., 2024).

3.4 Cross-Cutting Enablers

The IER Model identifies three cross-cutting enablers:

1. **Partnerships:** Collaboration with universities, NGOs, and the private sector enhances access to expertise and funding.
2. **Monitoring and Evaluation:** Tracking research activities, outputs, and impact builds evidence for sustainability.
3. **Knowledge Translation:** Ensuring research findings inform clinical guidelines, policies, and community engagement.

These enablers ensure that capacity building translates into institutional learning and improved health outcomes.

4. DISCUSSION

The Institutional Empowerment for Research (IER) Model underscores that sustainable research capacity in secondary-level health facilities depends on institutional ownership rather than reliance on external actors. This distinction is critical for LMICs like Ghana, where much of the historical research development has been driven by donor-funded initiatives. While such programs have provided essential infrastructure and training, their impact often fades once funding ceases (Moyo et al., 2022). The IER model reorients capacity building toward endogenous growth facilities become self-motivated systems of inquiry and evidence generation. Empirical studies have shown that institutional empowerment correlates with improved research productivity and service innovation (Adjei et al., 2023). When health workers are equipped with research competencies and organizational structures support their engagement, they are more likely to participate in studies, disseminate findings, and apply results to clinical care (Boateng et al., 2021). This creates a "virtuous cycle" in which research informs practice, practice generates new questions, and learning becomes embedded in institutional culture (Lynn et al., 2023). Furthermore, empowerment encourages inter-sectoral collaboration. Secondary-level health facilities, once considered passive implementers of policy, can become active contributors to the national research agenda through collaboration with universities and regional research centers (Osei et al., 2024). In Ghana, recent partnerships between the Ghana Health Service and academic institutions such as the University of Ghana and Kwame Nkrumah University of Science and Technology demonstrate this potential. These linkages facilitate mentoring, joint publications, and data-sharing systems that align operational realities with academic rigor (Tabong et al., 2024). However, implementation of empowerment models must address systemic barriers. These include hierarchical decision-making structures that limit staff autonomy, inadequate funding mechanisms, and the absence of performance-based incentives for research (Asare et al., 2021). Without addressing these governance issues, the potential benefits of capacity building may remain unrealized. The IER model, therefore, proposes multi-level strategies combining leadership commitment, inclusive governance, and long-term investment to ensure that empowerment is both structural and cultural.

4.1 Comparative Perspectives

Globally, successful models of institutional research empowerment share key features: decentralization, community engagement, and integration of research with service delivery (Breman et al., 2020; ESSENCE, 2021). For instance, Kenya's KEMRI District Health Research Units and South Africa's Health Systems Trust Initiatives have demonstrated that decentralized research units can drive local health innovation. These examples suggest that Ghana and similar LMICs can adopt contextually adapted versions of the IER model to institutionalize research culture at the secondary level.

5. POLICY AND PRACTICE IMPLICATIONS

5.1 National Health Policy Integration

Integrating the IER model into Ghana's Health Sector Medium-Term Development Plan (2023-2027) would support the decentralization of research governance. This integration ensures that each regional and district hospital has a functioning research committee, budget allocation for operational research, and linkages to national ethics boards. The Ghana Health Service (2023) has already highlighted research as a cross-cutting theme; institutional empowerment would operationalize that vision.

5.2 Workforce Development and Retention

Human capital development policies should explicitly include research competencies in pre-service and in-service training

curricula for health professionals. Embedding research expectations in job descriptions and promotion criteria will motivate staff to engage actively. Regional collaborations with universities could provide joint appointments or sabbatical exchanges to strengthen mentorship and supervision capacity (Kasonde & Campbell, 2023).

5.3 Funding Mechanisms and Sustainability

Dedicated funding streams are essential. Ministries of Health and Science should establish competitive grant schemes for district-level operational research, ensuring that secondary facilities can apply directly without relying solely on academic partners (Atuguba & Mensah, 2021). Public-private partnerships may also fund health innovations emerging from such facilities. Monitoring indicators such as number of studies conducted, research-informed policy changes, and publications can track impact and justify sustained investment.

5.4 Knowledge Translation and Learning Health Systems

Institutional empowerment also requires effective translation of research findings into practice. Developing learning health systems involves integrating research data into decision-making at all levels of service delivery (Lynn et al., 2023). Health managers should regularly review facility-based evidence during performance review meetings, linking research outcomes to patient safety, service efficiency, and quality of care.

6. CONCLUSION

This conceptual paper has argued that research capacity in secondary-level health facilities should be viewed not merely as a technical challenge but as a process of institutional empowerment. The proposed Institutional Empowerment for Research (IER) Model provides a structured framework for strengthening this capacity across three pillars Infrastructure Enhancement, Human Capital Development, and Research Governance supported by partnerships and monitoring. By repositioning secondary health facilities as active knowledge generators rather than passive service providers, Ghana and similar LMICs can create self-sustaining systems of innovation. Such empowerment aligns with global goals of equity, resilience, and universal health coverage. Future work should test and refine the IER model through pilot programs, evaluating its effectiveness in enhancing research output, influencing policy, and improving health outcomes. Ultimately, building empowered research institutions at all levels of the health system is essential for achieving long-term health security, reducing dependency on external expertise, and ensuring that evidence is locally generated, owned, and applied.

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