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Factors influencing the retention of medical specialists working in public Level 4 and Level 5 rural health facilities in Kenya.

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FACTORS INFLUENCING THE RETENTION OF MEDICAL SPECIALISTS WORKING IN PUBLIC LEVEL 4 AND LEVEL 5 RURAL HEALTH FACILITIES IN KENYA

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STUDENT'S DECLARATION

This dissertation is my original work and has not been submitted to any other institution for any purpose. Any use of external sources is duly acknowledged and cited in compliance with university guidelines.

Signed……. Date….19TH MAY, 2025……

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SUPERVISORS' APPROVAL

This research dissertation has been completed under my guidance, and is hereby submitted for credit.

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ABSTRACT

The unequal distribution of healthcare workers, particularly medical specialists, remains a significant global challenge, especially in underdeveloped and rural regions. These areas often experience acute shortages across nearly all cadres of healthcare workers, with medical specialists being among the scarcest. Their scarcity contributes to elevated patient morbidity and mortality rates in rural settings. This study aimed to determine the factors influencing the retention of medical specialists in rural Kenya among Level 4 and 5 hospitals, to mitigate turnover and enhance access to specialized care. A descriptive cross-sectional study was conducted among 323 randomly selected medical specialists working in rural health facilities. Regression analysis was used to analyze the association between retention and various factors including working conditions, financial incentives, career development, and professional responsibilities. Findings revealed that only 32.5% of respondents were willing to remain at their current facilities. Key positive predictors of retention included the presence of quality equipment and infrastructure satisfaction with salary and availability of career development opportunities. However, limited availability of essential drugs and supplies significantly reduced retention. The study concluded that improving working conditions, providing professional development, and ensuring adequate resources are critical to enhancing specialist retention in rural Kenya, thereby improving healthcare service delivery in underserved regions. The study recommends that rural health facilities should strengthen working conditions, ensure consistent medical supplies, upgrade equipment, and maintain supportive infrastructure, while also improving salary competitiveness and expanding funding for professional development.

Keywords: Medical specialists, Retention, Rural healthcare, Kenya, Healthcare workforce, Working conditions, Career development, Health equity.

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DEDICATION

I dedicate this work to my beloved parents, Mr. and Mrs. Mose. Your unwavering love, boundless support, and constant guidance have been the foundation of everything I am and all that I have achieved. Through every challenge and triumph, your strength has carried me, and your belief in me has been my greatest source of motivation. This journey would not have been possible without your enduring sacrifices and endless love. This dissertation is as much yours as it is mine.

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DEFINITION OF TERMS

Medical specialist	A *medical specialist* is a clinician who has completed accredited postgraduate medical training in a defined field and has been formally recognized by the Kenya Medical Practitioners and Dentists Council (KMPDC) or equivalent regulatory bodies for possessing advanced knowledge and skills to diagnose, treat, and manage complex medical conditions within that specialty (Kenya Medical Practitioners and Dentists Council, 2025; Okoroafor et al., 2022). Specialists undergo several additional years of structured clinical training beyond the basic medical degree, often leading to Master of Medicine (MMed) or Master of Dental Surgery qualifications, enabling them to deliver specialized clinical services.
Retention of Human Resource	*Retention of human resources* refers to the strategies, policies, and organizational conditions that encourage employees to remain in their positions over time, thereby reducing turnover and stabilizing the workforce (Fahim, 2019; Patro, 2022). In the health sector, retention focuses on creating an environment that supports continued service through adequate compensation, career development, supportive leadership, and conducive working conditions (De Vries et al., 2023; Russell et al., 2021).
Rural areas	*Rural areas* are regions characterized by low population density, limited infrastructure, reduced access to health services, and fewer economic and social amenities compared to urban centers (Muga & Muli, 2019; Kebede & Boulware, 2019). These areas typically face disparities in healthcare access and specialist distribution, often relying on smaller public facilities such as Level 4 and Level 5 hospitals.
Urban areas	*Urban areas* are settings marked by higher population density, advanced infrastructure, and increased concentration of economic, health, and social services, including major hospitals, specialized health facilities, and diverse employment opportunities (Muga & Muli, 2019; Ministry of Health, 2023). They generally include cities and large towns with well-developed health systems and enhanced resource allocation.

LIST OF ABBREVIATIONS

HCW	Health Care Workers
HRH	Human Resource of Health
WHO	World Health Organisation
UHC	Universal Health Coverage
KMPDC	Kenya Medical Practitioners and Dentist Council
IERC	Institutional Ethics and Review Committee
PI	Principal Investigator
NACOSTI	National Commision for Science, Technology and Innovation

CHAPTER 1: INTRODUCTION

1.1 Background

Employee retention is largely influenced by an organization's management practices and policies, which shape the work environment in which employees engage over the long term. Hines et al (2020) describes retention strategies as factors such as job security, rewards, and training, that impacts workers' decisions to leave or stay in an organization. Failure to retain key employees can be costly for any organization, and its within their mandate to focus on reducing this turnover, thereby lowering the costs of recruitment and training. A major concern among health policy makers is the migration of healthcare workers from rural areas to more affluent locations, which influences on the stability and resilience of the health systems due to the disproportionate distribution of the medical specialists (Girasek et al., 2010; Muli et al., 2019). This challenge carries serious consequences on the equity of access along with quality and quantity of these services (Goddard et al., 2010; Ochieng et al., 2021).

Attraction and retention of enough healthcare workers to offer sufficient services for residents of remote and rural areas has global importance. However, high-income nations experience challenges in staffing rural and remote areas, which are mostly seen by healthcare workers as less attractive areas to work. Therefore, there is a need for policymakers to be confident and select healthcare professional students according to their rural background to support distributed healthcare training based in remote and rural areas (Russell et al., 2021).

Universal retention aspects for healthcare professionals in a remote and rural area comprise positive rural exposure in early postgraduate years or training, rural background, and professional and personal support, even though financial incentives are less influential on staff retention and vary between high-middle- and low-income nations (Kumar & Clancy, 2020). Nurlinawati et al. (2023) found that the specialist doctor utilization initiative in Indonesia, succeeded in attracting specialist physicians to become participants when the individual considerations' context like demographic, geographic, and socioeconomic aspects are met and increased the retention of specialist physicians in the context of regional commitments like offering appropriate incentives, the provision of infrastructure for program participants and hospitals, and opportunities for career growth.

In China, the Targeted Admission Medical Education (TAME) initiative provides tuition-free education to nurture rural physicians, and despite the continuous professional development (CPD) being seen as a feasible retention approach, the turnover intention of the alumni physicians from the TAME initiative remains high for the recent past years. Therefore, retaining highly qualified rural doctors in China from TAME requires offering competitive salaries in line with their skills and offering adequate long-term career development opportunities in the rural and remote healthcare system (Wang et al., 2024). In Australia, the shortage of physicians in rural, remote, and regional communities was a longstanding health policy issue (Murray & Craig, 2023).

In Tanzania, Sirili et al. (2021) found that rejection or accommodations are the two main approaches in which local communities influenced the quest to retain health workers. Communities that accommodated incoming healthcare workers by offering them a good reception, assuming responsibility for addressing issues facing healthcare workers and hospitals, relating healthcare workers to local communities, and fostering practices that placed a high value on healthcare staff. According to Amalba et al. (2019) problem-based learning/community-based education and service (PBL/COBES) curriculum in Ghanaian medical schools' program was useful and might influence their selection of future practice location.

Locally, Dagane (2021) found that regular promotion, living and working environment, provision of essential supplies, and special financial package among Kenyan healthcare workers, significantly influenced the retention of healthcare workers in primary healthcare facilities in Garissa County. According to Okoroafor et al. (2022), investments in healthcare workers to guarantee universal access to skilled, qualified, and inspired health staff in pertinent in attaining the Sustainable Development Goals (SDGs) to enhance the quality of life of the rural population by investing in healthcare delivery and attaining universal healthcare coverage.

Spatial mismatch between doctors and patients constrains access to medical care and leads to differential health outcomes. Health Professional Shortage Area (HPSA) designations spot areas in which there were few primary care doctors to treat the local population and the federal and state programs were applied to incentivize a rise in primary care services for these designated areas and found that the counties experience a decline in overall mortality at 3% and a 6% decline in cancer mortality rate, and a 13% decrease in stroke mortality (Sauve-Syed, 2025). The shortage of family

doctors has contributed to challenges in discharging patients, prolonged wait lists, and a heavier and more sophisticated workload (Mason et al., 2024). Kaguthi et al. (2020) argued that healthcare workers strike in Kenya led to a decline in the number of patients attend to. In addition the healthcare workers' strike posed a significant threat to universal access to care. Lower levels of nurse staffing within the emergency units are related to delays in patients getting treatments and poor quality of care (Drennan et al., 2024).

Rural healthcare experiences a unique bundle of issues that run from infrastructure, resources, and career growth, which contribute to inequalities in health outcomes when compared with urban regions. The challenges include inadequate resources, underutilized services, and poor organization (Eriksen et al., 2024). Rural populations face challenges in accessing adequate and timely healthcare, and these inequalities manifest in the daily lives of patients struggling with the obstacles of geographical isolation, workforce shortages, and limited healthcare infrastructure, leading to worse health outcomes and increasing the difficulties of managing chronic conditions, preventing diseases, and promoting general well-being (Javed, 2025).

Healthcare delivery in rural areas presents a global issue, characterised by a largely dispersed patient population, challenges in the retention and recruitment of healthcare experts, and a physical distance from healthcare facilities. There is also uneven infrastructural development and a lack of economies of scale (Maclaren et al., 2024). Healthcare provision in remote and rural areas faces unique problems that substantially influence the access to quality care and effective medical services due to their geographical isolation, socio-economic constraints, and limited resources, leading to inequalities in health outcomes compared to urban regions (Wenang et al., 2021; Babawarun et al., 2024).

According to Ye et al. (2024), retention in rural hypertension care involved implementing multilevel combinations of interventions, including the effectiveness of these interventions, team-based care, education and training, consultation, and Short Message Service (SMS) reminders. Adams et al. (2021) found that the factors that influence the retention of mental health nurses include individual characteristics such as age, training, and skills, working within mental health services, and working environment, and retention strategies must be specific to each nursing specialty. Nurse Managers who are well-empowered, received constructive feedback, are satisfied

with their work, and find meaning in their responsibilities have a greater intention to stay (Penconek et al., 2024). Subramaniam et al. (2024) found that the most significant aspects to promote retention were supportive management, work-life balance, working environment, compensation and benefits, reward and recognition, career growth, health support; and training and development.

Gizaw et al. (2022) conducted a study to identify key practices from international experiences to improve access to primary healthcare (PHC) services in rural communities. They argued that to enhance access to PHC services, community-directed interventions or community programs, student-led healthcare services, school-based healthcare services, empanelment, mobile clinics or outreach services, family health program, telemedicine, community health funding schemes, working with non-profit sector and non-governmental healthcare organizations such as faith-based organizations, and working with traditional healers as major strategies to improve healthcare access in the underserved rural and remote areas. Serchen et al. (2025) observed that improving healthcare access in rural areas requires policymakers to invest in the social services, economies, and infrastructure of rural communities, particularly those programs that offer health services and coverage to them. The medical community and medical education institutions have a duty to equip doctors and doctors-in-training to care for rural communities, and offer opportunities for trainees to practice within rural environment.

In Kenya, health facilities are mainly classified into five levels: National Hospitals (level six), County Hospitals (level five), Sub-County Hospitals (level four), Health Centres (level three), and Dispensaries (level two). Depending on the level of the facility, there should be at least one Medical Officer, Clinical Officer, Nurse, Lab Technician, Nutritionist, Pharmacist, and Community Health Extension Worker. Rural and underdeveloped areas are characterized by small settlements, low populations, and are typically located outside urban centers. The majority of these areas are agricultural spaces with open areas and less traffic. Research has shown that increasing the training of more medical specialist has never been a determining factor in their retention within these rural settings (Alla-Eddini et al., 2001). Additionally, the desire to leave rural areas has been reported in several studies to exceed 70% (Glasser et al., 2010; Boracci et al., 2015, Doshmangir et al., 2020; Amiresmaili et al., 2014). This should be a substantial concern for any healthcare system, especially in the context where efforts have been directed towards addressing these issues

through incentives and policy reforms, yet retention still remains a challenge. This study, therefore explores the determinants of retention of these medical specialists in rural Kenya.

