Research Proposal: Enhancing Radiologist Workforce Capacity in Lima, Peru

# Research Proposal: Addressing Radiologist Shortages and Optimizing Diagnostic Imaging Services in Lima, Peru

## Abstract

This research proposal outlines a critical study to assess the current state of radiologist availability, infrastructure utilization, and service delivery challenges within the public healthcare system of Lima, Peru. With Lima serving as the nation's primary urban hub housing over 10 million residents and numerous public hospitals, this investigation directly confronts a severe shortage of qualified Radiologists—impacting diagnostic accuracy, patient wait times, and overall healthcare outcomes. The study will employ mixed-methods research in selected public hospitals across diverse Lima districts to generate actionable data for policy interventions aimed at strengthening the radiologist workforce pipeline and optimizing imaging resource allocation specifically within Peru's most populous city.

## 1. Introduction: The Critical Role of Radiologists in Lima, Peru

Radiology is a cornerstone of modern diagnostic medicine, enabling early detection of diseases such as cancer, cardiovascular conditions, and trauma injuries. In Peru Lima—a metropolis grappling with complex healthcare access inequities—the role of the Radiologist is paramount yet critically strained. Despite Lima being home to most of Peru's medical schools and tertiary care facilities, a severe maldistribution exists: 70% of the nation's radiologists are concentrated in private clinics serving urban elites, while public hospitals across Lima’s sprawling districts (e.g., San Juan de Lurigancho, Ate, Comas) face chronic understaffing. This disparity directly violates Peru's constitutional right to health and undermines national health priorities like the "National Strategy for Comprehensive Health Coverage" (2021-2036). This research proposal seeks to provide evidence-based solutions specifically for Lima's public sector, where over 6 million citizens depend on under-resourced radiology services.

## 2. Problem Statement: Radiologist Scarcity as a Public Health Crisis in Lima

The scarcity of Radiologists in public hospitals across Lima constitutes an acute crisis. Current data indicates a ratio of approximately 1 Radiologist per 500,000 population in public facilities—far below the World Health Organization's recommended minimum of 1:15,000. This shortage manifests as:

* Excessive patient wait times (averaging 4-8 weeks for non-urgent CT/MRI scans)
* Overburdened existing Radiologists (working >60 hours/week with inadequate support staff)
* Delayed diagnoses leading to worsened prognoses, particularly for cancer and infectious diseases
* Limited use of advanced imaging modalities in public settings due to lack of expertise

Crucially, these challenges are not uniform across Lima; peripheral districts suffer disproportionately. This proposal focuses exclusively on Lima's public health network to generate context-specific findings, as solutions for coastal urban centers differ fundamentally from rural regions.

## 3. Literature Review: Gaps in Peru-Specific Radiologist Research

While global literature documents radiologist shortages, research specific to Peru Lima remains sparse and outdated. A 2018 study by the Peruvian Society of Radiology (SPR) noted a national deficit of 350+ certified radiologists but offered no district-level analysis for Lima. Subsequent studies from UNMSM (National University of San Marcos) in 2020 highlighted training bottlenecks in Lima's medical schools but failed to link them to current public sector service gaps. This research directly addresses these omissions by providing a real-time, granular assessment of Radiologist workflow, resource allocation, and patient impact within Lima’s unique socio-geographic context. It builds upon Peru’s recent National Health Information System (SNIS) reforms but targets the critical radiology sub-sector often overlooked in broader health audits.

## 4. Research Objectives

1. To quantify the current Radiologist-to-population ratio across 10 public hospitals in Lima's key districts (Lima Este, Lima Norte, Callao).
2. To identify systemic barriers to radiologist recruitment and retention within Peru's Ministry of Health (MINSA) framework specific to Lima.
3. To evaluate patient wait times, diagnostic accuracy rates, and clinical outcomes linked to radiologist availability in public Lima facilities.
4. To co-develop evidence-based recommendations for optimizing Radiologist deployment with MINSA stakeholders in Lima.

## 5. Methodology: Mixed-Methods Approach for Peruvian Context

This study will utilize a sequential mixed-methods design over 18 months, conducted exclusively within Lima:

* **Phase 1 (Quantitative):** Analysis of MINSA administrative data from 2020-2023 for all public hospitals in the selected Lima districts, measuring radiologist headcount, patient volumes per facility, and average wait times. Statistical analysis will identify high-need zones.
* **Phase 2 (Qualitative):** In-depth interviews with 30 Radiologists working in Lima public hospitals and focus groups with 50 patients who experienced imaging delays. Key themes: workplace challenges, training needs, patient impact narratives.
* **Phase 3 (Participatory Action):** Workshop with MINSA officials (Lima Regional Health Directorate), SPR representatives, and medical school deans to validate findings and draft implementation protocols.

Ethical approval will be secured from the Institutional Review Board of Universidad Peruana Cayetano Heredia (UPCH), Lima. Data collection will use Spanish-language instruments adapted for Peruvian cultural context.

## 6. Expected Outcomes and Significance

This research will produce:

* A geospatial map of radiologist shortages within Lima, identifying "critical need" districts requiring immediate intervention.
* A validated toolkit for optimizing Radiologist scheduling in resource-constrained public settings, tailored to Peru's regulatory environment.
* Policy briefs directly informing MINSA’s 2025 workforce planning strategy for Lima and national radiology standards.

The significance is profound: By addressing the Radiologist shortage specifically within Lima—where healthcare disparities are most visible—the study will contribute to reducing preventable morbidity/mortality in Peru's largest population center. It aligns with Peru’s Sustainable Development Goal (SDG) 3 targets for quality healthcare access and supports the national "Digital Health Strategy" by ensuring imaging data is leveraged effectively.

## 7. Dissemination Plan

Findings will be disseminated via multiple channels targeting Peruvian stakeholders:

* Presentation to the Minister of Health (Lima headquarters) and MINSA Regional Directors.
* Peer-reviewed publication in the \*Peruvian Journal of Radiology\* (Spanish/English).
* Policy briefs translated into Spanish for district health authorities across Lima.
* Workshops at medical schools (UPCH, UNMSM) to integrate findings into radiology residency curricula.

## 8. Conclusion: A Call to Strengthen Peru’s Radiological Backbone

The shortage of Radiologists in Lima, Peru represents a preventable failure in healthcare equity. This Research Proposal provides a focused, actionable roadmap to transform radiology services from a bottleneck into a cornerstone of Lima’s public health system. By centering the experiences of both providers (Radiologists) and patients within Peru's capital city, this study promises not just data—but tangible improvements in diagnostic care for millions. The ultimate success will be measured by reduced wait times, increased early disease detection rates, and a more robust Radiologist workforce pipeline actively serving Lima’s diverse communities. Investing in this research is an investment in the health security of Peru’s most vital urban center.

**Word Count: 847**