

# Barriers To Effective Training And Development In Healthcare Organizations: Implications For Employee Innovation

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## Abstract

*This paper critically analyzes the obstacles to successful training and development (T&D) of healthcare organizations and their implications for innovation of employees in a developing country setting. The paper draws on the Human Capital Theory and Social Exchange Theory, and creates a connection of T&D barriers, training effectiveness, and innovative work behavior. The study was conducted with the help of a quantitative cross-sectional design to analyze the impact of structural, organizational, and individual constraints on the outcomes of innovation among healthcare professionals. The results indicate that the main impediments such as poor funding, managerial insufficiency, poor learning culture, excessive workload, and resistance to change are major factors lowering the effectiveness of T&D systems. These impediments not only limit access to training but also the transfer of training to practice thus limiting innovation of employees. Nevertheless, the paper has shown that properly designed and properly implemented T&D programs can drive innovation and prevent the adverse impact of these barriers. The effectiveness of training comes out as a key mediating variable and the significance of the alignment of training programs with organizational objectives. The research adds to the existing body of literature by moving the emphasis on training results to the systemic limits that provide context-related understanding of enhancing healthcare performance based on strategic T&D interventions.*

**Keywords:** *Training and Development; Employee Innovation; Healthcare Professionals; Barriers to Training; Training Effectiveness; Organizational Support; Learning Culture.*

Date of Submission: 10-05-2026

Date of Acceptance: 20-05-2026

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## I. Introduction

Training and development (T&D) are well known as essential human resource practices that enrich employee competencies, better service provision, and innovation in healthcare institutions. This ongoing professional learning is very vital in a sector with high rates of technological growth, complicated clinical procedures, and growing patient demands as a means of maintaining organizational effectiveness and making the provision of high-quality healthcare a priority. Proper T&D helps healthcare providers with the latest knowledge, technical expertise, and responsive capabilities to address new health care challenges and changing medical practice (Noe & Kodwani, 2018; Salas et al., 2019; Sousa & Rocha, 2019; Dirani et al., 2020). In addition, training programs are crucial in enhancing employee creativity and innovative behavior required to enhance healthcare systems and patient outcomes in a highly dynamic environment (Bos-Nehles & Veenendaal, 2019; Kim & Park, 2020; Anderson et al., 2020).

In spite of the recognized significance of T&D, healthcare organizations still have to deal with the ongoing obstacles that diminish its efficacy. Such obstacles are lack of funds, inaccessibility of training resources, lack of managerial support, and disorganized training programs. Moreover, the involvement in training activities and transfer of acquired skills to the workplace are further restricted by heavy workloads, time restrictions, and resistance against change in the healthcare professionals (Dhar, 2019; Gegenfurtner & Ebner, 2019; Malik et al., 2021; Al-Saleem & Aldakheel, 2024). These restrictions do not only prevent the development of the necessary competencies but also decrease the ability of workers to become involved in innovative practices, which influences the efficiency of the organization and quality of services. Empirical evidence indicates that employees will be less likely to build the creative confidence and problem-solving skills required to be innovative when training systems are ineffective or poorly implemented (Hughes et al., 2018; Radaelli et al., 2020; Anser et al., 2020).

The issue, hence, is that there is always a discrepancy between the perceived significance of T&D and its real impact within healthcare institutions. Although large investments can be made in training programs, the structural, organizational, and individual-level obstacles constrain their effects on employee performance and innovation results. Training programs in most healthcare facilities, especially in developing environments, tend to be infrequent, underfunded, and uncoordinated with organizational objectives, which mean that they have little impact on the innovative work behavior (Otoo et al., 2018; Nair et al., 2019; Nguyen et al., 2021). This poses important questions regarding the degree to which current T&D practices can aid in innovation, which is becoming more and more critical toward enhancing healthcare delivery and responding to complicated health system issues.

Considering this background, the barriers that hinder effective training and development need to be systematically reviewed and the impact of these barriers on employee innovation in healthcare organizations requires to be known. In particular, the present study aims to determine the most important organizational, resource-based, and behavioral limitations in relation to T&D, evaluate the connection between these limitations and innovation in employees, and determine how successful training practices can help address those limitations. In this way, the study will contribute to the theory and practice by shedding light on how healthcare organizations can develop and establish more effective training systems that can improve employee innovation and overall organizational performance (Sousa & Rocha, 2019; Radaelli et al., 2020; Dirani et al., 2020; Nguyen et al., 2021).

### ***Beyond the Deficit View of Barriers***

Conventional research about T&D has mostly idealized organizational obstacles including insufficient funds, time, and sufficient institutional backing as a deterrent to employee output and innovation. These obstacles are normally considered to limit knowledge and learning of skills, which subsequently limits the ability of employees to participate in creative work conduct (Dhar, 2019; Nguyen et al., 2021).

Nevertheless, new trends in organizational and innovation studies propose a more subtle meaning of constraints. The constraint-induced innovation hypothesis is that resource constraints and structural obstacles can evoke adaptive problem-solving, improvisation, and creative recombination of existing knowledge (Sonenshein, 2018; Rosso, 2019). Workers are provided with little time to do much in constrained conditions and they might have to resort to doing more with less which may bring about ingenuity and context-based innovation. This view is especially applicable in the health sector of developing economies where practitioners often have to work with scarce resources, intense workload, and institutional inefficiency. The hindrances to T&D in these settings might not just limit formal learning opportunities but also foster informal learning, peer-building, and experiential acquisition of knowledge, all of which can contribute to innovation (Anser et al., 2020; Dirani et al., 2020). It is on this basis that this research moves beyond the prevailing deficit-based perspective, by suggesting that obstacles to T&D can have both facilitating and limiting impacts on employee innovation.

### ***Hypotheses Development***

The association between T&D, organizational obstacles, and innovation among employees is quite multifaceted and intricate, especially in the healthcare setting where resource limitations and operational strain are the norm. Although conventional literature tends to categorize barriers as performance and innovation obstacles, the new thinking has it that, in some circumstances, constraints can also trigger response of adaptability and innovation among employees.

In a traditional perspective, the obstacles to T&D, which include lack of financial resources, managerial support, poor learning culture, excessive workload and change resistance, are all likely to be barriers to accessing training opportunities and lower the efficiency of skill development processes. They are normally restrictions that prevent employees from learning new things and skills, thus undermining their innovative potential (Dhar, 2019; Nguyen et al., 2021). Theoretical and empirical information, however, suggests that

constraints may also act as innovation drivers by forcing employees into the challenging of improvisation, problem-solving, and reconfiguration of resources, especially in resources constrained environment.

Such constraints in healthcare organizations can motivate frontline workers to generate innovative and responsive ideas to address service delivery requirements as professionals often work under pressure and with a limited set of resources. This view is consistent with the idea of constraint-based innovation, as problematic workplaces trigger resourcefulness and pragmatic innovation. Consequently, barriers to T&D can have dual functions instead of entirely negative ones, as, under certain organizational circumstances, they might lead to the development of an innovative behavior.

**H1:** *Training and development barriers have a positive impact on employee innovation by eliciting adaptive and problem-solving behaviors in healthcare professionals.*

Conversely, the value of effective training and development in promoting employee innovation is well known in the literature. Using Human Capital Theory, employee training investments enhance knowledge, skills, and competencies that are prerequisites of creativity and innovative performance. Training increases cognitive flexibility, technical skills, and the ability to develop and apply new ideas, which are all important elements of innovative work behavior (Salas et al., 2019; Kim & Park, 2020).

Moreover, Social Exchange Theory indicates that when organizations invest in employee development in form of systematized and applicable training programs, employees view it as organizational support and give back with positive discretionary behavior, which includes innovation. Well-developed T&D systems do not just provide the employees with technical skills but also inspire them to be motivated, active, and eager to make a creative contribution to organizational objectives. Empirical research also shows that properly designed and context-specific training programs can vastly benefit the innovation of employees in many industries, and healthcare is not an exception (Radaelli et al., 2020; Anser et al., 2020).

Following these arguments, it is anticipated that the effectiveness of training has a direct and significant role in facilitating innovative work behavior among healthcare professionals.