1.2 Problem Statement

Access to quality healthcare in rural Kenya continues to lag behind national targets, largely due to the persistent shortage and high turnover of medical specialists (Okoroafor et al., 2022; Government of Kenya, 2023). Despite ongoing national investments in Universal Health Coverage (UHC) and county-level health system strengthening, rural counties remain underserved, with specialist-to-population ratios well below WHO recommendations and significantly lower than those in urban regions (WHO, 2022; Ouma, 2025). Medical specialists are essential for diagnosing and managing complex conditions, improving treatment outcomes, and reducing preventable morbidity and mortality, especially in low-resource rural settings (Okoroafor et al., 2022). However, their retention in rural Level 4 and Level 5 facilities remains a systemic challenge, hindering equitable health service delivery and slowing progress toward Kenya's UHC agenda (Government of Kenya, 2023; Ouma, 2025).

Recent studies indicate that poor working conditions, including inadequate infrastructure, lack of essential equipment, limited diagnostic capacity, and unsupportive facility environments, significantly shape health workers' willingness to remain in rural settings (Mutai et al., 2021; Ojakaa et al., 2020). However, the specific ways in which working conditions influence specialists as opposed to general health workers, remain underexplored in Kenya. This represents an important contextual knowledge gap. Similarly, financial considerations such as salary disparities, limited rural hardship allowances, delayed payments, and insufficient non-monetary incentives have continued to influence health worker retention into the 2020s (WHO, 2023). While financial incentives are widely acknowledged as important, evidence linking specific financial factors to specialist retention in rural Kenyan facilities is limited and inconsistent. This highlights a critical empirical gap that the current study seeks to address.

In addition, career growth opportunities and professional development pathways remain unevenly distributed between rural and urban facilities. Leading research shows that the lack of mentorship, CPD opportunities, training exposure, and clear career progression structures contributes to attrition among healthcare professionals (Mbindyo et al., 2022). However very few studies have

examined how these factors influence retention specifically among medical specialists whose professional requirements differ from those of general practitioners. This represents a clear gap in both literature and practice. Moreover, responsibility-related factors, including role clarity, fairness in job allocation, workload distribution, and adequate support staff, continue to shape job satisfaction and burnout. Overstretching specialists with non-core duties or excessive workloads has been associated with increased turnover intention (Amiresmaili et al., 2014; updated evidence: Muthoni et al., 2021). However, there is little context-specific evidence assessing how these responsibility-related dynamics influence retention of specialists in rural Kenya, leaving another unaddressed research gap.

Although existing literature recognizes that multiple factors affect health worker retention, there remains limited, up-to-date, and specialist-specific evidence for rural Kenya. The lack of understanding of the proportion of specialists willing to remain, working conditions, financial incentives, and career growth and responsibility-related factors limits policymaking at county and national levels. Consequently, retention interventions remain generic, poorly targeted, and often ineffective. This study therefore sought to address these gaps by determining the proportion of specialists willing to stay in their current rural postings and examining how working conditions, financial incentives, career growth, professional development, and responsibility-related factors influence the retention of medical specialists in Level 4 and 5 rural health facilities in Kenya.

1.3 Study Objectives

1.3.1 Broad Objective

The broad objective of this study was to determine the factors influencing the retention of medical specialists working in level 4 and 5 health facilities in rural Kenya.

1.3.2 Specific Objectives

i. To determine the proportion of medical specialists supportive of retention at their current workstations in rural Kenya.
ii. To determine the working conditions influencing the retention of medical specialists in rural Kenya.
iii. To determine the financial factors influencing the retention of medical specialists in rural Kenya.

iv. To examine how job responsibility factors, career growth opportunities, and professional development opportunities influence the retention of medical specialists in rural Kenya.

1.4 Research Questions

i. What is the proportion of medical specialists supportive of retention at their current workstation in rural Kenya?
ii. What are the working condition associated with the retention of medical specialists in rural Kenya?
iii. What are the financial factors associated with the retention of medical specialists in rural Kenya?
iv. What is the influence of job responsibility factors, career growth opportunities, and professional development opportunities on the retention of medical specialists in rural Kenya?

1.5 Scope of the Study

This study focused on medical specialists working in selected Level 4 and Level 5 health facilities located in rural counties of Kenya. The study was limited to a purposively chosen set of rural counties that met the criteria of having functional Level 4 and 5 facilities with an established specialist workforce. Within these counties, specific facilities were selected to ensure representation of diverse rural contexts. The study examined four categories of factors influencing specialist retention, working conditions, financial incentives, career growth opportunities, and job responsibility factors. It targeted medical specialists employed in the selected facilities. A descriptive cross-sectional research design was used, and data were collected through structured questionnaires administered to randomly sampled specialists within the selected counties. The scope was further limited to examining retention-related factors at the facility level, without extending to national-level human resource policy analysis. Findings are therefore applicable to the participating rural counties and facilities, and not generalizable to all rural areas in Kenya. The study's insights are intended to inform county governments, healthcare managers, and policymakers on improving specialist retention in rural health settings.

1.6 Significance of the Study

Retaining a stable specialist workforce is essential for improving population health, particularly in under-resourced rural areas of Kenya where access to specialized care remains limited. Understanding the factors that influence the retention of medical specialists provides health managers and policymakers with the evidence needed to design targeted interventions and programs that enhance specialist satisfaction, productivity, and overall quality of care.

Strengthening retention helps to reduce frequent turnover, which is often associated with high recruitment, induction, and training costs. A stable workforce also ensures continuity of care, minimizes service disruptions, and contributes to reductions in preventable morbidity and mortality. Sustained availability of specialists improves access to timely diagnosis, management of chronic illnesses, emergency care, maternal health services, and other complex medical conditions, thereby narrowing the health disparities that typically exist between rural and urban regions.

Furthermore, the study contributes to evidence-based decision-making by offering empirical insights into the specific working conditions, financial incentives, professional development opportunities, and job responsibility factors that influence specialist retention in rural Kenya. These findings also supports national and county governments, facility managers, training institutions, and development partners in developing retention policies and strategies that are responsive to local realities. Academically, the study enriches the literature on rural health workforce retention in Kenya and provides a foundation for future research on specialized human resources for health.

1.7 Chapter Summary

The shortage of medical specialists in rural Kenya presents a significant barrier to equitable healthcare access. Specialists play a crucial role in providing targeted interventions, managing chronic diseases, and addressing complex health issues such as maternal complications and infectious diseases. Rural populations face higher incidences of chronic illnesses and complex health conditions that require specialized care, yet they often lack consistent access to these essential services. Retaining medical specialists in rural Kenya can lead to improved healthcare access and enhanced health outcomes for underserved populations.

Understanding and addressing factors to retention may be critical in reducing recruitment challenges and improving the retention of employees. Hence, there needs to be a deliberate examination of these factors in the context of medical specialist in rural areas, so as to determine the significant ones that can be informative for management to implement programs and development strategies.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Retention of the healthcare workforce is crucial for maintaining quality patient care and operational efficiency in healthcare systems. Despite progress in expanding the workforce, several challenges persist, particularly in terms of distribution, quality, and retention. This chapter presents the theoretical foundation and an exploration of existing literature on the retention of healthcare workers, and summarizes the results of the review founded on the specific objectives of the study.

2.2 Theoretical Review

2.2.1 Herzberg's Two-Factor Theory

Also known as the Motivation-hygiene theory, Herzberg's Two-Factor Theory (1959) remains one of the most influential approaches in understanding employee motivation and job satisfaction across diverse organizational contexts (Hasan & Mishra, 2025). The theory posits that job satisfaction and dissatisfaction arise from two distinct sets of factors; hygiene factors, which prevent dissatisfaction, and motivators, which actively enhance satisfaction and drive performance (Mardanov, 2021; Mitsakis & Galanakis, 2022). The central assumption of the theory is that eliminating dissatisfaction does not generate satisfaction; instead, satisfaction emerges when organizations invest in intrinsic motivators such as recognition, meaningful work, and advancement opportunities (Michael, 2023). This assumption challenges earlier behaviorist models that emphasized extrinsic control, instead proposing that true motivation stems from higher-order psychological needs associated with growth (Kehui et al., 2025). The theory further assumes that administrators should identify and take into account both sets of traits in order to enhance their attitude toward work and productivity, rather than assuming that a rise in satisfaction will result in a fall in dissatisfaction (Abdulkhamidova, 2021).

Herzberg asserts that hygiene factors, or dissatisfiers, are external to the job and function and can only reduce employee dissatisfaction rather than inspire them. These elements include pay, relationships with coworkers, corporate policies, oversight, and working environment (Michael, 2023; Bevins, 2018). According to the theory, employees are not motivated by hygienic factors while they are present, but they become dissatisfied when they are absent. Conversely, motivators, also known as satisfiers, are intrinsic factors and include the work itself, accountability, success, acknowledgment, and promotion (Michael, 2023). This dual structure assumes that workers

respond differently to intrinsic and extrinsic job factors, and that improving hygiene conditions alone cannot create committed or high-performing employees unless motivators are also strengthened.

The key theorist associated with the development of this framework is Frederick Herzberg, who first articulated the theory following his study of engineers and accountants in the United States in the 1950s (Peramatzis & Galanakis, 2022). Several other scholars have extended or tested the model across sectors and generations. Bevins (2018) examined generational differences in responses to motivators and hygiene factors, showing that Herzberg's premises hold across age groups but with varying intensity. Yousaf (2020) provided empirical validation of Herzberg's proposition within Pakistan's telecommunications industry, demonstrating that motivators such as achievement and advancement significantly predict satisfaction, while hygiene factors like pay and working environment reduce dissatisfaction. Similarly, Ozsoy (2019) conducted an empirical analysis that confirmed the bidimensional nature of satisfaction factors. Further contributions come from studies in healthcare settings, where Rai et al. (2021) and Suhaimi et al. (2023) applied the theory to understand nurses' motivation, strengthening the theory's cross-cultural and sectoral utility. More recent scholarship, including Thant (2023), applied the theory to Myanmar's government workforce, again reinforcing the dual-factor structure. Abdulkhamidova (2021) and Peramatzis and Galanakis (2022) further provided contemporary scholarly discussions and clarifications of the motivational components of the theory.

Several theoretical principles from Herzberg's theory hold direct relevance for studies on employee satisfaction and retention. The first principle is the distinction between motivators such as achievement, recognition, professional growth, responsibility, and advancement and hygiene factors, including salary, supervision, organizational policy, working conditions, and job security (Bevins, 2018; Michael, 2023). Another principle emphasizes the importance of job enrichment, arguing that employees require meaningful work and opportunities for self-actualization to remain engaged (Peramatzis & Galanakis, 2022). Additionally, Herzberg's theory underscores that improving hygiene factors alone cannot motivate employees in the long term but serves only to prevent dissatisfaction, necessitating complementary strategies that strengthen intrinsic aspects of work (Suhaimi et al., 2023; Michael, 2023). These principles form the conceptual basis for analyzing factors influencing employee motivation within complex organizational structures.

Despite its influence, Herzberg's theory has elicited several critiques and controversies. Paul F. Wernimont (1972) was one of the main critics of Herzberg's theory, arguing that although intrinsic variables are only feelings, extrinsic elements are external circumstances. According to Wernimont, intrinsic factors are merely subjective emotions that cannot be compared to external elements, which are variables (Rai et al., 2021). Further, the theory had methodological limitations as the results of a theory can only be inferred using the single method from which it was first derived (Bevins, 2018; House & Widgor, 1967; Freanch et al., 1973). Therefore, unless they do the study under particular conditions, other researchers investigating this theory cannot obtain data and results that support the theory, which is not ideal when trying to confirm such a well-known and widely used theory of motivation (French et al. 1973). Other researchers argue that certain factors can function both as motivators and hygiene factors depending on context. For example, salary, which Herzberg categorized as a hygiene factor, is viewed by some contemporary employees as a motivator when tied to achievement or performance outcomes (Yousaf, 2020; Peramatzis & Galanakis, 2022). Similarly, Onen and Maicibi (2004) disagree with Maidani (1991). They contend that one of the hygiene factors was initially a motivator in the study and that this misclassification results from variations in the sample and employee organizational culture. Further, Gimpl's (2024) analysis challenges Herzberg's original dual-factor approach by indicating that several traditional hygiene factors, such work-life balance and job conditions, may now function as motivators.