**H2:** *Effectiveness of training and development has a positive impact on employee innovation in healthcare organizations.*

In addition to direct impacts, the association between organizational barriers and employee innovation can be comprehended better in the context of underlying processes like the effectiveness of training. Even though barriers can lead to adaptive innovation directly, it can also diminish the quality and accessibility of training programs, as well as their applicability. In this aspect, training effectiveness is an important organizational process whereby the impact of barriers is channeled to the results of innovation.

When training systems are efficient, i.e. relevant, quality, in line with the organizational need, the negative effects of the organizational barriers can be alleviated because the employees learn to use the necessary skills in spite of the current limitations. On the other hand, inefficient training systems can increase the negative impact of barriers through restricted knowledge transfer and decreased ability of the employees to innovate. This brings out the significance of training effectiveness as an intervening variable between organizational conditions and employee behavior.

Prior research supports the mediating role of training effectiveness by indicating that organizational factors mediate the results of performance indirectly via human resource development processes (Sousa & Rocha, 2019; Dirani et al., 2020). Amid the healthcare settings, a good training system will enable conversion of structural and organizational problems into learning and innovational opportunities.

**H3:** *The effect of barriers to training and development on innovation of employees in healthcare organizations is mediated by training and development effectiveness.*

## **II. Literature Review**

### **Theoretical Framework**

This research paper is based on the Human Capital Theory, Social Exchange Theory and Job Embeddedness Theory to demonstrate how training and development can affect employee creative performance and job embeddedness acts as an intermediate variable.

#### ***Human Capital Theory***

Human Capital Theory indicates that when investments are made in the knowledge, skills and competencies of employees, then the outcome of their productivity and performance improves. T&D is regarded as one of the most important types of human capital investment that provides employees with appropriate capabilities needed to be innovative and creative.

Recent research stresses that ongoing learning programs have a great impact on the capacity of employees to come up with new ideas and address intricate issues, which also contributes to a positive creative

performance (Salas et al., 2019; Noe et al., 2020). Training employees in knowledge-intensive industries like healthcare can help them to embrace technological changes and enhance the outcomes of service delivery (Kraiger & Ford, 2021).

Moreover, empirical data indicate that companies that focus on formal training schemes have increased employee creativity as a result of cognitive flexibility and problem-solving abilities (Sung & Choi, 2018; Kim & Park, 2020). Human Capital Theory, therefore, gives good rationale of anticipating a positive linear relationship between training and development and creative performance.

### ***Social Exchange Theory***

Social Exchange Theory (SET) is also used in this study to explain the behavior in the workplace as a result of a reciprocal relationship between employee and organization. When organizations support their employees by training, they feel that the organization is willing to support them and they will in turn be willing to give back in form of positive work behaviors, such as increased creativity.

According to recent literature, perceived organizational support as a result of training opportunities leads to employee commitment, engagement, and discretionary behavior like innovation (Cropanzano et al., 2017; Karatepe et al., 2020). When employees are made to feel valued, they become more motivated to make creative contributions towards organizational objectives (Rhoades & Eisenberger, 2021).

Also, training programs indicate that the organization will be committed to employees in the long term, which builds trust and motivates employees to invest their efforts in creating innovative solutions (Ali et al., 2019). This two-way relationship is especially significant in service based industries where generation of creative ideas by employees directly influences service delivery. Thus, Social Exchange Theory proves the thesis that training and development indirectly contributes to improving creative performance through improving employee-organization relationships.

### **Conceptual Proposition**

#### ***Health Care Training and Development***

T&D are systematic and ongoing organizational activities, which strive to enhance knowledge, technical skills and professional competencies of employees to facilitate better performance and attainment of the strategic goals. T&D is particularly vital in healthcare organizations because of the dynamic nature of the sector, with its fast changes in technologies, changes in clinical practices, and the growing dependence on evidence-based practice. To provide patients with safe, effective, and high-quality care, healthcare professionals are obliged to constantly upgrade their skills. As a result, properly designed training programs can help to enhance clinical competence, decrease the number of medical errors, and improve the overall patient safety outcomes (Salas et al., 2019; Sousa & Rocha, 2019; World Health Organization, 2020; Dirani et al., 2020; Al-Shammari & Alenezi, 2021). In addition to clinical effectiveness, T&D can also be a driver of innovation because employees who have the knowledge and confidence to embrace new technologies, enhance processes, and create innovative solutions to complex healthcare problems tend to do so (Bos-Nehles & Veenendaal, 2019; Kim & Park, 2020; Radaelli et al., 2020; Anser et al., 2020).

Available literature highlights that efficient T&D systems in the health sector are related to enhanced performance of employees, high job satisfaction, and organizational commitment. For instance, continuous professional development programs were found to make healthcare workers more adaptable and capable of responding to the new health crises and system demands (Dhar, 2019; Nair et al., 2019; Nguyen et al., 2021; Malik et al., 2021). Also, training programs that apply experiential learning, interdisciplinary teamwork, and technology-based platforms are more likely to yield positive learning results and transfer knowledge into practice (Salas et al., 2019; Gegenfurtner & Ebner, 2019; Kwon & Park, 2021). Although all these advantages are acknowledged, T&D deployment within healthcare facilities is still uneven, and many organizations find it challenging to match training programs with the needs of employees and organizational objectives (Otoo et al., 2018; Dirani et al., 2020;).

Nevertheless, a review of the literature shows that there are some gaps that inhibit a thorough comprehension of T&D efficacy in healthcare organizations. Firstly, a lot of the current literature is mainly concerned with the consequences of training, including improvement in performance and patient safety but does not pay much attention to the structural and organizational issues that prevent the implementation of training successfully. Although some studies also consider issues like resource constraints and time limits, they are not viewed as the main variables but as by-products that can affect training effectiveness and the outcomes of innovation (Nguyen et al., 2021; Malik et al., 2021; Al-Saleem & Aldakheel, 2024). Second, no integrative studies have been conducted to investigate the direct relationship between T&D barriers and employee innovation, especially in the health care setting. The majority of the research is likely to analyze the training and innovation as independent constructs, thus, ignoring how the inadequacies of the training systems can directly hinder innovative work behavior (Bos-Nehles & Veenendaal, 2019; Radaelli et al., 2020; Anser et al., 2020).

Also, the existing body of research is mostly focused in developed healthcare, and there is not much empirical data in developing nations where resource limitations and institutional barriers are stronger. These result in a gap in context, where the nature and effect of training barriers can vary greatly between settings. Moreover, the interaction between organizational variables like leadership support, learning culture, and communication systems and T&D to affect innovation has not been sufficiently explored (Sousa & Rocha, 2019; Dirani et al., 2020; Malik et al., 2021). The literature about the mediating mechanisms that effective training may alleviate the negative contribution of these barriers is also under-investigated (Kim & Park, 2020; Anser et al., 2020; Nguyen et al., 2021).

This research fills in these gaps by moving beyond the evaluation of the results of training to the critical analysis of the obstacles that compromise the effectiveness of such training in healthcare organizations. Precisely, it examines the impact that resource constraints, organizational support systems, and individual constraints have on T&D implementation and, consequently, employee innovation. This research is unique as compared to the previous ones, as it considers training and innovation as one and the same instead of depending on the independent analysis of the two variables, focusing on the identification of the direct and indirect links between T&D barriers and innovative work behavior. Also, by putting the study into a developing healthcare setting, it brings context-specific information that is not sufficiently represented in the existing literature. The analysis also examines the mediating effect of training efficacy between organizational obstacles and the results of innovation, thus giving a more detailed explanation of how healthcare organizations can utilize T&D to break through the barriers and encourage innovation. In such a way, it could promote both theoretical and empirical understanding of the strategic role of T&D in promoting innovation within healthcare systems (Sousa & Rocha, 2019; Dirani et al., 2020; Malik et al., 2021).

### ***Employee Innovation in Healthcare Provision***

Employee innovation can be defined as the deliberate creation, advocacy, and utilization of new ideas, processes, or practices that enhance organizational performance and service delivery. Employee innovations is especially essential in healthcare organizations since frontline professionals, including doctors, nurses, and allied health workers, have direct patient interactions and thus are in a unique position to spot inefficiencies, offer suggestions, and suggest feasible solutions. The role of innovation in this regard is usually in the form of better clinical practices and patient management models, and the implementation of novel technologies to streamline health care delivery. Due to the dynamic and unpredictable nature of healthcare settings, employees need to be innovative in their work behavior to handle new challenges, enhance patient outcomes, and maintain the resilience of their organizations (West & Chowla, 2017; Alharbi et al., 2019; Shanker et al., 2019; Radaelli et al., 2020). More recent research also highlights that employee experience and their daily contact with patients contribute significantly to healthcare innovation because they can offer valuable insights on how to make continuous improvement (Bos-Nehles & Veenendaal, 2019; Anser et al., 2020; Kim & Park, 2020; Al-Saleem & Aldakheel, 2024).

The literature has recognized a few factors that affect employee innovation in healthcare such as support of the leaders, organizational culture, sharing of knowledge and access to continuous learning opportunities. Positive organizational climate and supportive leadership help to make employees not afraid of failure when trying new ideas, thus, promoting creativity and innovation (Dhar, 2019; Shanker et al., 2019; Alharbi et al., 2019). In the same way, a robust learning culture facilitating a continuous development of professionals improves the capacity of employees to gain new knowledge and use it in new creative ways (Sousa & Rocha, 2019; Dirani et al., 2020; Nguyen et al., 2021). The training and development programs are identified as the major sources of innovation as well, as they provide employees with the competencies and skills necessary to adjust to the transforming work conditions and technology changes (Salas et al., 2019; Gegenfurtner & Ebner, 2019; Malik et al., 2021). Nevertheless, organizational constraints, including work overload, strict hierarchies, and lack of resources, may largely suppress innovative behavior because it restrains the ability and motivation of employees to tackle problems creatively (Radaelli et al., 2020; Anser et al., 2020; Malik et al., 2021).

Although the research on employee innovation in healthcare is growing in quantity, there are still a number of critical gaps. To start with, a significant part of the current literature is predisposed to discuss the positive enablers of innovation that include leadership, organizational culture and motivation, but relatively less on the hindrances that prevent innovative behavior. This provides a partial picture of the innovation dynamics since the lack of enabling factors does not necessarily determine the occurrence of inhibiting conditions (Shanker et al., 2019; Bos-Nehles & Veenendaal, 2019). Secondly, few studies have been conducted empirically to investigate the direct association between training and development barriers and employee innovation. Despite the fact that T&D is often mentioned as a source of innovation, very few researches explore explicitly how ineffective training systems or barriers to learning can hamper the innovative capabilities of employees (Anser et al., 2020; Kim & Park, 2020; Nguyen et al., 2021).

Also, most of the research on the subject of employee innovation in the healthcare sector has been carried out in developed nations, whose institutional, technological, and resources environment is not similar to the developing setting. This reduces the generalizability of the results especially in environments when the healthcare systems are more structurally and financially constrained (Sousa & Rocha, 2019; Dirani et al., 2020). In addition, little has been done to understand how organizational factors can interplay with training systems to affect the outcomes of innovation. Specifically, the mediating effect of training effectiveness on the development of the relationship between organizational barriers and employee innovation is underrepresented in the literature (Anser et al., 2020; Radaelli et al., 2020; Malik et al., 2021).

This study fills these gaps by taking a barrier-based approach to employee innovation within healthcare organizations. Instead of focusing on enabling factors, it looks at how the constraining factors on structural, organizational, and resource factors, specifically those that relate to training and development, hinder innovative work behavior among the employees. The combination of T&D barriers and employee innovation that the study involves, allows gaining a better insight into the ways in which the constraints of learning systems may be directly and indirectly related to the outcomes of innovation.

Furthermore, placing the research in the context of the developing healthcare situation, the study adds context-specific information that is frequently neglected in the literature. It also examines the mediating role of training effectiveness thus provides a finer explanation of how healthcare organizations can alleviate barriers and increase employee innovation by using strategic human resource practices. In such a manner, the research contributes to the existing body of knowledge by establishing the connection between training issues and the performance of innovation in a theoretically sound and practically meaningful way (Sousa & Rocha, 2019; Anser et al., 2020; Dirani et al., 2020; Malik et al., 2021).

### ***Obstacles to Training and Development***

Obstacles to T&D in healthcare organizations are complex and occur on structural, organizational, and individual levels, which frequently limit the effectiveness of learning programs and inhibit their influence on employee performance and innovation. Resource constraints have been one of the most referenced issues and this includes the lack of financial investment, lack of training facilities and lack of qualified trainers/facilitators. In most healthcare systems, especially in developing settings, financial constraints curtail the quality, access, and frequency of training programs, thus limiting the possibilities of lifelong learning (Otoo et al., 2018; World Health Organization, 2020; Dirani et al., 2020; Malik et al., 2021; Nguyen et al., 2021). This issue is further aggravated by human resource shortage since health care professionals are usually overworked with clinical tasks and have little time to engage in training activities. Such limitations not only hamper the acquisition of skills but also hamper the sustainability of training programs and their effectiveness in the long term (Dhar, 2019; Nair et al., 2019; Al-Saleem & Aldakheel, 2024).

Besides the technical challenges associated with resources, the absence of organizational support is also a very significant obstacle to successful T&D. Leadership commitment and alignment to organizational strategies are critical in ensuring the relevance, sufficiency, and integration of training programs to the overall organizational objectives. Nevertheless, there is a tendency of low managerial support of training in many healthcare entities, which is a lack of encouragement of staff involvement, insufficient follow-up procedures and measures, and lack of assessment of training results (Salas et al., 2019; Dirani et al., 2020; Malik et al., 2021). The perceived value of training among employees is also further reduced by ineffective human resource management practices, including lack of clear training policies and performance-related development plans. The lack of institutional support tends to make training programs a one-time occurrence instead of a part of the organizational development process, thus diminishing their effectiveness in individual and organizational outcomes (Sousa & Rocha, 2019; Kim & Park, 2020; Anser et al., 2020).

The other major obstacle is the lack of a learning culture in healthcare organizations. A culture of learning encourages the sharing of knowledge, constant improvement, and being open to new ideas all of which are key to successful training and innovation. Nevertheless, there are numerous healthcare organizations that do not have formal frameworks and unwritten rules that can promote team learning and sharing of knowledge. Interdisciplinary interaction is usually limited by hierarchical organizational structures, professional silos, and lack of interdisciplinary interaction, which obstruct information flow and learning processes (Bos-Nehles & Veenendaal, 2019; Radaelli et al., 2020; Dirani et al., 2020). Consequently, despite the existing training opportunities, transferring and implementing knowledge to the workplace can be minimal, which minimizes the overall effectiveness of T&D initiatives (Gegenfurtner et al., 2019; Malik et al., 2021).

There is also a significant barrier to training effectiveness in the healthcare setting being resistance to change. Healthcare workers can prove to be unwilling to participate in training programs because of their workloads, time, or doubt the applicability of training material to their work. The old knowledge and routines of the profession can also become barriers to acquiring new knowledge and practices that are brought about by training (Dhar, 2019; Alharbi et al., 2019; Shankar et al., 2019). The absence of incentives or recognition of

learning usually increases this resistance and decreases the motivation of employees to engage in training and use new skills (Anser et al., 2020; Malik et al., 2021). Therefore, well-planned training programs might fail to deliver the desired results, when the employees do not want or cannot accept the changes. This is because lack of proper communication channels and knowledge sharing sites is another major barrier to effective T&D since training needs identification, distribution of learning opportunities, and transfer of knowledge among different organizational units all require good communication channel.

Nevertheless, a great number of healthcare organizations do not have integrated communication systems which facilitate such processes. The lack of digital platforms, information fragmentation, and lack of feedback mechanisms are the barriers to knowledge acquisition during training (Sousa & Rocha, 2019; Dirani et al., 2020; Nguyen et al., 2021). This not only impacts individual learning results but also limits organizational learning and innovation, since knowledge of insights and good practices cannot be well shared or institutionalized (Anser et al., 2020; Malik et al., 2021).