Several gaps in the literature remain evident. While numerous studies apply the theory to general employee satisfaction, fewer explore its relevance in highly skilled or specialist professions where motivation structures may differ significantly (Alrawahi et al., 2020). Another gap concerns the integration of Herzberg's theory with contemporary leadership and organizational behavior frameworks, such as psychological safety and adaptive leadership, which may influence how employees interpret workplace conditions (Michael, 2023). Systematic reviews indicate that although the theory continues to be widely cited, empirical studies often fail to test both hygiene and motivator dimensions simultaneously, thereby limiting the capacity to evaluate the theory's holistic predictive power (Kehui et al., 2025). Additionally, gaps persist in studies from developing-country contexts, where economic constraints and resource limitations may reshape the influence of hygiene and motivator factors on job satisfaction and retention (Zhang & Gandham, 2025).

This study applies Herzberg's Two-Factor Theory to examine how both hygiene factors and motivators influence medical specialists' retention. Consistent with Herzberg's framework, the study posits that addressing hygiene factors such as working conditions, infrastructure, availability of essential supplies, and fair compensation will mitigate dissatisfaction among specialists, creating a neutral baseline conducive to retention. Simultaneously, enhancing motivators, including opportunities for professional growth, career development, recognition, increased responsibilities, and autonomy, is expected to actively foster satisfaction and long-term commitment. By integrating both dimensions, the study adopts a comprehensive approach that aligns with Herzberg's assertion that sustainable motivation and retention require attention to both extrinsic and intrinsic job elements. Furthermore, this research intends to address gaps in the literature by applying Herzberg's theory to highly skilled healthcare professionals within resource-constrained contexts, that is rural healthcare settings, providing empirical evidence on the interaction between hygiene and motivator factors in influencing retention. Ultimately, the findings will inform targeted interventions that simultaneously prevent dissatisfaction and enhance motivation, ensuring that strategies for specialist retention are both theoretically grounded and practically actionable.

2.3 Empirical Review

An empirical review examines existing research and evidence to provide an in-depth insight of a particular subject. In relation to this study, the empirical review analyzed previous literature on the factors influencing the retention of medical specialists in rural Kenya. Retaining healthcare professionals in rural areas remains a persistent challenge, with factors such as inadequate infrastructure, limited career growth opportunities, financial constraints, and work-life balance concerns affecting their willingness to remain in these regions.

This review explored empirical studies that have assessed these challenges in Kenya and comparable settings, highlighting trends, gaps, and potential solutions. By examining research findings on healthcare workforce distribution, incentive structures, and policy interventions, this study aimed to provide insights into effective strategies for improving specialist retention in rural healthcare facilities. Understanding these factors is essential for designing sustainable healthcare policies that enhance access to specialized medical services in underserved communities.

2.3.1 Working Condition Factors

Working conditions falls under Herzberg hygiene factors, and according to Dolea et al., (2010), these factors may affect medical specialists recruitment and retention in rural areas. Studies have affirmed that lack of essential drugs and unavailability of surgical equipment can discourage medical specialists to work in rural areas (Ravaghi et al., 2015). Strong associations have been reported between the specialization of medical specialists and their choice of work environment. Specialists working in hospitals settings with state of art technological equipment cutting-edge were hesitant to be employed in rural areas where such services were limited (Mollahaliloğlu et al., 2015). Leepile et al. (2022) reaffirmed this in their systematic review that demonstrated that better access to health infrastructure was key for retention. Comparable findings have been made locally by Mungai et al (2021) who reported that the lack of modern medical equipment in rural health facilities was a key factor contributing to specialists' decisions to leave these areas.

There have been diverse results on the relationship between doctors having a rural background and their intention to stay and work within rural facilities. Studies that reported a relationship, found that a majority of those that had schooled in rural areas, and those who conducted a portion of their training in rural areas, such as internship had a higher likelihood of of staying (Carson et. al., 2015).

2.3.2 Financial Factors

Herzberg et al. (1959) places financial factors under hygiene factors, and as Wallin et al. (2022) state that when an organization lacks financial resources, employee behavior is affected, leading to a higher risk of reduced motivation and a deterioration in quality of patient care.

A major incentive for medical specialists is their source of revenue, and those that have been employed in rural areas have made complaints in regards to their low income and reimbursements in comparison to their colleagues in urban settings (Amiresmaili et al., 2014).

Financial incentives and rewards could play a crucial role in retaining medical specialists in rural areas (Goel et al., 2016), as these factors influence their preference for urban areas. Vujicic et al. (2011) reported findings from Vietnam, emphasizing that paying financial bonuses should be taken seriously by the government. These bonuses could be implemented either as a separate allowance

or through a revision of the current remuneration structure to provide greater rewards for those employed in rural areas.

Comparable sentiments are shared by Fang et al. (2014) in their study in China, where they recommended that the government increase the income of rural doctors and offer additional benefits, such as insurance and pension schemes. Furthermore, studies have indicated that medical specialists in rural areas often have fewer opportunities to work in private facilities (Russell et al., 2012).

In rural Australia, Russell et al. (2012) reported that management policies regarding remuneration, availability of suitable housing, and paid locum services would facilitate retention. Verma et al. (2016) highlighted that scholarships provided throughout medical education have been used as a strategy for retaining medical specialists. Reimbursement of tuition fees and assistance with relocation have also been suggested as effective means of attracting and retaining specialists (Shankar, 2011).

In South Africa, Toit et al. (2021), Mshana et al. (2023) in Tanzania, and Mekonnen et al. (2023) in Ethiopia reported that higher bonuses and salaries were crucial for retention. Comparable findings were highlighted in a systematic review by Leepile et al. (2022), which demonstrated remuneration as a critical factor for retention. Locally, Omolo et al. (2021) reported that salary disparities between the public and private sectors were critical for retention. Additionally, Kariuki et al. (2023) noted that medical specialists in rural Kenya are often poorly compensated compared to their counterparts in urban centers, making it difficult to retain them in rural postings.

2.3.3 Career Growth and Professional Factors

Under the Herzberg's two factor model, the career growth and professional factors have been considered under motivation factors, and they provide employees opportunity for growth and career advancement.

Employers can reduce turnover costs and increase employee retention by providing various training and professional development opportunities, which boost employees' job performance by improving their skills, knowledge, and behavior. Medicine, as a science, requires continuous updates based on the latest validated information and knowledge. Consequently, offering

educational and networking opportunities, as well as continuous skill improvement, has been noted to enhance the retention of medical specialists in rural settings and influence their choice of workplace (Guilbert, 2006; Mutai et al., 2021).

In Iran, the provision of education was one of the main strategies developed to increase physician retention (Amiresmaili et al., 2014). Additionally, Chauhan et al. (2010) highlighted that professional development, along with educational opportunities for the specialists' children, could influence retention. To reduce turnover intentions, Kumar et al. (2021) recommended that management implement training programs and development strategies aimed at enhancing professional growth.

A study in Nepal by Butterworth et al. (2008) found that career development, with a clear path for continued professional growth, is a key issue that the government needs to address. Similarly, Joarder et al. (2018) in Bangladesh emphasized that career tracks should be well-defined, distinct, and upheld. In Ghana, Snow et al. (2011) highlighted the importance of career advancement incentives, such as guaranteed promotions, ensure stable appointment terms with clearly defined endpoints and access to mentors through rural rotations of specialists or online educational centers. These measures were considered essential for addressing recruitment challenges and enhancing the retention of health professionals in rural areas.

Additionally, Toit et al. (2021) in South Africa, Omolo et al. (2021) in Kenya, and Mshana et al. (2023) in Tanzania stated that career and professional development opportunities are highly effective in reducing turnover and are crucial for retention in rural areas.

2.3.4 Responsibility Factors

Responsibility factors fall under motivation factors within the Herzberg's two factor model, and it majorly focuses on delineation of responsibilities, of which according to the model it correlates well with performance and job satisfaction. Responsibility can also be extended to include the skills of the doctor been mismatched with the available hospital facilities as reported by Butterworth et al. (2008).

Amiresmaili et al. (2014) found that extended working responsibilities and long working hours were regarded as some of the most significant reasons for past resignations and intentions to leave

in the future. Similarly, Chauhan et al. (2010) and Mollahaliloğlu et al. (2015) observed that heavy workloads and multiple responsibilities negatively influenced the willingness of doctors to stay in their positions. These workloads and responsibilities often increase when financial resources are scarce, and operating under such conditions can potentially raise employees' intent to leave (Wallin et al., 2022).

Russell et al. (2012) and Patrick (2018) highlighted in their studies that addressing workload-related issues, such as weekly total hours worked and the availability of on-call hours, was associated with longer retention. Pathman et al. (2004) reported that retention was influenced by modifiable characteristics of the work environment, such as having on-call duties two or fewer times per week and offering leadership opportunities, among other factors. Interestingly, their study also found that doctors who owned their practices tended to stay longer. In rural Kenya, the heavy workload and lack of support staff significantly contribute to burnout and job dissatisfaction (Kamau et al., 2022).

2.4 Conceptual Framework

The conceptual framework illustrates the relationship between the variables used in the study. The independent variables include working condition factors, financial factors, career and professional development factors, and responsibility factors, while the dependent variable is the retention of medical specialists. The framework is inspired by Herzberg's Two-Factor Theory and highlights the relationship between hygiene factors and motivators, demonstrating how they influence the retention of medical specialists in rural Kenya.

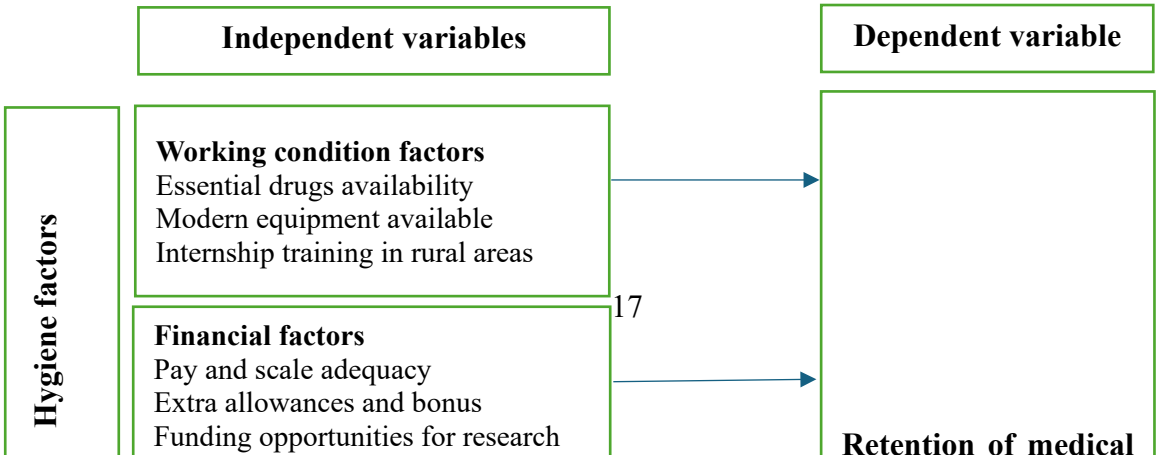

Figure 1: Factors influencing retention of medical specialists in rural Kenya

Based on Herzberg's Two-Factor Theory, hygiene factors are foundational; they address work conditions, remuneration, and workloads. Addressing these factors may reduce dissatisfaction, which often leads to frustration, burnout, and eventual employee turnover. Conversley, motivators are intrinsic factors that focus on personal fulfillment, career development, and professional growth, all of which make the employee feel valued and are more likely to lead to retention. Ultimately, the retention of medical specialists depends on how the hygiene factors are addressed and how the motivators are strengthened.

2.4.1 Working Conditions

Working conditions refer to a convex set of circumstances, factors, and other components that influence a worker's productivity, health, well-being and and loyalty to the employer. (Sukalova, 2021). In this study, working conditions sub-constructs include; essential drugs availability, modern equipment availability, and internship training in rural areas. Working conditions deeply shape health workers' ability to deliver care and their job satisfaction. The availability of essential drugs ensures that practitioners can treat patients effectively. Essential medications are those that meet the population's top medical demands and are chosen based on cost-effectiveness, clinical efficacy and safety evidence, disease prevalence, and public health importance (Mitiku et al., 2022). Essential medications should always be accessible within the framework of operational health systems in sufficient quantities, in suitable dosage forms, with guaranteed quality, and at a cost that both the individual and the community can pay (WHO, 2024). Similarly, the availability of modern equipment such as including diagnostic tools, laboratory facilities, and well-maintained buildings is crucial. A cross-sectional study in Uganda found that equipment availability was significantly associated with greater retention of health workers in remote health centres (Twineamatsiko et al., 2023). Lastly, internship training in rural areas is an important component. Evidence from retention-intervention reviews shows that longer durations of rural training during pre-service or postgraduate education are correlated with higher likelihood that health workers will stay in rural service (Russell et al., 2021).

2.4.2 Financial Factors

Financial factors are the monetary and material economic supports that influence employees' decisions to join, remain in, or leave a job. In health and other public-service sectors these factors operate both as direct compensation (salary) and as compensating differentials (allowances, benefits, supports) that offset hardships, opportunity costs, or career needs (Russell et al., 2021). In this study, financial factors sub-constructs include; pay and scale adequacy, extra allowances and bonus, funding opportunities for research, housing facilities, and scholarship and reimbursements. Pay and scale adequacy refers to a compensation system that ensures an employee's base salary is sufficient to meet their needs and is structured within a formal grading or scale system that facilitates consistent progression and fair pay across different job categories (cadres). This system balances internal equity with external market competitiveness (Ministry of Health, 2023).

Funding opportunities for research also play a role in employee retention. For healthcare professionals, especially in academic or tertiary settings, the ability to access grants or institutional research funds offers both intellectual stimulation and career continuity, thereby reducing turnover. While less studied, some policy-level reviews emphasize integrating research funding into retention packages (De Vries et al., 2023). Housing facilities are one of the most crucial aspects of life, which offers warmth, security, and a place to sleep (Henilane, 2016). Good accommodation in or near the workplace reduces daily stress, commuting cost, and safety concerns particularly in rural postings. Research shows that lack of housing is a deterrent to retention, while secure, decent accommodation supports it (Okoroafor et al., 2021). Lastly, scholarship and reimbursements provide long-term financial and professional rewards (Popa, 2024). Workers who receive educational support often feel a sense of reciprocity and commitment, increasing their likelihood of staying. This is supported by studies showing that further training on scholarship is significantly associated with retention (Twineamatsiko et al., 2023).

2.4.3 Career Growth and Professional Development

Career growth occurs when employees advance through the ranks as a direct result of their efforts to improve performance and pick up new abilities (Asamaowei et al., 2023). Career growth also includes an organization's efforts to reward employees for their efforts, both financially and otherwise (Knezović, & Greda, 2021). In order to foster growth and progress, professional development is a long-term process that involves frequent opportunities and experiences that are methodically prepared through both formal and informal experiences such as workshops and reading professional publications respectively (UNESCO, n.d). in this study, career growth and professional development sub-constructs include; continuous educational opportunities, networking opportunities, clear career path, and mentorship. Continuous educational opportunities also referred to as continued professional development (CPD) is the process by which healthcare professionals continue to learn and grow throughout their careers, starting with their initial qualifying schooling and continuing throughout their careers whether formal and informal, in order to maintain their competence to practice and advance their professional competency and knowledge (Mlambo et al., 2021). Further, networking opportunities are events that gives one the chance to network with other business professionals in order to build relationships, get advice, and pick up new skills in seminars, conferences, industry-specific speaking engagements, and inter-facility collaborations (Indeed Editorial Team, 2025).

In addition, a career path is an employment track with a progression of attained job positions within a professional sector or organization based on earned education, experience, accomplishment, and responsibility. According to Matulčíková and Breveníková (2020) career paths are different categories namely; linear/ascending, spiral, professional, variable, independent, multiple, discontinuous, and descending career paths. Lastly, mentorship is the process by which a more experienced or knowledgeable individual helps to assist a less experienced or knowledgeable individual (Peretomode & Ikoya, 2019). Through this long-term relationship, the mentor guides a mentee and creates a suitable atmosphere for development and transition. Such a continuous procedure is especially crucial for the mentee to gain confidence in their professional activity. This connection should ideally be active and cooperative, with an emphasis on the mentee's professional and personal growth. Depending on the situation, mentoring can be implemented and based on a range of goals or theoretical approaches with varying durations and intensities (Koirala et al., 2024).

2.4.4 Responsibility Factors

Responsibility factors relate to the scope, burden, and alignment of tasks assigned to employees. In this study, they include extension of work responsibility, skills mismatch, support staff availability, working hours, and workload. Also referred to as job enlargement, extension of work responsibility is the process of giving workers more identical tasks to complete, which ultimately results in an increase in the number of responsibilities they carry out (Owhorji, 2023). Job enlargement entails shifting duties beyond simple subdivision, it increases the scope of work, offers variation, and reintroduces abilities (Tumi, Hasan, & Khalid, 2021; Eyo et al.,2025) . The term skills mismatch refers to a mismatch between an employee's or job candidate's skill set and the requirements of the position through the underutilization of a person's abilities in the task they carry out (Brun-Schammé, 2021). Skill mismatch can be used to characterize field of study (horizontal) mismatch, skill obsolescence, skill gaps, skill shortages typically measured in terms of unfilled and difficult-to-fill vacancies, and vertical mismatch typically measured in terms of over-education, under-education, over-skilling, and under-skilling (McGuinness et al., 2027).Three criteria are used to identify different types of mismatches: quality of mismatch (surplus vs. shortage), reporting party (employer vs. employee), and kind of skills (cognitive vs. technical) (Maltseva, 2019). Working hours and workload are closely linked. Long shifts, night duties, and unpredictable hours contribute to fatigue and burnout. Recent studies show that heavy

workloads and unsustainable hours significantly worsen job outcomes, undermining retention (Ditlopo et al., 2024).

2.5 Research Study Gap

Despite the recognized importance of medical specialists in rural healthcare, several knowledge gaps persist. Existing research primarily focuses on general healthcare worker retention, with limited studies addressing the specific challenges faced by medical specialists in rural Kenya (Rajabi et al., 2013; Kebede et al., 2019). The impact of poor working conditions, such as inadequate infrastructure and resources, on retention remains underexplored (Mollahaliloğlu et al., 2015). Financial incentives are known to influence retention, but there is insufficient research on compensation equity and benefits for rural medical specialists (Goel et al., 2016; Vujicic et al., 2011). Additionally, the role of professional development, career growth opportunities, and networking in retention has not been adequately examined (Guilbert, 2006; Mutai et al., 2021). Heavy workloads, role ambiguity, and lack of support staff contribute to burnout, yet their direct impact on retention remains unclear (Amiresmaili et al., 2014). Moreover, while various policies and incentive programs have been introduced to improve retention, their effectiveness lacks empirical validation (Alla-Eddini et al., 2001; Hines et al., 2020). Lastly, inequities in healthcare access due to the disproportionate distribution of medical specialists persist, with little research exploring how systemic inefficiencies exacerbate this issue (Girasek et al., 2010; Ochieng et al., 2021). Addressing these gaps is crucial for developing targeted, evidence-based interventions to enhance retention and ensure equitable healthcare access in rural Kenya.

Table 1: Summary on Study Research Gaps

Study gap	Description	Citation
Limited Context-Specific Research on Retention Factors	Most studies focus on general healthcare worker retention but lack specific insights into medical specialists in rural Kenya. There is a need to determine whether global retention factors apply to Kenya's rural healthcare system or if unique challenges exist.	Rajabi et al. (2013); Kebede et al. (2019)

Unclear Influence of Working Conditions on Retention	Poor working conditions contribute to attrition, but specific factors such as infrastructure, availability of medical equipment, and hospital management practices affecting medical specialists' retention remain underexplored.	Mollahaliloğlu et al. (2015)
Financial and Compensation-Related Gaps	Financial incentives influence retention, but there is limited research on equity in compensation, benefits, and allowances for medical specialists in rural Kenya. The extent to which these factors impact long-term commitment is unclear.	Goel et al. (2016); Vujicic et al. (2011)
Lack of Focus on Professional Development and Career Growth	While financial incentives have been explored, the effect of training opportunities, networking, and career advancement pathways on retention remains under-researched. Limited career growth opportunities may contribute to specialists leaving rural areas.	Guilbert (2006); Mutai et al. (2021)
Impact of Workload and Role Clarity on Retention	Excessive workloads, lack of support staff, and role ambiguity contribute to burnout, but their direct impact on medical specialists' retention in rural Kenya requires further study.	Alla-Eddini et al. (2001); Hines et al. (2020)
Limited Understanding of the Effectiveness of Existing Retention Strategies	Policies and incentive programs have been implemented to improve retention, but their effectiveness remains unclear. Empirical evidence on whether financial and non-financial incentives work is lacking.	Chiang and Birtch (2012

Equity and Accessibility in Rural Healthcare Systems	The uneven distribution of medical specialists continues to affect healthcare equity. However, little research has examined how systemic inefficiencies (e.g., resource allocation, facility classification) contribute to the retention problem.	Girasek et al. (2010); Ochieng et al. (2021)

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents a summary of the research methodology that guides solving the research problem. It specifically explores the research philosophy, study design, target population, the sampling procedures, the sample size and data collection methods, data analysis and ethical considerations and finally the quality assurance measures to ensure reliability and validity is explained.

3.2 Study Philosophy

The study philosophy guides the approach to knowledge generation and shapes how data are collected, analyzed, and interpreted (Bajpai, 2011). This study adopted a positivist philosophy, which is grounded in the belief that reality is objective, external, and measurable. Positivism assumes that social phenomena, including factors influencing retention, can be studied using the same scientific principles applied in natural sciences, where truths are discovered through systematic observation and empirical measurement (Collins, 2010). This study adopted a positivist research philosophy because it aligns with the objective of examining measurable, observable factors influencing the retention of medical specialists in rural Kenya. Positivism assumes that reality is external, stable, and can be quantified through systematic and empirical investigation (Karupiah, 2022). Under this paradigm, constructs such as working conditions, financial incentives, job responsibilities, and career growth opportunities were treated as objective variables that exist independently of the researcher. The use of structured questionnaires and statistical procedures, including chi-square tests, cross-tabulations, odds ratios, and logistic regression, reflects positivism's emphasis on objectivity, causality, and generalizability (Bergmann, 2023; Mbanaso, Abrahams, & Okafor, 2023). The cross-sectional, descriptive design further operationalized this worldview by enabling standardized, replicable, and time-bound measurement of retention factors across a large sample. Adopting positivism therefore provided a coherent foundation for generating reliable evidence to explain and predict the determinants of specialist retention in rural health facilities.

3.3 Research Design

Kothari (2004) describes research design as a framework that guides the smooth execution of various research activities, ensuring efficiency in generating results while minimizing the use of

effort, time, and resources. The study employed a cross-sectional, descriptive design. A crossectional design is suitable as it describes the characteristics of a population or phenomenon at a specific time. In the context of this study, a "snapshot" of the proportion of individuals in the population that are willing to retain their position at work at one point in time. It is more precise and accurate due to its structured and methodical approach to describing events (Babbie, 2010). Additionally, it is descriptive in nature, as the outcomes of the study objectives are analyzed to describe the characteristics, frequencies, or distributions of the variables. Moreover, this choice of research design aligns with the positivist philosophy because it emphasizes the use of objective, measurable data, scientific methods, and an empirical approach to understanding phenomena. It is further congruent with the positivist belief that reality can be understood through observation, measurement, and statistical analysis.

3.4 Population and Sampling

3.4.1 Study Population

The study population refers to the entire group of individuals who possess the characteristics relevant to a research problem and from whom the sample is ultimately drawn (Hossan, Dato'Mansor, & Jaharuddin, 2023; Willie, 2024). In this study, the population comprised medical specialists registered and recognized by the Kenya Medical Practitioners and Dentists Council (KMPDC). These individuals formed the broader universe of interest because they represent the cadre of highly trained practitioners responsible for delivering specialized healthcare services in Kenya. Clear articulation of the population is essential for ensuring transparency, accuracy, and relevance in sampling procedures, as emphasized by Casteel and Bridier (2021). A medical specialist possess advanced competency and are authorized to diagnose, manage, and treat complex medical and surgical conditions within their discipline. For the purposes of this study, the population therefore consisted of all KMPDC-recognized medical specialists currently practicing in Kenya, estimated at 4,908 specialists according to the KMPDC database (Kenya Medical Practitioners and Dentists Council, 2025). The study focused on those specialists working specifically in Level 4 and Level 5 health facilities in selected rural counties, as these facilities provide the context within which retention challenges are most prominent. This group formed the accessible population, from which the study's sample was drawn.