Although there is a lot of literature on these barriers, there are gaps in the literature. First, the literature is inclined to discuss these issues separately, without an integrated framework that would reflect the combined and interactive impact of several barriers on the effectiveness of training and the results of innovation (Sousa & Rocha, 2019; Dirani et al., 2020). Secondly, although much recognition is given to the fact that these barriers exist, the empirical studies that measure their direct effect on the innovation of employees are scarce. Training results, including the acquisition of skills and job performance, are the primary subjects of many of the written sources, and there is less emphasis on the impact of barriers to T&D on novel work behavior (Kim & Park, 2020; Radaelli et al., 2020; Anser et al., 2020). Thirdly, the absence of context-specific studies in the developing healthcare systems stands out as the lack of structural constraints, institutional weakness, and resource limitation, which are more severe and can affect the nature and effect of T&D barriers in different ways (Otoo et al., 2018; Malik et al., 2021). Moreover, the mediating processes, like training effectiveness, by which these barriers influence innovation, are also under-researched (Dirani et al., 2020; Nguyen et al., 2021).

This research thus bungs up these cavities by embracing an integrative and holistic approach towards studying barriers to T&D in healthcare organizations. Instead of looking at individual barriers separately, it explains the synergy of resource limitations, organizational support, learning culture, change resistance, and communication systems on training effectiveness and employee innovation. The paper also builds on prior literature by directly connecting T&D barriers to innovative work behavior, thus contributing empirical data on how training systems barriers would inhibit innovation in a healthcare context. Moreover, placing the research in a developing context, the study adds contextually pertinent information to increase the generalizability and applicability of results. Notably, it explores the mediating power of training effectiveness, which provides a more detailed explanation of how enhancing the training systems can reduce the adverse impacts of these obstacles and create a more innovative healthcare workforce.

### ***Training and Employee Innovation Nexus***

The connection between training and innovation among employees has been gaining more and more scholarly interest, especially in knowledge-based industries like healthcare where constant learning is needed to keep up with the changes. Training helps employees improve their creative skills, problem-solving skills, and flexibility by exposing them to new knowledge, techniques, and perspectives, which could be used to enhance work processes and results. Training can provide healthcare professionals with cognitive flexibility and technical competence to create and adopt innovative solutions in patient care and service delivery since uncertainty and complexity are inherent in healthcare organizations (Salas et al., 2019; Sousa & Rocha, 2019; Radaelli et al., 2020; Dirani et al., 2020; Malik et al., 2021). With the help of systematic learning interventions, employees can acquire not just task-related skills but also higher-order capabilities like critical thinking and teamwork, as well as integrating knowledge, which are essential components of innovative work behavior (Bos-Nehles & Veenendaal, 2019; Kim & Park, 2020; Anser et al., 2020).

Further, effective training helps to develop a learning-based workforce, which is more accepting to change and more able to come up with new ideas. The training programs that involve interactive activities, experiential learning, and cross-functional tasks are especially useful in promoting creativity and innovation because they push employees to challenge current policies and practices and consider new methods (Noe & Kodwani, 2018; Gegenfurtner & Ebner, 2019; Kwon & Park, 2021). In this respect, training is an important mechanism that helps organizations to develop innovation capacity by increasing the capacity of employees to acquire, share and use knowledge. Empirical evidence shows that organizational learning systems, leadership support, and employee engagement are significant factors that determine innovation in healthcare, which are all closely connected with training and development practices (Dhar, 2019; Nguyen et al., 2021; Dirani et al., 2020; Sousa & Rocha, 2019). Employees will be more willing to pursue innovative behaviors and help the organization improve when they feel the training process to be relevant, supportive, and in accordance with their career ambitions (Anser et al., 2020; Malik et al., 2021).

Nonetheless, the positive correlation between training and employee innovation is not always practiced as it is, especially in cases where training systems are inefficient or ineffective. Poor training design, absence of follow up support and mismatch of training material to job requirements may restrict the knowledge acquisition and transfer of learning to the workplace. Consequently, they might not be able to transfer the newly learned skills into innovative behavior, which undermines the overall effect of training on the innovation outcomes (Salas et al., 2019; Gegenfurtner & Ebner, 2019; Malik et al., 2021). Also, training can be hindered by limited resources and organizational support as well as resistance to change, which further limit its ability to promote innovation (Dirani et al., 2020; Anser et al., 2020; Nguyen et al., 2021). This indicates that the training-innovation nexus depends not only on the access to training but also on the quality and relevance and organizational conditions under which training is conducted (Sousa & Rocha, 2019; Bos-Nehles & Veenendaal, 2019).

Although the connection between training and innovation is increasingly being recognized, there are a few gaps in the literature. First, the extant research has focused a lot on the specific positive impacts of training on innovation, and usually ignored the circumstances that can weaken or destroy this relationship. Specifically, the empirical focus on the influence of barriers to training and development as moderators or mediators of the connection between training and employee innovation is limited (Anser et al., 2020; Malik et al., 2021). Second, although organizational learning, leadership support, and employee engagement are often cited as key drivers of innovation, their relationship with training systems is not adequately discussed within an integrated framework. This restricts an in-depth view of how the combination of various organizational variables can influence innovation outcomes (Radaelli et al., 2020; Kim & Park, 2020; Dirani et al., 2020). Also, not many studies have specifically investigated the mediating factors by which training affects innovation, especially in health care. Although there are studies to the effect that training increases innovation through the improvement of knowledge and skills, a smaller number of them empirically examine how training effectiveness is a mediating variable between organizational variables and innovation outcomes (Sousa et al., 2019). Also, most empirical studies are based on developed economies, and little research has been conducted in developing healthcare settings whereby structural constraints and institutional challenges can considerably change the dynamics of the training-innovation relationship (Otoo et al., 2018; Nguyen et al., 2021). This provides a contextual gap that restrains the applicability of the available findings in different healthcare systems.

In this study, the authors plug in by offering a more integrative and nuanced analysis of the training and employee innovation nexus in healthcare organizations. Instead of concentrating on the positive impact of training, it looks at the role of barriers to training and development in shaping this relationship, and as such, provides a more realistic evaluation of the effectiveness of training in practice. Organizational factors (leadership support, learning culture, availability of resources) are also included in the study and the analysis provides a comprehensive understanding of the interaction between these factors and training systems to determine the innovation outcomes. Notably, it examines the mediating effect of training effectiveness between T&D barriers and employee innovation, thus, adding to a better understanding of how training influences innovation. Placing the study in a developing healthcare setting, the study also offers context-specific information that can help overcome the limitations of the current research and increase the applicability of findings to policy and practice (Sousa & Rocha, 2019; Dirani et al., 2020; Anser et al., 2020; Malik et al., 2021).

### **III. Materials And Methods**

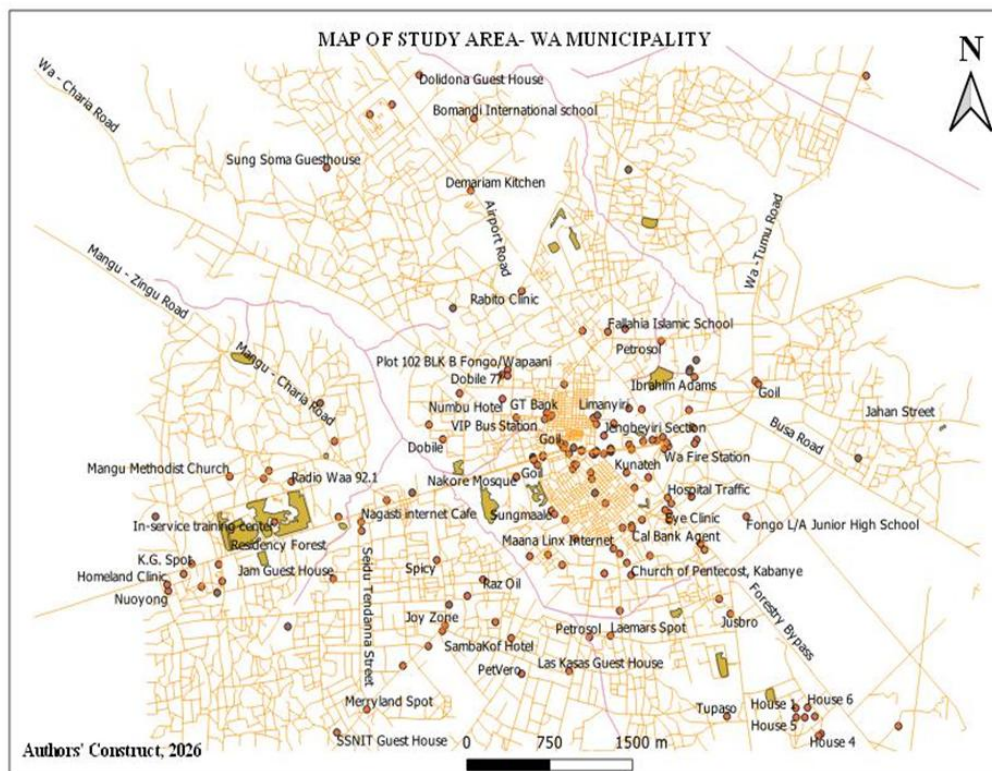
#### ***Study Area***

The research is carried out in the Wa Municipal Assembly, which is in the Upper West Region of Ghana. Wa Municipality is the regional capital and one of the most significant administrative, commercial and healthcare centers in the Northern part of the country. The geographical area of the municipality is varied with a mixture of urban and peri-urban communities with mixed population of different socio-economic and cultural backgrounds. The region has witnessed a consistent population growth over the years, leading to a rise in the number of people requiring basic services, especially in the fields of healthcare, education, and social infrastructure (Ghana Statistical Service, 2021).