3.4.2 Target Population

The target population refers to the specific subset of the broader population that possesses the characteristics relevant to the research objectives and from whom the study seeks to draw inferences (Hossan, Dato'Mansor, & Jaharuddin, 2023; Willie, 2024). Clearly defining the target population enhances the accuracy, relevance, and generalizability of the study findings (Casteel & Bridier, 2021). The target population for this study consisted of medical specialists employed by the Ministry of Health and working in Level 4 and Level 5 public health facilities located in rural counties of Kenya. In line with scholarly guidance that a target population should represent the specific group about whom a study intends to draw conclusions (Hossan et al., 2023; Willie, 2024; Casteel & Bridier, 2021), this group was selected because rural areas experience the greatest shortages of specialized healthcare personnel. Specialists were eligible for inclusion if they had served in these rural facilities for at least one year, ensuring meaningful exposure to workplace conditions affecting retention, while foreign, mission, visiting specialists, and those based in urban counties designated as cities were excluded to maintain contextual relevance. The unit of analysis was the individual medical specialist, with the study focusing on how their working conditions, financial incentives, job responsibilities, and career development opportunities influence retention.

3.5 Sample Size Calculation

The calculation of the sample size followed Fisher's formula (Daniel, 1999). Given the study design is cross-sectional and descriptive, this formula is appropriate as researchers can use a point estimate such as a proportion, for the phenomenon being researched based on prior studies or pilot data, in the sample size calculation.

$$n = \frac{Z^2 x\ P(1-P)}{d^2}$$

Where,

n = Desired sample size

Z = value from standard normal distribution corresponding to desired confidence level (Z=1.96 for 95% CI)

P = expected true proportion (estimated at 0.70 (i.e. 70.0%), which is an average from studies that have reported on the desire by medical specialist to leave rural areas (Glasser et al., 2010; Boracci et al., 2015, Doshmangir et al., 2020; Amiresmaili et al., 2014).

d = desired precision (0.05)

$$n = \frac{1.96^2 x\ 0.70(1 - 0.70)}{0.05^2} = 323$$

This study required a sample of 323 medical specialists. A source document with the number of medical specialists within each county is not available to allow proportionate sampling, hence was assumed that almost equal number of specialists are distributed amongst the 43 counties. Therefore, the 323 medical specialists was divided by the 43 counties, which gave at least 8 medical specialists to be sampled per county.

3.6 Sampling Procedure

A sampling procedure refers to the systematic process used to select a subset of individuals from a defined population for the purpose of making inferences about that population (Creswell & Creswell, 2018). This study employed a stratified simple random sampling technique to ensure adequate representation of medical specialists across the participating rural counties. Stratified sampling involves dividing the target population into homogeneous subgroups or strata, based on relevant characteristics, after which simple random sampling is conducted within each stratum (Rahman et al., 2022). This approach is particularly effective in quantitative studies where the goal is to enhance the precision of estimates, improve representativeness, and ensure that all key subgroups of the population are proportionately included (Creswell & Creswell, 2018).

In this study, each rural county formed a stratum, reflecting geographical and administrative distinctions that influence staffing patterns and facility environments. Within each stratum, medical specialists listed in the sampling frame were assigned unique identification numbers, and selection was carried out using the Microsoft Excel RAND() function, a widely accepted tool that facilitates unbiased and fully random selection (Noor, Tajik, & Golzar, 2022). This ensured that every specialist within each county had an equal and independent probability of being selected, in line with the principles of simple random sampling.

The stratified random sampling approach strengthened the study by reducing sampling error and ensuring that counties with smaller or larger specialist populations were appropriately represented, thereby improving the generalizability of the findings across rural Kenya. Following selection, sampled medical specialists were contacted and invited to complete an online structured questionnaire distributed via email or other secure electronic means. This data collection method supports standardized quantitative inquiry and minimizes bias (Creswell & Creswell, 2018).

3.7 Data Collection Methods and Procedure

The study utilized an online survey questionnaire, detailed in Appendix II, as the primary instrument for data collection. A questionnaire is a structured data collection instrument consisting of a series of systematically arranged questions designed to gather information from respondents about specific variables of interest (Taherdoost, 2022). Questionnaires are commonly used in quantitative research because they allow for standardized measurement, ensure consistency across respondents, and facilitate the collection of precise, comparable, and analyzable data. According to Taherdoost (2022), an effectively designed questionnaire enhances reliability and validity by using clear wording, appropriate response formats, and logically sequenced items aligned with research objectives. An online survey refers to a mode of administering questionnaires through digital platforms such as email, web-based forms, or secure online survey tools. Online surveys offer several advantages, including rapid distribution, reduced administrative costs, automated data capture, and access to geographically dispersed respondents (Newman, Bavik, Mount, & Shao, 2021).

The questionnaire items employed a likert scale format, enabling participants to express varying degrees of agreement or disagreement with statements related to key study variables. The likert scale approach ensures consistency in responses, facilitating quantitative analysis and comparative assessment (Kusmaryono, Wijayanti, & Maharani, 2022). As noted by Tanujaya, Prahmana, and Mumu (2022) Likert scales are particularly effective for capturing perceptions, attitudes, and experiences regarding aspects such as working conditions, career development opportunities, financial incentives, and overall job satisfaction. The advantages of using likert scales include ease of administration, the generation of quantifiable data, the ability to capture nuanced opinions, standardization across responses, flexibility in application, the identification of trends and patterns,

reduction of response bias, and the minimization of extreme or forced responses, thereby promoting balanced data collection (Kusmaryono et al., 2022; Tanujaya et al., 2022).

Prior to the main data collection phase, the questionnaire was pre-tested with a sample of 32 randomly selected medical specialists from the target rural areas, representing approximately 10% of the anticipated sample size (Hassan, Schattner & Mazza, 2006). These individuals were excluded from the final study sample. The pre-test aimed to evaluate the clarity, relevance, and appropriateness of the questionnaire items, with revisions made as necessary based on participant feedback. Data collected during the pre-test was analyzed to ensure alignment with the study objectives. The questionnaire was organized thematically, with sections corresponding to specific study aims, and includes a dedicated section for socio-demographic information.

Participants were selected using simple random sampling from a predefined sampling frame that accurately represents the target population. Upon selection, participants received personalized invitations via email and other digital communication platforms, containing a secure and unique link to access the questionnaire. Before beginning the survey, participants were presented with an electronic informed consent form, outlining the study's objectives, confidentiality measures, voluntary nature of participation, and the right to withdraw at any time without penalty.

The questionnaire, designed to be self-administered, was hosted on a secure online survey platform, compatible with computers, tablets, and smartphones. Participants were allocated one week to complete the survey, during which two reminder messages were sent to non-respondents to enhance response rates. To ensure data integrity, the online platform implemented measures to prevent multiple submissions from the same device or IP address, and mandatory fields were used to minimize missing data. Upon completion, survey responses were automatically stored in a password-protected database accessible only to the Principal Investigator (PI) and authorized research assistants.

Following the conclusion of the data collection period, the dataset was downloaded and subjected to rigorous review to assess completeness and accuracy. Incomplete responses, duplicate entries, and those failing to meet eligibility criteria were systematically identified and excluded from the final analysis. Throughout the data collection process, strict adherence to ethical standards,

including maintaining participant anonymity and confidentiality, was observed in accordance with institutional guidelines.

Participants gained access to the study questionnaire only after providing informed consent by selecting the "Agree to participate" option on the electronic consent form. Upon completing the consent form, participants finalized their agreement by clicking the "Finish" button, which automatically submit the consent to the research team.

3.8 Data Analysis

Data analysis refers to the systematic process of organizing, examining, transforming, and interpreting collected data to identify patterns, relationships, and trends that help answer the research questions or test hypotheses (Taherdoost, 2022). Following the completion of data collection, responses were exported from the online survey platform into statistical software for analysis; Statistical Package for Social Sciences (SPSS) version 26.0 for analysis. The dataset was initially be subjected to data cleaning procedures, which include screening for incomplete responses, identifying and removing duplicate entries, and verifying the eligibility of participants based on predefined inclusion criteria. Demographic characteristics of the study participants was analyzed with the use of descriptive statistics such as means and medians for continous data, and as frequencies for categorical data. Retention was calculated as a proportion of participants willing to continue working at their workstation over the total sample size, and reported as a percentage. The independent factors working condition, financial, career and professional, and responsibility factors was assessed in association with the dependent variable retention at univariate and multivariate analysis with the use of binary logistic regression. Odds ratio as well as 95% confidence interval was computed and reported. Statistical significance was be considered where the p-value is less than 0.05.

Table 2: Operationalization of Variables

Study objective	Variables to be measured	Methods of data collection for the targeted variables under each research question	The analysis methods to be applied

DEPENDENT VARIABLE			
Retention of participant	Willingness to maintain their work station	Online questionnaire	Simple proportion
INDEPENDENT VARIABLES			
Working condition factors for the retention of medical specialists	Essential drugs availability Modern equipment available Internship training in rural areas	Online questionnaire	logistic regression (Univariable and Multivariable)
Financial factors for the retention of medical specialists	Pay and scale adequacy, Extra allowances and bonus , Housing facilities, Scholarship and reimbursements	Online questionnaire	logistic regression (Univariable and Multivariable)
Career and professional factors for the retention of medical specialists	Continuous Education opportunities, Networking opportunities, Clear career path, Mentorship.	Online questionnaire	logistic regression (Univariable and Multivariable)
Responsibility factors for the retention of medical specialists	Extension of work responsibility, Skills mismatch, Support staff availability, Working hours, Workload	Online questionnaire	logistic regression (Univariable and Multivariable)

3.9 Study Quality

The quality of this study was grounded in methodological rigor, ensuring the reliability and validity of its findings. A structured research design has been adopted to augment the credibility, reproducibility, and applicability of the results. The study employs a likert scale for data collection, promoting consistency in responses and allowing for objective measurement of perceptions and experiences. Additionally, statistical analysis was utilized to interpret data accurately, minimizing biases and strengthening the overall reliability of conclusions.

3.9.1 Study Validity

Validity determines the extent to which a study accurately measures what it intends to assess. This study upholds both internal and external validity by carefully designing research instruments that align with the study objectives. Internal validity was ensured by controlling potential confounding variables that can affect the results, while external validity was strengthened by selecting a representative sample to augment the generalizability of results. Additionally, the study incorporated empirical literature to support its theoretical framework, ensuring that conclusions are grounded in established knowledge and prior research.

The validity of a research instrument refers to its ability to measure what it is intended to assess accurately, ensuring that collected data truly reflects the study's objectives without being influenced by biases or misinterpretations. According to Kothari (2013), validity also determines whether respondents interpret and understand research questions as intended by the researcher. To enhance content validity, the research instruments have been developed with guidance from expert advisors, primarily the study supervisors. Their feedback led to modifications in the content and structure of the questionnaire, improving the clarity, relevance, and alignment of the questions with the study's objectives. After implementing these refinements, the researcher proceeded with data collection to ensure that the instrument effectively captures the necessary information.

Further measures were taken to reinforce the validity of the study. Clear instructions were provided on an online data collection platform to guarantee that all eligible participants completely understand the questions. The PI (Principal Investigator) oversaw the data collection process, verifying accuracy, completeness, and adherence to the study's scope. To maintain data security, responses were stored in a password-protected digital storage system, available exclusively to the

PI, research assistant, and the statistician. Data analysis was conducted by a professional statistician to ensure precise interpretation of results, further strengthening the validity of the study. Additionally, face validity was assessed by consulting the research supervisor to confirm that the study instrument is well-designed before implementation.

3.9.2 Study Reliability

Reliability refers to the reproducibility, consistency and stability of a research tool in measuring the intended concepts, ensuring that repeated trials under similar conditions yield the same results (Kothari, 2013). In this study, the reliability of the research tools was assessed by means of the test-retest method, where the same instrument was administered to a sample group twice within a two-week interval. The correlation between the two sets of responses was analyzed to determine the consistency of the measurement tool. Additionally, to enhance reliability, built-in validation checks were integrated and mandatory responses into the electronic questionnaire to ensure completeness and accuracy, particularly for demographic variables such as age. This approach minimizes missing or invalid responses, strengthening the overall reliability of the collected data. Post data collection, internal consistency was assessed using Cronbach's alpha reliability analysis.

Further, the study instrument's reliability was tested on 10% of the sample size, involving approximately 32 medical specialists who were not participate in the final data collection to prevent bias. Inconsistencies and ambiguities identified during this pilot phase were addressed before the full-scale study begins. Standardized data collection procedures were also be implemented to reduce variability caused by external factors, ensuring that findings remain stable and replicable. The use of a well-structured likert scale questionnaire enhanced internal consistency, ensuring that responses accurately reflect the key factors influencing the retention of medical specialists in rural Kenya. By applying these rigorous measures, the study ensures that its research instruments remain reliable, consistent, and capable of producing valid and trustworthy results.

3.10 Ethical Consideration

The PI obtained ethical approval from relevant research ethics committees and institutions, including the National Commission for Science, Technology and Innovation (NACOSTI) and the Strathmore University Institutional Ethics Review Commitee (IERC), before commencing the

study. The study was approved under Ref Number *SU-ISERC2879/25.* This research strictly adhered to ethical guidelines for the protection of human subjects, with key considerations focusing on participant autonomy, valid informed consent, and non-maleficence. Prior to participating in the online questionnaire, all potential respondents were provided with a detailed online informed consent form comprehensive information about the study, ensuring participants fully understand its purpose, objectives, and how their data will be used before obtaining their consent. To uphold anonymity, no identifiable information about participants was included in the final dissertation only coded, anonymized excerpts was used in reporting the findings. The online survey platform was configured to collect minimal personal information. The study maintained a non-coercive approach, ensuring that participants are informed that they can opt out at any stage without any repercussion. Participants were required to provide explicit consent by selecting a checkbox indicating their agreement to participate before they gain access to the questionnaire.

Confidentiality was a priority, with all sensitive data stored securely on a password protected server accessible only to authorized research team members. This data will be retained for up to seven years in compliance with institutional research policies, after which it will be permanently destroyed. Ethical considerations was also extend to data collection, analysis, and reporting, ensuring objectivity and minimizing bias. The study took deliberate measures to prevent undue influence or manipulation of findings. Ethical approval from relevant authorities reinforced adherence to research standards, fostering trust, credibility, and integrity in the study. By maintaining these ethical standards, the research aims to uphold the dignity and rights of participants while guaranteeing the validity and reliability of its results

3.11 Consent and Confidentiality

Prior to participating in the study, all potential respondents were required to provide informed consent electronically. An introductory page was presented at the beginning of the online questionnaire, clearly outlining the study's purpose, objectives, procedures, potential risks and benefits, the voluntary nature of participation, and the measures taken to ensure confidentiality and anonymity. Participants were explicitly informed that participation is entirely voluntary and that they have the right to decline to participate without any negative consequences. They were also be advised that they may may withdraw from the study at any point. No identifiable personal information was collected unless necessary and approved by the ethics committee. Potential

participants were required to indicate their agreement by ticking a mandatory checkbox labeled, "I have read and understood the information provided above, and I voluntarily consent to participate in this study." Access to the questionnaire was only granted after participants provide their consent. Participants who chose not to consent were redirected to a thank you page acknowledging their decision without further engagement or pressure. The consent taking process was be designed in accordance with ethical standards established by the Strathmore University Ethical Review Committee under Ref Number *SU-ISERC2879/25*. and aligned with international ethical guidelines; Declaration of Helsinki and the Belmont Report.

3.12 Risks to Participants

No risks are associated with the study.

CHAPTER 4: RESULTS

4.1 Introduction

The results of the study are presented in this chapter. The study's broad objective was to determine the factors influencing the retention of medical specialists working in level 4 and 5 health facilities in rural Kenya. The results are presented as per the study objectives.

4.2 Characteristics of the study participants

Table 3 presents results of the characteristics of the study participants. Majority of the participants were aged 30 to 39 years (56.7%). Most of the participants were male (75.5%), were married (74.9%), and had worked at the facility between 2 to 5 years (48.3%). Most participants were surgeons (52.9%).

Table 3: Characteristics of the Study Participants

Characteristic	**Frequency,** *(n=323)*	**Percent**
Age (years)		
Mean:40.0 (SD 5.4), Min: 32.0, Max: 57.0, Median: 38.0 (IQR, 36.0 – 41.0)		
30 – 39	183	56.7

40 – 49	105	32.5
50 – 59	35	10.8
Gender		
Male	244	75.5
Female	79	24.5
Marital status		
Single	81	25.1
Married	242	74.9
Length of service (years)		
Mean:5.6 (SD 4.7), Min: 0.1, Max: 24.0, Median: 4.0 (IQR, 2.0 – 9.0)		
≤1	43	13.3
2 – 5	156	48.3
>5	124	38.4
Area of medical specialization		
Internal Medicine	46	14.2
Obstetrics and Gynecology	38	11.8
Ophthalmology	8	2.5
Paediatrics	16	5.0
Pathology	8	2.5
Pharmacy	8	2.5
Psychiatry	4	1.2
Radiology	24	7.4
Surgery	171	52.9

4.3 Retention

This section presents findings on the proportion of medical specialists who expressed a willingness to remain at their current workstations in rural Kenya. Participants were asked to evaluate their overall satisfaction and intention to continue working at their respective health facilities, taking into consideration factors such as working conditions, financial remuneration, career advancement and professional development opportunities, as well as the scope of responsibilities assigned to them. The results revealed that approximately one-third (32.5%) of the respondents indicated a positive disposition toward retention at their current facility.

Table 4: Supportive of retention

Participants support	Frequency	Percent
Retention	105	32.5
No Retention	218	67.5

4.4 Working condition factors

This section presents the findings on how various working condition factors influence the retention of medical specialists in rural Kenya. The analysis showed that participants who had completed their undergraduate internship at a rural health facility were less likely to support retention at their current workstation (OR = 0.8, 95% CI: 0.5–1.3, p = 0.318). However, this association was not statistically significant, indicating that the location of internship did not have a measurable impact on retention.

In contrast, the availability of essential drugs and medical supplies was significantly associated with retention. Participants who reported that adequate drugs and supplies were only sometimes available were less likely to support retention compared to those who indicated that such resources were often available (OR = 0.3, 95% CI: 0.2–0.6, p = 0.001).

Furthermore, the quality of medical equipment and infrastructure emerged as a strong positive predictor of retention. Respondents who described the equipment and infrastructure at their facility as being of good quality were significantly more likely to support continued service at their current post (OR = 3.3, 95% CI: 1.9–5.7, p = 0.001) compared to those who perceived these resources to be of poor quality.

Table 5: Working condition factors

	Retention		**No Retention**		**OR (95% CI)**	**p-value**
Factor	*(n=105)*	%	*(n=218)*	%		
Undergraduate internship at rural facility						
Yes	74	70.5	165	75.7	0.8 (0.5 – 1.3)	0.318
No	31	29.5	53	24.3	Reference	
Facility stocks adequate drugs and supplies						
Sometimes	67	63.8	183	83.9	0.3 (0.2 – 0.6)	**0.001**
Often	38	36.2	35	16.1	Reference	
Quality of equipment and infrastructure						
Good	85	81.0	123	56.4	3.3 (1.9 – 5.7)	**0.001**
Poor	20	19.0	95	43.6	Reference	

4.5 Financial factors

This section presents the findings related to financial and professional development factors that influence the retention of medical specialists in rural Kenya. The analysis revealed that participants who expressed satisfaction with their salaries were significantly more likely to support retention at their current facility (OR = 3.3, 95% CI: 2.0–5.7, p = 0.001), indicating a strong positive association between salary satisfaction and retention.

In contrast, the receipt of additional allowances and bonuses did not show a significant relationship with retention. Participants who reported never receiving extra allowances and bonuses were

equally likely to support retention as those who reported receiving them on rare occasions (OR = 1.0, 95% CI: 0.5–1.8, p = 0.891), suggesting no meaningful statistical association.

Regarding professional development opportunities, participants who indicated that funding and scholarships were never available were significantly less likely to support retention compared to those who reported such opportunities were available on rare occasions (OR = 0.4, 95% CI: 0.3–0.7, p = 0.001). This finding demonstrates a statistically significant association between the availability of professional development opportunities and willingness to remain at rural health facilities.

Table 6: Financial factors

	Retention		**No Retention**		**OR (95% CI)**	**p-value**
Factor	*(n=105)*	%	*(n=218)*	%		
Satisfaction with salary						
Dissatisfied	65	61.9	184	84.4	Reference	
Satisfied	40	38.1	34	15.6	3.3 (2.0 – 5.7)	**0.001**
Receives extra allowances and bonuses						
Never	88	83.8	184	84.4	1.0 (0.5 – 1.8)	0.891
Rarely	17	16.2	34	15.6	Reference	
Funding opportunities and scholarship						
Never	34	32.4	117	53.7	0.4 (0.3 – 0.7)	**0.001**
Rarely	71	67.6	101	46.3	Reference	

4.6 Career growth, and professional development factors

This section presents findings on how career growth and professional development opportunities influence the retention of medical specialists in rural Kenya.

The results indicated that participants who reported satisfaction with their career growth and professional development were significantly more likely to support continued service at their

current rural health facility (OR = 3.2, 95% CI: 1.9–5.5, p = 0.001). This suggests a strong and statistically significant association between satisfaction with career development prospects and retention.

Conversely, participants who indicated that professional support and development opportunities were never available were less likely to support retention compared to those who reported such opportunities existed, albeit rarely (OR = 0.8, 95% CI: 0.5–1.4, p = 0.504). However, this association was not statistically significant.

Similarly, those who reported that advanced skills development and training opportunities were never available were also less likely to support retention than those who noted such opportunities were occasionally available (OR = 0.6, 95% CI: 0.4–1.1, p = 0.100), though this result did not reach statistical significance.

In contrast, the availability of mentorship opportunities from senior specialists showed a significant influence on retention. Participants who reported that such mentorship opportunities were never available were substantially less likely to support retention compared to those who indicated that such opportunities were available on rare occasions (OR = 0.3, 95% CI: 0.2–0.5, p = 0.001), demonstrating a strong and statistically significant association between mentorship and retention.

Table 7: Career growth, and professional development factors

	Retention		**No Retention**		**OR (95% CI)**	**p-value**
Factor	*(n=105)*	%	*(n=218)*	%		
Career growth opportunities and promotions						
Dissatisfied	65	61.9	183	83.9	Reference	
Satisfied	40	38.1	35	16.1	3.2 (1.9 – 5.5)	**0.001**
Professional support and development opportunities						
Never	28	26.7	66	30.3	0.8 (0.5 – 1.4)	0.504
Rarely	77	73.3	152	69.7	Reference	

Advanced skills development and training opportunities						
Never	20	19.0	60	27.5	0.6 (0.4 – 1.1)	0.100
Sometimes	85	81.0	158	72.5	Reference	
Opportunities for mentorship from senior specialists						
Never	41	39.0	146	67.0	0.3 (0.2 – 0.5)	**0.001**
Rarely	64	61.0	72	33.0	Reference	

4.7 Responsibility factors

This section presents the findings on how responsibility-related factors impact the retention of medical specialists in rural Kenya.

The analysis revealed that participants who reported that the extension of responsibilities beyond the scope of their contractual agreements occurred only rarely were slightly more likely to support retention compared to those who experienced such extensions frequently (OR = 1.1, 95% CI: 0.6–2.1, p = 0.723). However, this association was not statistically significant, suggesting that the frequency of non-contractual task extensions may not play a decisive role in influencing retention.

Similarly, working hours did not show a statistically significant relationship with retention. Participants who indicated that they rarely worked within regular and acceptable hours were less likely to express support for retention than those who often worked within such parameters (OR = 0.9, 95% CI: 0.6–1.5, p = 0.804), indicating that irregular working hours alone may not be a critical determinant of retention.