The strategic location of Wa Municipality is significant because it has become a seat of governance and service delivery of the Upper West Region. It is home to various government offices, educational institutions, financial institutions, and healthcare centers. The major healthcare facilities within the municipality include the Wa Regional Hospital, Wa Municipal Hospital and Wa Police Clinic, which are all critical facilities in the delivery of healthcare to the inhabitants within the municipality and beyond. These centers serve the diverse healthcare requirements, such as outpatient and inpatient care, emergency, maternal and child health, and targeted medical care (Ghana Health Service, 2022).

The healthcare system in Wa Municipality exists in the framework of the public health system in Ghana which is designed to provide the population with equitable and accessible healthcare services.

Nonetheless, similar to most healthcare systems in developing countries, the municipality is characterized by the shortage of resources, poor infrastructure, and lack of workforce. These issues tend to influence the quality of healthcare provision and access of healthcare providers to ongoing training and development (World Health Organization, 2020). These limitations make the municipality an interesting and suitable context in which it is possible to study the problem of training and development, and employee innovation.



### Research Approach and Design

The research paper uses a quantitative research design to test the relation between training barriers to T&D and employee innovation in healthcare organizations by adopting cross-sectional research design. The study is especially suited to a quantitative method since it allows the systematized gathering and methodical analysis of numerical data to examine hypothesized correlations between variables, which provide objectivity, generalizability, and statistical rigor. Quantitative research has gained popularity in organization and health field studies to study patterns, relationships, and causal implications among constructs like training effectiveness, organizational barriers, and innovative work behavior (Nwabuko et al., 2024). This strategy enables the research to transcend simple informational details and offer researchers empirical information on the extent and course of connections between critical variables.

The study plan specifically used a cross-sectional survey design, which entails gathering data on the respondents at a single time. Cross-sectional designs are typical of healthcare research and organization research to determine the current situation, perceptions, and associations of variables among the variables of a particular population. They are especially appropriate to analyze relationships between variables like training barriers and innovation without the need to follow them over time (Pérez-Guerrero et al., 2024). The cross-sectional design used in this study allows the researcher to get a snapshot of experiences of employees on training systems and their innovative behavior in healthcare organizations. It is an effective design that is economical and suitable in research that seeks to test theoretical relationships and build evidence to inform policy and practice (Zuleika & Siswo, 2022).

The decision to use cross-sectional approach can also be explained by the fact that it has been widely used in recent healthcare studies. Recent research on healthcare practices, employee attitudes, and organizational influences often involves cross-sectional surveys as the method that allows considering various variables simultaneously and drawing important relationships (Melkamu et al., 2024; Allen et al., 2025). Likewise, the cross-sectional surveys have been employed to investigate the learning settings, training performances, and professional skills in healthcare facilities, which illustrates their appropriateness and methodological applicability to research of this nature (Razak et al., 2025).

Moreover, the research has analytical cross-sectional design, which does not only describe variables but also analyzes the relationships among the variables using inferential statistics, including correlation, regression and mediation analysis. Analytical cross-sectional studies have special usefulness in predictor identification and testing the theoretical models and, therefore, are appropriate to investigate the effect of the barriers to T&D on employee innovation (Irshad et al., 2024). By doing so, the study was able to test hypotheses about the direct and indirect influence of T&D barriers, and the mediating power of training effectiveness, thus, gaining a better understanding of the mechanisms driving the innovation in healthcare organizations.

Although the design has some advantages, it has some limitations especially its inability to determine causality because it lacks temporal sequence. Given that data are measured at one point in time, it is not easy to establish whether a change in one variable leads to a change in another. This limitation is however countered in the current study by strong statistical methods and theoretically informed hypotheses, which can be further used to interpret the relationships between variables meaningfully. Additionally, the use of cross-sectional studies is well known to be suitable in the context of the exploratory and explanatory research, particularly in case of the longitudinal data collection, which can be unfeasible due to time and resource limitations (Pérez-Guerrero et al., 2024).

Moreover, the research used deductive style of research, in which hypotheses are formulated in accordance with existing theories and empirical literature and empirically tested with the help of quantitative data. This is a theory-driven approach that helps in validating or building on current knowledge of training and development and employee innovation. The deductive method is especially appropriate when a researcher is interested in determining the relationships between variables and the test of conceptual models in a system and organized way.

On the whole, the combination of a quantitative paradigm and an analytical cross-sectional design offers a solid methodological framework to examine the role of T&D barriers on employee innovation in healthcare organizations. Such a design allows the study to produce empirical findings, test theoretical correlations, and provide useful information that can be used to enhance training systems and create innovation in the healthcare industry.

#### ***Population, Sample Size and Sampling Methods***

This study targeted healthcare professionals practicing in three chosen institutions within the Wa Municipality, that is, the Wa Regional Hospital, Wa Municipal Hospital, and Wa Police Clinic. These institutions were strategically chosen based on their strategic functions in healthcare provision in the area, the variety of staff types, and its relevance to the research topic on training, development, and innovation of employees. The professionals working in these hospitals included doctors, nurses, midwives, pharmacists, laboratory technicians and administrative personnel who are either directly or indirectly engaged in the care of patients and the running of the facilities. By targeting these institutions, the study can guarantee a heterogeneous target population of respondents whose experience with training and innovation can offer rich and contextually valuable data.

The number of healthcare workers of such institutions is not known which is a typical problem in organizational and healthcare research, especially in developing settings where current workforce records might not be easily obtained. When the population is not known or hard to estimate, researchers usually apply known statistical sampling methods which are used in large or infinite populations, to guarantee the representativeness and reliability of findings (Cochran, 1977; Israel, 2013). Due to the lack of knowledge regarding the population size, the present study follows a probabilistic sampling method with statistical principles to determine a sufficient sample size that would provide generalizable and valid results. In particular, Cochran uses the formula of large population to determine the sample size, which is highly suggested in the case of the study population whose size is unknown or is supposedly unlimited (Cochran, 1977; Taherdoost, 2017).

The sample size for the study was determined using the Cochran formula, based on the assumptions of a 95 percent level of confidence and a 5 percent margin of error. The formula enables the researcher to determine a representative sample that sufficiently represents the variability in the population, thus improving the statistical power of the study. To further enhance the strength of the sample, the research could include an adjustment of non-response by enlarging the calculated sample to compensate the possible incomplete or unusable responses (Etikan & Bala, 2017).

With regards to the sampling method, a stratified sampling strategy was considered suitable to this research. Subgroups (strata) are formed by the institutional affiliation (Wa Regional Hospital, Wa Central Hospital, and Wa Police Clinic) and potentially by professional groups (e.g., clinical and non-clinical staff). This guaranteed that every subgroup was well represented in the end sample, thus enhancing the accuracy and representativeness of results. Stratified sampling is especially applicable in studies involving healthcare because it makes it possible to compare perceptions and experiences of various groups of people in the same organizational environment (Acharya et al., 2013; Taherdoost, 2017).