In contrast, satisfaction with the management of daily workload emerged as a significant predictor of retention. Participants who reported being satisfied with how they handled their day-to-day responsibilities were considerably more likely to support continued service at their current post compared to those who expressed dissatisfaction (OR = 4.7, 95% CI: 2.6–8.5, p = 0.001). This finding underscores the importance of effective workload management in promoting retention among medical specialists in rural settings.

Table 8: Responsibility factors

	Retention		No Retention		OR (95% CI)	p-value
Factor	*(n=105)*	%	*(n=218)*	%		
Extended responsibilities not part of contract						
Rarely	19	18.1	36	16.5	1.1 (0.6 – 2.1)	0.723
Often	86	81.9	182	83.5	Reference	
Work within regular and acceptable hours						
Rarely	64	61.0	136	62.4	0.9 (0.6 – 1.5)	0.804
Often	41	39.0	82	37.6	Reference	
Satisfied on management of daily workload						
Dissatisfied	16	15.2	100	45.9	Reference	
Satisfied	89	84.8	118	54.1	4.7 (2.6 – 8.5)	**0.001**

4.8 Multivariate analysis

This section reports the results of the multivariate analysis for all the factors that were found to be statistically significant in influencing the retention of medical specialist in rural Kenya.

Table 9: Multivariate analysis

Factor	cOR (95% CI)	p-value	aOR (95% CI)	p-value
Facility stocks adequate drugs and supplies				
Sometimes	0.3 (0.2 – 0.6)	**0.001**	0.9 (0.5 – 1.7)	0.723
Often	Reference		Reference	
Quality of equipment and infrastructure				
Good	3.3 (1.9 – 5.7)	**0.001**	1.4 (0.7 – 2.6)	0.365

Poor	Reference		Reference	
Satisfaction with salary				
Dissatisfied	Reference		Reference	
Satisfied	3.3 (2.0 – 5.7)	**0.001**	2.6 (1.4 – 4.9)	**0.004**
Funding opportunities and scholarship				
Never	0.4 (0.3 – 0.7)	**0.001**	0.5 (0.3 – 0.9)	**0.018**
Rarely	Reference		Reference	
Career growth opportunities and promotions				
Dissatisfied	Reference		Reference	
Satisfied	3.2 (1.9 – 5.5)	**0.001**	1.2 (0.6 – 2.3)	0.692
Opportunities for mentorship from senior specialists				
Never	0.3 (0.2 – 0.5)	**0.001**	0.3 (0.2 – 0.6)	**0.001**
Rarely	Reference		Reference	
Satisfied on management of daily workload				
Dissatisfied	Reference		Reference	
Satisfied	4.7 (2.6 – 8.5)	**0.001**	4.8 (2.4 – 9.5)	**0.001**

CHAPTER 5: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the discussion on the summary of the findings, conclusion, recommendations and suggestions for further research. The discussions section discusses and compares the findings of the study objectives and compares them with other findings on the published literature. In the subsequent sections, conclusion and recommendations are provided arising from the study. Finally, the chapter provides suggestions for future research.

5.1 Discussion of Findings

5.1.1 Working Conditions Factors

Based on the findings, participants who had completed their undergraduate internship at a rural health facility were less likely to support retention at their current workstation. However, this association was not statistically significant, indicating that the location of internship did not have a measurable impact on retention. In partial agreement with these findings, Holst (2020) noted that in addition to confirming the potential of rural exposure during undergraduate medical training to aid in recruitment and, consequently, retention in nonurban settings, the worldwide focus also demonstrates the interventions' typically growing efficacy with time. Rural placements during medical training have some potential to enhance the effort to lessen the scarcity of rural physicians, regardless of the nation and healthcare system in existence. Undergraduate medical education can have a significant impact on the recruitment and subsequent retention of rural physicians, in addition to supply and demand management, financial incentives, and other strategies.

In addition, the findings noted that the availability of essential drugs and medical supplies was significantly associated with retention. This concurs with the findings of Hassan (2021) who noted that a positive and moderate correlation existed suggesting that in order to improve the retention of medical staff in Garissa County's healthcare institutions, basic supplies like drug stockpiles and the regularity of drug delivery were crucial. Further, in a similar view, Fahim (2019) discovered a positive correlation existed between staff retention and essential supplies.

Furthermore, the quality of medical equipment and infrastructure emerged as a strong positive predictor of retention. Respondents who described the equipment and infrastructure at their facility as being of good quality were significantly more likely to support continued service at their current post compared to those who perceived these resources to be of poor quality. In line with these findings, Twineamatsiko et al. (2023) noted that the physical condition of the medical facility was strongly linked to retention, that is, a well-maintained facility encouraged medical staff to stay longer. Healthcare professionals who worked in facilities with sufficient infrastructure had a higher retention rate than those who worked in facilities with inadequate infrastructure. Further, equipment availability was also strongly linked to health workers' retention.

5.1.2 Financial Factors

The findings revealed that participants who expressed satisfaction with their salaries were significantly more likely to support retention at their current facility, indicating a strong positive association between salary satisfaction and retention. In contrast with these findings, Dorcas et al. (2024) noted that based on SDA Non-Tithe-based institutions' compensation policy, the majority of the factors taken into account in the study were absent from the compensation packages. As a result, they may not be significantly impacting the employees' retention intentions. Regarding employee benefits, the study found that not all of the examined components were included in the organization's compensation package, and as a result, they might not have a significant impact on the organization's ability to retain employees. However, Patro (2022) stated that monthly salary positively and significantly influenced retention.

Based on the findings, the receipt of additional allowances and bonuses did not show a significant relationship with retention. Participants who reported never receiving extra allowances and bonuses were equally likely to support retention as those who reported receiving them on rare

occasions suggesting no meaningful statistical association. Contrary to these findings, Mwema et al. (2022) noted that since there was a significant and positive correlation between reward management and employee retention in Christian faith-based health institutions in Kenya, it was concluded that reward management is a crucial predictor for employees' retention to these institutions. Reward management, including commissions, salary incentives, monetary compensation for overtime, leave payments, employee participation in decision-making, paid holidays, and work-life balance initiatives, encourages high employee retention.

Regarding professional development opportunities, participants who indicated that funding and scholarships were never available were significantly less likely to support retention compared to those who reported such opportunities were available on rare occasions. This finding demonstrates a statistically significant association between the availability of professional development opportunities and willingness to remain at rural health facilities. This finding aligns with Berlanga and Corti (2025), who observed that access to scholarships positively influenced university students' academic outcomes, demonstrating that financial support and opportunities for advancement can significantly affect engagement and commitment in educational and professional contexts. Similarly, Moores and Burgess (2023) reported that financial support enhanced retention, particularly for students from lower-income households, highlighting that opportunities that reduce financial barriers can strengthen commitment and persistence.

5.1.3 Career Growth and Professional Development Factors

The results indicated that participants who reported satisfaction with their career growth and professional development were significantly more likely to support continued service at their current rural health facility. This suggests a strong and statistically significant association between satisfaction with career development prospects and retention. in relation to these findings, Bimpong et al. (2020) identified that professional development opportunities were a vital factor in job retention and satisfaction among NHS workers. Similarly, Kasdorf and Kayaalp (2020) showed that employee career development was a successful strategy for lowering attrition and raising work satisfaction.

Conversely, participants who indicated that professional support and development opportunities and advanced skills development and training opportunities were never available were less likely

to support retention compared to those who reported such opportunities existed, albeit rarely. However, this association was not statistically significant. In correspondence with these findings, Shiri et al. (2023) noted that opportunities for ongoing training or development were linked to a higher intention to remain in one's current position, a lower intention to quit, a lower intention to change jobs or retire early, and a quicker return to work. In a similar view, Mohammad et al. (2025) showed that initiatives such as professional development and training opportunities influenced more students to become teachers and retain workers within the education sector.

In contrast, the availability of mentorship opportunities from senior specialists showed a significant influence on retention. Participants who reported that such mentorship opportunities were never available were substantially less likely to support retention compared to those who indicated that such opportunities were available on rare occasions, demonstrating a strong and statistically significant association between mentorship and retention. In concurrence with these findings, Ng;oda et al. (2024) found that mentorship programs allowed participants to contribute to national and international projects in addition to upskilling them in a variety of areas, including research techniques, epidemiology, biostatistics, and grant writing. Therefore, this indicates that the mentorship programs significantly influenced retention.

5.1.4 Responsibility Factors

The analysis revealed that participants who reported that the extension of responsibilities beyond the scope of their contractual agreements occurred only rarely were slightly more likely to support retention compared to those who experienced such extensions frequently. However, this association was not statistically significant, suggesting that the frequency of non-contractual task extensions may not play a decisive role in influencing retention. Contrary to these findings, Ndiritu (2022) job enrichment which included elements such as increasing employees' tasks and assignments, increasing the responsibilities of staffs at the workplace, enhancing the complexity of the work tasks, job rotation, freedom to choose assignments, autonomy and expanding the scope of work positively influenced employee retention since they were fully engaged and motivated. Similarly, Somerville et al. (2024) noted that since they have similar motivations, task-shifting may be compatible and complementary with the recruitment and retention of optometrists in remote locations and that task-shifting options are easily accessible and beneficial.

Similarly, working hours did not show a statistically significant relationship with retention. Participants who indicated that they rarely worked within regular and acceptable hours were less likely to express support for retention than those who often worked within such parameters, indicating that irregular working hours alone may not be a critical determinant of retention. In consonance with these findings, Wakio and Misango (2019) noted that a negative significant relationship existed between working hours and job retention indicating that current scheduling and working hours within health facilities experienced shortcomings. On the contrary, Mugambi and Namusonge (2021) stated that flexible working works increased employee retention during the COVID 19 crisis.

In contrast, satisfaction with the management of daily workload emerged as a significant predictor of retention. Participants who reported being satisfied with how they handled their day-to-day responsibilities were considerably more likely to support continued service at their current post compared to those who expressed dissatisfaction. This finding underscores the importance of effective workload management in promoting retention among medical specialists in rural settings. Based on Yan and Sun (2022) findings, the expected rural retention rate is significantly impacted negatively by the number of working hours per week, that is, doctors who work more than 50 hours per week are 2.076 times more likely to quit than those who work fewer than 40 hours per week. An excessive workload would result in ineptitude, depression, or poor work performance, an increase in mistakes or accidents, a loss in personal satisfaction, and a further impact on retention rates. In contrast, a moderate workload serves to foster the best working circumstances. In addition to providing medical care, rural doctors typically handle filing-related tasks including creating residents' health records. Rural physicians may sometimes become frustrated by an overwhelming amount of labor associated with filing and outpatient services.

5.2 Conclusion of Findings

5.2.1 Working Conditions Factors

The findings indicate that while rural internship experience alone did not significantly influence retention, the availability of essential drugs, medical supplies, and quality infrastructure strongly promoted continued service at rural health facilities. This underscores that tangible working conditions, including well-stocked facilities and functional equipment, are crucial in shaping medical specialists’ decisions to remain. Ensuring consistent access to essential resources and

maintaining facility infrastructure not only enhances the quality of care but also fosters a supportive work environment that encourages long-term commitment among healthcare professionals in underserved rural settings.

5.2.2 Financial Factors

Salary satisfaction emerged as a strong determinant of retention, highlighting the importance of fair and competitive remuneration in retaining medical specialists. Conversely, additional allowances or bonuses alone did not significantly affect retention, suggesting that these incentives may be insufficient without foundational salary satisfaction. Notably, access to professional development funding and scholarships significantly influenced retention, reflecting that financial support extends beyond basic pay to career advancement opportunities. Overall, these findings emphasize that financial considerations, encompassing both adequate compensation and investment in professional growth, are critical levers for promoting sustained commitment to rural healthcare service.

5.2.3 Career Growth and Professional Development Factors

Career growth and professional development opportunities significantly influenced retention, with satisfaction in these areas correlating with a stronger commitment to rural service. Mentorship from senior specialists also demonstrated a clear positive impact, reinforcing the value of guided professional support. While access to advanced skills training alone showed mixed effects, overall, structured pathways for career progression, continuous learning, and mentorship programs collectively enhance engagement, job satisfaction, and the likelihood of long-term retention. These findings highlight that fostering a culture of growth and support within rural health facilities is essential for retaining skilled medical specialists.