In each stratum, a simple random sampling method was used to select the respondents so that no respondent is left behind during the research. This decreases selection bias and increases external validity of the results. In cases where a full sampling frame is not available, the study can also be based on convenient sampling within strata to guarantee the practical collection of data and as much as possible representativeness. This mixture of sampling methods assists in balancing methodological rigor and practical feasibility in a real-world healthcare environment.

In general, the sampling design used in this study is appropriate as the sample size is sufficient to represent the population of healthcare professionals in the three institutions although the population size is not known. Through the proper use of sampling methods and the concepts of statistics, the study assures that the results are valid, reliable and can be generalized to the larger population of healthcare workers in such situations. This method also enhances the validity of the study conclusions about the impediments to training and development and its repercussions on employee innovation in healthcare organizations.

### ***Data Collection***

The primary data used in this study were structured questionnaires that helped in capturing the perceptions of T&D barriers, training effectiveness, and innovation in employees in healthcare organizations. Primary data are especially suitable because they enable the researcher to gain first-hand information directly from healthcare professionals, which increase the validity and relevance of the results (Creswell & Creswell, 2018; Saunders et al., 2019). The questionnaire was designed in sections that reflect the main variables of the study and consists of close-ended questions that were measured on a five-point Likert scale; disagree, strongly disagree, agree, strongly agree, neutral. The scale is popular in social science studies due to the fact that through it, it is possible to quantify attitudes, perceptions, and behaviors, which makes it statistically analyzable (Joshi et al., 2015; Allen & Seaman, 2017). The training constructs in the questionnaire evaluated the training barriers based on resource constraints, leadership support, organizational culture, resistance to change and communication systems. The training effectiveness was determined in the context of the degree to which training programs enhance the level of knowledge, skills and job performance of employees. This construct is a measure of the perceived quality and the effects of training programs in the organization. Innovative work behavior is measured by the engagement of respondents in the generation, promotion, and implementation of new ideas, processes, or practices in their workplace to measure the level of employee innovation (Radaelli et al., 2020; Kim & Park, 2020).

To check the quality of the instrument, prior to the actual data collection, the questionnaire was pre-tested. This assists in recognizing the ambiguity of questions, enhancing the wording of items and determining the reliability of the measurement scales. The instrument was refined based on the pilot study feedback to make sure that the instrument captures the intended constructs. Moreover, ethical implications, including informed consent, confidentiality, or voluntary participation are strictly followed during the data collection process (Creswell and Creswell, 2018).

### ***Data Analysis Techniques***

Combinations of descriptive and inferential statistics are used in analyzing the collected data. Descriptive analysis can give background knowledge of the dataset and assist in the interpretation of the results of further analysis (Saunders et al., 2019).

In order to determine the internal consistency of the measurement scales, reliability analysis is performed using Cronbach's alpha. This method assesses the extent to which the items in each construct are consistent in measuring the same underlying concept. Cronbach's alpha of 0.70 or more is assumed to be satisfactory, which means that the scale is well-reliable (Hair et al., 2019). Reliability is required to ensure the validity of the results and to make sure that the constructs are measured correctly.

This is then followed by correlation analysis to investigate the nature and direction of relationships between the key variables of training barriers, training effectiveness, and employee innovation. The correlation coefficient of Pearson is often utilized to identify whether there are any significant relationships between variables and to present preliminary evidence of the associations proposed in the hypotheses (Allen & Seaman, 2017). This analysis helps to determine whether the variables move in a positive or negative direction and thus guide subsequent regression analysis.

Regression analysis was carried out to establish how training obstacles are predictive of employee innovation and how training effectiveness has a direct contribution to innovation. The method offers information about the size and importance of relationships and thus makes it possible to test hypotheses (Hair et al., 2019; Field, 2018).

Lastly, mediation analysis was performed to investigate the question whether training effectiveness mediates the relationship between training barriers and employee innovation. The mediation analysis assists in elucidating the mechanism behind the way independent variables affect dependent variables. The research can

either take the Baron and Kenny method or other sophisticated methods like structural equation modeling (SEM) or bootstrapping methods in testing the mediation effect. Recent sources suggest utilizing bootstrapping techniques when performing a mediation analysis as they have a greater statistical strength and are more accurate in estimating indirect effects (Hayes, 2018). The analysis offered a more in-depth insight into how enhancing the effectiveness of training can serve to alleviate the adverse consequences of training barriers on the results of innovation.

As a whole, the set of these analytical methods guaranteed a thorough investigation of the relations between variables, which made the results of the study more robust and valid and allow learning more about the interaction between training and development and employee innovation in healthcare organizations.

### ***Measurement of Variables***

The measurement of training barriers is a multidimensional construct that includes resource constraints, leadership support, organizational culture, resistance to change, and communication systems. Items that measure resource restrictions emphasize financial, material and human resources that are available to trainers. The measurement of leadership support is based on the items which evaluate managerial encouragement, desire to develop employees, and the opportunity to provide them with training. The organizational culture is measured by the level at which the workplace encourages ongoing learning, knowledge sharing, and receptivity to new ideas. The willingness of employees to attend and use training programs is evaluated to measure resistance to change, and the communication systems are evaluated by evaluating the efficacy of information sharing and feedback systems within an organization (Salas et al., 2019; Nguyen et al., 2021).

The effectiveness of training is evaluated by assessing the degree to which training programs advance the knowledge, skills and job performance of the employees. The items concentrate on the relevance, quality and applicability of training programs and the extent to which employees can implement what they have learnt in their daily work. The construct is a perceived effect of training programs on individual and organizational performance and one of the important measures of effective training results (Noe & Kodwani, 2018; Radaelli et al., 2020).

Employee innovation is quantified as a behavioral construct that quantifies the involvement of employees in the generation, promotion and implementation of new ideas in the organization. Measurement items evaluate creativity, idea generation, problem-solving, and implementation of innovative practices at the workplace. The construct indicates innovative work behavior, which is required to enhance healthcare service delivery and organizational efficiency (Kim & Park, 2020; Radaelli et al., 2020). The fact that a number of items are used to measure each construct increases the reliability and validity of the model of measurement since the complex constructs are well represented.

### ***Ethical Consideration***

An important aspect of this study is ethical considerations to protect the participants and integrity of the research process. First, all respondents were informed about the data collection and gave their consent before data gathering. The participants were given precise information about the study aim, character of their participation and their rights such as the right to discontinue with the study at any time without adverse effects (Creswell & Creswell, 2018). No one was forced to participate in the study and participation was purely voluntary.

The research process was under strict confidentiality and anonymity. The questionnaires did not record the identities of the respondents and all data collected were meant to be used only for academic purpose. Information was safely stored and only accessible to the researchers and as such the personal information of the respondents is kept safely. This is especially crucial in the field of healthcare research, where confidential data and professional identities are at risk (Saunders et al., 2019).

The research also makes certain that the questionnaire has no harmful, intrusive or misleading questions that may make the participants feel uncomfortable. Moreover, the results are presented in a sincere and open manner, without manipulating and distorting facts, which supports the principles of academic integrity and research ethics (Field, 2018).

In general, the thoroughness of measuring the variables and the high level of compliance with ethical standards contributed to the credibility, reliability, and validity of the study. Such practices make sure that the research results are both scientifically and ethically accountable and they help to further develop the knowledge in the field of training and development and employee innovation in healthcare organizations.

## **IV. Results**

This section presents the research results. The analysis was conducted in five steps: reliability analysis, descriptive statistics, correlation analysis, regression analyses to test hypotheses, and mediation analysis.

**Reliability Analysis**

Reliability analysis was conducted using Cronbach’s alpha to determine the internal consistency of the measurement scales. All constructs as reported in Table 1 have satisfactory reliability as the alpha coefficients were greater than the recommended value of 0.70 (Hair et al., 2019). The highest reliability was shown by T&D effectiveness ( $\alpha = 0.87$ ), then barriers to T&D ( $\alpha = 0.83$ ) and employee innovation ( $\alpha = 0.83$ ). These findings prove that the measurement tools were valid and can be used in future analysis.

**Table 1: Reliability Statistics of Study Constructs**

Construct	Number of Items	Cronbach’s Alpha
Barriers to Training and Development	5	0.83
Training and Development Effectiveness	6	0.87
Employee Innovation	6	0.83

Source: Field Survey, 2026.