5.2.4 Responsibility Factors

The analysis shows that while extended responsibilities and irregular working hours alone did not significantly affect retention, effective management of daily workload strongly influenced medical specialists' decisions to remain in rural posts. A manageable workload reduces stress, prevents burnout, and supports high-quality patient care, making it a critical determinant of retention. These findings underscore the importance of balancing job responsibilities with realistic expectations and adequate support structures. Implementing strategies that optimize task allocation, promote

autonomy, and prevent excessive workload can create a conducive work environment that sustains motivation, job satisfaction, and long-term retention of medical specialists in rural healthcare settings.

5.3 Recommendations

5.3.1 Recommendations for Working Conditions Factors

A key recommendation arising from these findings is the need to strengthen overall working conditions in rural health facilities to improve the retention of medical specialists. First, county governments and the Ministry of Health should prioritize consistent availability of essential medicines and medical supplies by investing in efficient procurement systems and strengthening supply-chain management to prevent chronic stockouts. Ensuring predictable drug availability not only enhances service delivery but also reinforces professional confidence and job satisfaction. Second, upgrading medical equipment and improving facility infrastructure should be treated as a strategic investment rather than a periodic activity. Modern, functional equipment and well-maintained facilities enable specialists to perform effectively and foster a sense of professional fulfilment. Additionally, while undergraduate rural internships did not show a significant effect on retention, their potential long-term value warrants continued support through structured rural training programs that combine mentorship, adequate supervision, and post-training incentives to encourage specialists to remain in rural practice.

5.3.2 Recommendations on Financial Factors

Based on these findings, it is recommended that rural health facilities strengthen their financial and professional development incentives to enhance retention of medical specialists. Priority should be given to reviewing salary structures to ensure competitive and equitable compensation, as salary satisfaction emerged as a strong predictor of retention. Facilities should also expand funding mechanisms for scholarships, short courses, and specialized training, as access to professional development significantly increased willingness to remain in post. Although additional allowances and bonuses did not show a measurable impact in this study, broader reward management practices such as performance-based incentives, overtime compensation, and supportive work–life balance policies may enhance retention when applied consistently. Strengthening these financial and developmental incentives can contribute to a more motivated, stable, and committed rural health workforce.

5.3.3 Recommendations for Career Growth and Professional Development Factors

Strengthening career growth and professional development opportunities is essential for improving the retention of medical specialists in rural health facilities. Based on the findings, the Ministry of Health and county governments should prioritize structured professional development programs, including regular training, advanced skills development, and accessible scholarship opportunities. Establishing sustainable mentorship frameworks led by senior specialists would further enhance skills transfer and professional confidence. Rural facilities should also develop clear career progression pathways to motivate specialists to remain in their positions. Investing in these strategies will not only enhance job satisfaction but also contribute to a stable and skilled rural health workforce.

5.3.4 Recommendations for Responsibility Factors

The study recommends that the Ministry of Health and county governments should come up with clear role definitions, supported by structured job enrichment programs, to enhance motivation while avoiding undue task overload and task extension beyond contractual obligations. This can be achieved by increasing the number of healthcare workers in rural areas to ensure that responsibilities are fairly distributed. Facilities should also adopt flexible and predictable scheduling practices to improve work–life balance and minimize burnout linked to long working hours. Additionally, investing in systems that streamline administrative duties such as digital record-keeping can reduce non-clinical workload pressures. Collectively, these strategies can create a more supportive working environment that promotes sustained commitment and reduces turnover in rural health settings.

5.4 Suggestions for Further Research

Based on the study findings, it is recommended that further research be conducted on advanced skills development and training opportunities, undergraduate internship at rural facilities would influence retention. Longitudinal studies should also be carried out to track the long-term effects of internship placements and early career experiences on workforce stability.

5.5 Study Limitations

The study acknowledges several limitations that may influence the interpretation and generalizability of its findings. One primary limitation is its cross-sectional design, which captures

data at a single point in time and therefore cannot establish causality between the identified factors and retention. Additionally, the reliance on self-reported data from medical specialists may introduce bias, as participants might underreport or overreport certain aspects such as job satisfaction or work conditions. Finally, factors such as personal motivations or external influences outside the scope of working conditions, financial incentives, and career development were not extensively explored, which could also impact retention decisions.

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APPENDICES

Appendix I: Informed Consent

Factors Influencing the Retention of Medical Specialists' in Rural Health Facilities in Kenya

To participant,

I, Felister Moraa Mose, a student undertaking a Master's degree in Business Administration in Health Care Management at Strathmore University, kindly request your participation in a study that I am conducting in your location.

Purpose of the research study

The aim of this study is to identify the factors influencing the retention of medical specialists in rural level 4 and 5 health facilities in Kenya. Data collection will involve the administration of a questionnaire.

Risks:

Participating in this study poses no risks.

Benefits:

While no financial compensation will be provided for participation, the results of this study will help advance informed decision-making processes to aid policy formulation or changes regarding the retention of medical specialists, benefiting various stakeholders.

Study participation & Right to Withdraw:

Taking part is completely optional, and your contribution is greatly appreciated. You are at liberty to opt out at any point without facing any repercussions**.**

Confidentiality:

All the data for this study will be treated with utmost confidentiality. Your privacy will be respected, and you will be assigned a study number for identification purposes. No personally identifiable data will be collected, and your name will not appear on any data collection tools. The

data gathered will be used solely for the study thesis. Electronic data will be safeguarded on a password-protected computer. Hard copies will be securely stored in a computer secured with a password.

Investigators Contacts:

Should you have any questions, do not hesitate to contact me at:

Phone: +254 711 756643

Email: felister.mo@gmail.com

If you wish to speak with someone independent of the research, please contact:

The Secretary – Strathmore University Institutional Ethics Review Board

P. O. Box 59857, 00200, Nairobi

Email: ethicsreview@strathmore.edu

Phone: +254 703 0343

Participant's statement

I have read and understood the information provided above. All my queries have been addressed to my satisfaction. By clicking 'I Agree' and proceeding to the questionnaire, I confirm that I have read and understood the information provided above and I voluntarily agree to participate in this study.

[ ] I Agree
[ ] I Do Not Agree

I hereby give/do not give my consent to enrol in this study. Please read the options below carefully and select your choice:

- ☐ *I have read and understood the information provided, and I voluntarily consent to participate in this study.*
- ☐ *I do not consent to voluntarily participate in this study.*

Instructions:

- If you **consent**, please click "Continue" below to begin the questionnaire.
- If you **do not consent**, please click "Exit" below. Thank you for considering participation.

CONTINUE TO QUESTIONNAIRE

EXIT

Initials of participant: …….

Signature of participant: …….

Date: ……

Researcher's statement

I, the undersigned, have clearly provided a thorough explanation of this research study to the aforementioned participant and am confident they fully understand and have voluntarily provided their consent.

Name of Researcher/ Research assistant : ……

Date: ……

Signature: ……

Role in the study: .....

Appendix II: Quantitative Data Collection Tool

Study ID number: .....

A: Socio-Demographic Data

1. Age (Years): .....
2. Gender: Male=1, Female=2: .....
3. Marital status: Single=1, Married=2, Divorced=3, Widowed=4, Separated=5: .....
4. Area of medical specialization: .....
5. Name of health facility: .....
6. Length of service at the facility in years: .....
7. Location of the facility (County and Subcounty): ……

B: Working condition factors

1. Was your internship after undergraduate studies at a rural facility? Yes=1, No=2
2. How frequently does the facility maintain an adequate stock of essential drugs and supplies?
   A. Never
   B. Rarely (<10% of the time)
   C. Sometimes (about 10-49% of the time)
   D. Often (about 50-90% of the time)
   E. Always (>90% of the time)
3. How would you rate the quality of equipment and other infrastructure at your facility in terms of meeting your professional needs?
   A. Very poor
   B. Fair
   C. Good
   D. Very good
   E. Excellent

C: Financial factors

4. How satisfied are you with the salary, is if competitive and fair based on your qualifications and responsibilities?
   A. Very dissatisfied
   B. Dissatisfied
   C. Neither dissatisfied or satisfied
   D. Satisfied
   E. Very satisfied
5. How often do you receive extra allowances and financial bonuses offered by the facility?
   A. Never
   B. Rarely
   C. Sometimes
   D. Often
   E. Always
6. How often does the facility offer funding opportunities and scholarships?
   A. Never
   B. Rarely
   C. Sometimes
   D. Often
   E. Always

D: Career growth and professional factors

7. How satisfied are you with the career growth opportunities and promotions at the facility?
   A. Very dissatisfied
   B. Dissatisfied
   C. Neither dissatisfied or satisfied
   D. Satisfied
   E. Very satisfied
8. How often does the facility offers professional support and development opportunities?
   A. Never

B. Rarely
C. Sometimes
D. Often
E. Always

9. How often is the availability of advanced skills development and training opportunities?
   A. Never
   B. Rarely
   C. Sometimes
   D. Often
   E. Always
10. How often does the facility offers opportunities for mentorship from senior specialists rotating from other facilities?
   A. Never
   B. Rarely
   C. Sometimes
   D. Often
   E. Always

E: Responsibility

11. How often do you have extended responsibilities that is not part of your contract?
   A. Never
   B. Rarely
   C. Sometimes
   D. Often
   E. Always
12. How often do you work within regular or acceptable working hours?
   A. Never
   B. Rarely
   C. Sometimes
   D. Often
   E. Always

13. How satisfied are you on how you manage your day-to-day workload?
    A. Very dissatisfied
    B. Dissatisfied
    C. Neither dissatisfied or satisfied
    D. Satisfied
    E. Very satisfied

F: Retention

14. Considering the working conditions, financial factors, career and professional opportunities, and the responsibilities offered by the health facility where you work, would you say you are satisfied and willing to continue providing your professional expertise and services? Yes = 1, No = 2

Appendix III : Study Timelines

Activity	DEC 2024	JAN 2025	FEB 2025	MARCH 2025	APRIL 2025	MAY 2025	JUNE 2025
Proposal writing and submission to supervisors							
Proposal presentation to the department and approval by department							
Proposal ethical approval							
Data collection and cleaning							
Data analysis							
Chapter 4 and 5 write up							
Results presentation to the department							
Submit final write up and publication							

Appendix IV: Study Budget

Item	Unit cost	Number of units	Total cost
Research approval	2,000	1	2,000
Research assistants	15,000	3	45,000
Communication	1,000	4	4,000
Stationery	25,000	1	25,000
Computer services (data entry)	5,000	1	5,000
Data analysis	30,000	1	30,000
Transport	5,000	1	5,000
Dissemination of findings	20,000	1	20,000
Sub total			**136,000**
Contingency 10%			11,600
Grand total			**147,600**

Appendix V: Strathmore University Institutinal Scientific Ethics and Review Commitee (Su-Iser) Approval Ref Number SU-ISERC2879/25.

Strathmore UNIVERSITY

24th April 2025

Ms Mose Felister,
felister.mose@strathmore.edu

Dear Ms Mose,

RE: Factors Influencing the Retention of Medical Specialists in Rural Health Facilities in Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU- Masters** proposal. Your application reference number is **SU-ISERC2879/25.** The approval period is from **24th April 2025 to 23rd April 2026.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

Ole Sangale Rd, Madaraka Estate. PO Box 59857-00200, Nairobi, Kenya. Tel +254 (0)703 034000
Email admissions@strathmore.edu www.strathmore.edu

Appendix VI: National Commission for Science and Technology and Innovation (NACOSTI) Approval Ref No: 161658

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 161658

Date of Issue: 12/May/2025

RESEARCH LICENSE

This is to Certify that Dr.. felister MORAA mose of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Baringo, Bomet, Bungoma, Busia, Elgeyo-Marakwet, Embu, Garissa, Homabay, Isiolo, Kajiado, Kakamega, Kericho, Kiambu, Kilifi, Kirinyaga, Kisii, Kitui, Kwale, Laikipia, Lamu, Machakos, Makueni, Mandera, Marsabit, Meru, Migori, Muranga, Nandi, Narok, Nyamira, Nyandarua, Nyeri, Samburu, Siaya, Taita-Taveta, Tanariver, Tharaka-Nithi, Trans nzoia, Turkana, Vihiga, Wajir, Westpokot on the topic: factors influencing the retention of medical specialists in rural health facilities in Kenya for the period ending : 12/May/2026.

License No: NACOSTI/P/25/4173310

161658

Applicant Identification Number

Deputy Director
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code

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See overleaf for conditions