**Descriptive Statistics**

Descriptive statistics were calculated to help summarize the perceptions of the respondents of the main study variables. The average score of the barriers to T&D was 3.45 (SD = 0.83) which demonstrated an average perception of obstacles towards training programs. The effectiveness of training also had a mean of 3.45 (SD = 0.79) indicating that the respondents rated training programs as moderately effective. The mean score of employee innovation (M = 3.68) was the highest, which indicates fairly high levels of involvement in innovative working behaviors among healthcare professionals. The standard deviations are relatively low which means that there was a reasonable degree of agreement amongst respondents. These results are presented in Table 2 below;

**Table 2: Descriptive Statistics of Study Variables**

Variable	N	Mean (M)	Std. Deviation (SD)
Barriers to Training and Development	146	3.45	0.83
Training and Development Effectiveness	146	3.45	0.79
Employee Innovation	146	3.68	0.60

Source: Field Survey, 2026.

**Correlation Analysis**

The relationships among the study variables were analyzed using Pearson correlation analysis. As illustrated in Table 3 below, employee innovation ( $r = 0.36, p < .01$ ) and training effectiveness ( $r = 0.31, p < .01$ ) were significantly and positively related with barriers to T&D. Moreover, training effectiveness had a positive significant relationship with innovation of the employees ( $r = 0.58, p < .01$ ). These results give initial evidence on the hypothesized relationships and are the reasons to continue with the regression analyses.

**Table 3: Pearson Correlation Matrix among Study Variables**

Variables	1	2	3
Barriers to T&D	1		
Training & Development Effectiveness	0.31**	1	
Employee Innovation	0.36**	0.58**	1

Note.  $p < .01$  (2-tailed).

Source: Field Survey, 2026.

**Regression Analysis**

**Effect of Barriers to T&D on Employee Innovation**

(H1) hypothesized that training and development barriers have significant impacts on the innovation of employees. To test this relationship, a simple linear regression analysis was done. As shown in Table 4, employee innovation was highly predicted by barriers to T&D ( $\beta = 0.359, t = 4.618, p < .001$ ). The model explained 12.9% of the variance in employee innovation ( $R^2 = 0.129$ ) is small, yet a significant effect. These findings back H1 which argues that the perceived obstacles have the power to trigger innovative behavior, perhaps by promoting adaptive and creative reactions to organizational threats.

**Table 4: Linear Regression Analysis: Effect of Barriers to T&D on Employee Innovation**  
**Dependent Variable: Employee Innovation**

Predictor	B	Std. Error	$\beta$	t	Sig.
Constant	2.782	0.200	—	13.903	< .001
Barriers to T&D	0.261	0.056	0.359	4.618	< .001
Model Summary		Value			
R	0.359				
R Square	0.129				
Adjusted R Square	0.123				
F	21.33***				

Note.  $p < .001$ .

Source: Field Survey, 2026.

**Impact of Training and Development on Employee Innovation**

Hypothesis 2 was that effective T&D has a positive impact on employee innovation. According to the results of regression in Table 5, training effectiveness positively influences employee innovation significantly with a strong effect ( $\beta = 0.577$ ,  $t = 8.486$ ,  $p < .001$ ). The model explained a considerable amount of innovation ( $R^2 = 0.333$ ), which indicates a significant degree of explanatory power. Thus H2 is upheld, which proves a decisive role of effective training in developing innovative work behavior amongst healthcare professionals.

**Table 5: Linear Regression Analysis: Effect of Training and Development on Employee Innovation**  
**Dependent Variable: Employee Innovation**

Predictor	B	Std. Error	$\beta$	t	Sig.
Constant	2.158	0.184	—	11.735	< .001
Training & Development Effectiveness	0.441	0.052	0.577	8.486	< .001
Model Summary		Value			
R	0.577				
R Square	0.333				
Adjusted R Square	0.329				
F	72.03***				

Note.  $p < .001$ .

Source: Field Survey, 2026.

**Mediation Analysis**

**Regression Paths for Mediation**

The study hypothesized (H3) that the relationship between barriers to T&D and employee innovation are mediated by the effectiveness of training and development. Series of regression analyses were performed according to the bootstrapping method used by Hayes (2018). Table 6 reveals that barriers to T&D were a significant predictor of training effectiveness ( $\beta = 0.310$ ,  $p < .001$ ). Training effectiveness was found to be a good predictor ( $\beta = 0.565$ ,  $p < .001$ ), when both barriers and training effectiveness were part of the model to predict employee innovation. The contribution of barriers was also significant but lesser ( $\beta = 0.217$ ,  $p = .001$ ). Such a decrease in the coefficient implies partial mediation.

**Table 6: Regression Results for Mediation Analysis**  
**(a) Effect of Barriers on Training Effectiveness**

Predictor	B	Std. Error	$\beta$	t	Sig.
Constant	2.353	0.214	—	10.990	< .001
Barriers to T&D	0.310	0.067	0.310	4.630	< .001

**(b & c') Effects on Employee Innovation**

Predictor	B	Std. Error	$\beta$	t	Sig.
Constant	1.331	0.225	—	5.914	< .001
Barriers to T&D (c')	0.158	0.048	0.217	3.290	.001
Training & Development Effectiveness (b)	0.433	0.047	0.565	9.140	< .001
Model Summary		Value			
R	0.671				

Predictor		B	Std. Error	$\beta$	t	Sig.
R Square	0.450					
Adjusted R Square	0.442					
F	58.21***					

Note.  $p < .001$ .

Source: Field Survey, 2026.

**Bootstrapped Indirect Effects**

Bootstrapping was used to verify the mediation effect. The indirect impact of barriers to T&D on training effectiveness on employee innovation was found to be significant ( $\beta = 0.134$ ) with a 95 percent confidence interval of 0.062 to 0.221 as shown in Table 7. Since the confidence interval does not cover zero, the mediation effect is statistically significant, thus supporting H3.

**Table 7: Bootstrapped Indirect Effect of Barriers on Employee Innovation through Training Effectiveness**

Effect	Estimate	Boot SE	95% CI Lower	95% CI Upper
Indirect Effect (a × b)	0.134	0.041	0.062	0.221

Note. Mediation is significant when the confidence interval does not include zero.

Source: Field Survey, 2026.

**Overview of Hypotheses Testing**

Table 8 summarizes the results of the hypotheses testing. Empirical evidence supported all the hypotheses that were proposed.

Hypothesis	Statement	Result
H1	Barriers to T&D significantly influence employee innovation	Supported
H2	Effective T&D positively influences employee innovation	Supported
H3	Training & Development mediates the relationship between barriers and employee innovation	Supported (Partial Mediation)

Source: Field Survey, 2026.

**Summary of Results**

Overall, the findings reveal that measurement scales employed in the study are valid and the healthcare professionals report about moderate training barriers and training effectiveness and rather high innovative behavior. Correlations and regression results indicate that the variables have significant positive correlations. In particular, employee innovation is impacted by barriers to T&D to a large extent, whereas training effectiveness has a more significant positive impact. The mediation analysis also suggests that training effectiveness mediates the relation between barriers and innovation to some extent. These results highlight the strategic value of effective training systems in promoting innovation in healthcare organizations.

**V. Discussions**

The results of the study offer strong empirical evidence on the intricate interaction between impediments to T&D, training efficacy and organizational innovation among employees in healthcare organizations. On the whole, the findings confirm all three hypotheses and demonstrate a complex relationship that confirms and contradicts the literature. Interestingly, employee innovation was found to be influenced by barriers to T&D significantly ( $\beta = 0.359$ ,  $p < .001$ ) indicating that constraints in the organizational environment do not always reduce innovative behavior. Rather, this is a sign that employees can react to institutional constraints by coming up with adaptive and creative solutions to play their roles efficiently. This observation is contrary to the prevailing views in the literature, which state that obstacles to innovation, including resource constraints, lack of organizational support, and inefficient training systems, usually block innovation by limiting access to knowledge and skill building (Hughes et al., 2018; Dhar, 2019; Radaelli et al., 2020; Anser et al., 2020; Nguyen et al., 2021). But the outcome can also be viewed through the prism of constraint-based innovation with difficult work settings inspiring improvisation and problem-solving, especially within resource-limited healthcare environments. In these situations, employees have to become innovative by necessity, which has been indirectly supported by research focusing on experiential learning and adaptive practices among frontline health workers (Bos-Nehles & Veenendaal, 2019; Anser et al., 2020).

Conversely, training efficacy was a robust and dependable indicator of employee innovation ( $\beta = 0.565$ ,  $p < .001$ ), which further supports the key position of effectively planned and topical training programs in

boosting innovative work behavior. This assumption is well supported by previous studies that show that successful training enhances cognitive flexibility, technical competence, and problem-solving skills all of which are essential to innovation (Salas et al., 2019; Kim & Park, 2020; Radaelli et al., 2020). Also, training helps to gain knowledge and apply it in practice, and, therefore, to foster the creation and implementation of new ideas by employees in their organizations (Bos-Nehles & Veenendaal, 2019; Anser et al., 2020). The finding can be explained by the Human Capital Theory that investments in skills and knowledge of employees contribute to productivity and creativity and by the Social Exchange Theory that states that employees respond to organizational support with positive discretionary behaviors like innovation (Cropanzano et al., 2017; Karatepe et al., 2020). Simultaneously, the results also illuminate the fact that the availability of training is not the sole condition that defines its influence on innovation; instead, its efficacy defines its influence on innovation. It helps to argue that the poorly designed or inapplicable training programs do not lead to any significant results (Gegenfurtner & Ebner, 2019; Malik et al., 2021).

Moreover, the mediation analysis revealed that the relationship between barriers to T&D and employee innovation is mediated by the effectiveness of training partially (indirect effect  $\beta = 0.134$ ; CI [0.062, 0.221]) meaning that barriers have both direct and indirect impact on employee innovation via quality of training systems. This result contributes a lot to the theoretical knowledge because it establishes that organizational constraints do not act independently but are subjected to the filters of institutional processes like training effectiveness. It is in line with recent studies, which define training systems as important conduits, whereby organizational conditions are converted into innovation results (Sousa & Rocha, 2019; Dirani et al., 2020; Anser et al., 2020; Nguyen et al., 2021). Notably, the biased quality of the mediation implies that the negative connotations of barriers can be alleviated with the help of effective training, but not completely removed. This supports the claim that more organizational conditions, such as the support of leaders, resource distribution, and the culture of learning are still necessary to promote innovation (Malik et al., 2021; Nguyen et al., 2021).

These conclusions are also supported by the correlation and regression analyses, all the key variables were found to have positive and statistically significant relationships, and the regression model in general accounted a significant percentage of the variation in employee innovation ( $R^2 = 0.450$ ). The close linkage between training effectiveness and innovation highlights the significance of the continuous learning systems in the development of innovative capacity in healthcare institutions. This aligns with previous studies that have highlighted the importance of knowledge sharing, professional development, and organizational learning as a driver of innovation (Sousa & Rocha, 2019; Dirani et al., 2020). These results together imply that the presence of constraints does not necessarily prevent innovation in healthcare environments but the way organizations and workers react to and address them.

Combined with each other, the findings contribute to a more dynamic and context-specific comprehension of the interdependence between T&D and innovation. The study does not consider barriers as having only negative effects but shows that they can also serve as driving forces of innovation, given the right circumstances, especially when employees are facilitated by efficient training systems. The effectiveness of training can be viewed as a force that triggers the innovation and as one of the most important processes according to which the influence of organizational barriers is conditioned. This combined approach builds on the current literature to go beyond naive assumptions and emphasize the role of contextual and institutional aspects in the establishment of innovation outcomes. Additionally, the study fills a significant gap in the literature that was so far dominated by studies in developed economies given that it offers empirical evidence based on a developing healthcare setting (Otoo et al., 2018; Nguyen et al., 2021). It also adds to theory by confirming the mediating effect of training effectiveness, and by re-conceptualizing barriers as constrainers and possible facilitators of innovation.

Overall, the results indicate that although obstacles to training and development are still a major challenge, they do not have the same negative effect on the innovation of employees. Rather, innovation is a result of the organizational constraints and training systems efficacy, which point to the necessity of a balanced solution that would consider both the structural constraints and enhance the quality and relevance of training interventions.

## **VI. Policy Implications**

The implications of the findings of this research are significant in the determination of policies in healthcare systems in the developing context. First, the fact that barriers to T&D positively correlate with employee innovation implies that not all organizational constraints have adverse effects. Nevertheless, such constraints as a source of innovation are not sustainable and fair. However, policymakers ought to focus on ensuring that structural and institutional obstacles such as low levels of funding, poor access to training resources, and poor organizational support systems are eliminated, and at the same time, work to create an environment that promotes adaptive problem-solving. This is in line with the wider human resource developing policies that focus on sustaining professional learning as a source of service enhancement.

Moreover, the high impact of training effectiveness on innovation highlights the necessity of policies that go beyond the training provision to quality, relevance, and applicability. Regular training needs assessment, design of the curriculum based on the context and evaluation frameworks that measure the results of training based on performance and innovation should be mandated at the national and institutional level. This aligns with the current policy suggestions that emphasize the use of competency-based training and outcome-oriented human capital development strategies (Salas et al., 2019; Dirani et al., 2020).

Besides, the mediating effect of training effectiveness implies that training systems can serve as important institutional processes according to which organizational issues are handled. In this light, policymakers need to incorporate T&D into more comprehensive healthcare reform agendas, which would make sure that it aligns with workforce planning, leadership development, and organizational learning strategies. To ensure the best possible impact of training programs on innovation and service delivery, there will be a need to strengthen the governance structures, accountability mechanisms and resource allocation.

## **VII. Recommendations**

Given the results, a number of practice-oriented recommendations may be promoted for healthcare institutions and policy-makers. First, there is a need to improve the design and delivery of training programs by making them context-specific, problem-oriented and in accordance with the real job needs of employees. The training process must include practical, applied techniques that will allow the employee to implement freshly gained knowledge directly to the task at hand in the workplace and reinforce the results of innovation.

Secondly, organizations ought to develop strong evaluation and feedback systems which will constantly evaluate the effectiveness of training programs. This involves the use of key performance indicators which are concerned with innovation and service improvement, post-training evaluations, and performance monitoring. These mechanisms will be used to make sure that training investments provide a quantifiable resource, as well as ones that can make a difference to organizational objectives.

Thirdly, healthcare facilities need to strive to eliminate systemic obstacles to T&D, such as financial means, access to training materials, and managerial support. This would be realized by allocating more funds towards staff training, association with training institutions, and utilizing digital learning platforms to increase access.

Fourthly, leadership is a very important factor in determining the outcomes of training and, thus, organizations must foster supportive leadership and a learning culture. Managers are expected to promote active engagement in training programs, share knowledge, and promote an environment where innovative ideas are considered and realized.

Lastly, since the presence of a certain degree of constraint could be an effective stimulus to adaptive innovation, organizations must find a middle ground between employee-led innovation and formal structures, like innovation hubs, suggestion schemes, and continuous improvement programs. This makes sure that improvisational solutions are recorded, refined and scaled well.

## **VIII. Directions For Future Research**

Although this research contributes greatly, it also leaves a number of possibilities in the way of future research. First, the discovery, that obstacles to T&D may have a positive impact on innovation, is worth studying. Future research ought to examine in what circumstances constraints can be used to stimulate innovation, such as the impact of organizational culture, leadership style, and individual resilience. Case studies and in-depth interviews are qualitative methods that might offer more information about these dynamics.

Likewise, other mediating and moderating factors that could mediate the relationship between T&D and innovation should be studied in future research. Mechanisms involved might be better understood with the help of variables like the organizational learning culture, the engagement of employees, psychological empowerment, and the support by the leadership.

Furthermore, the research was carried out in a particular healthcare setting, which can be a limitation to generalization. The research results should be confirmed and generalized by future research through comparative studies in different industries and countries, especially in developed and developing settings.

Also, longitudinal research designs are suggested to determine the causal relationships and sustained impacts of training effectiveness on innovation. These designs would allow capturing the changes over time and giving more concrete evidence of the effect of T&D interventions.

Lastly, to enhance the strength and validity of findings, future studies might utilize objective measures of innovation and performance as opposed to using self-reported data only. Mixed-methods would also give a more comprehensive picture of the phenomena studied.

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