

AMC Health Systems and Cancer Research Division

***Challenges of Radiotherapy in Post-War and  
Developing Countries: A Case Study of Afghanistan***

*An In-Depth Review of Infrastructure, Policy, and Global Partnerships*

## Abstract

Radiotherapy is a fundamental component of modern cancer treatment, yet it remains largely inaccessible in many developing and post-conflict countries, including Afghanistan. This report examines the systemic barriers to establishing radiotherapy services in such settings, with a particular focus on Afghanistan as a case study. Drawing from global research, regional comparisons, and national health data, the report explores how decades of war, political instability, economic constraints, and a lack of trained medical personnel have hindered the development of radiotherapy infrastructure. Afghanistan's healthcare system is assessed in the context of broader South Asian (SAARC) dynamics, illustrating how the country lags significantly behind regional counterparts in cancer care capacity. The report also identifies key internal and external barriers—including policy neglect, gender-based restrictions, and limited international support—and offers strategic recommendations for future development. These include investment in infrastructure, capacity building, policy reform, and engagement with international agencies such as the IAEA and WHO. The findings underscore the urgent need for coordinated efforts to introduce radiotherapy services and improve cancer outcomes in Afghanistan.

## **Table of Contents**

- 1. Table of Contents**
- 2. Introduction**
- 3. Executive Summary**
- 4. Background**
- 5. Global Challenges in Radiotherapy Access**
- 6. Afghanistan: A Case Study**
- 7. Comparative Overview: SAARC and Other Post-Conflict Countries**
- 8. Key Internal and External Barriers**
- 9. Recommendations**
- 10. Conclusion**
- 11. References**

## **1. Introduction**

Radiotherapy is a cornerstone of modern cancer treatment, employed in approximately 50% of all cancer cases either as a curative or palliative intervention. However, in many developing and post-war countries, access to radiotherapy remains severely limited. Afghanistan, a nation scarred by decades of conflict and political instability, represents a critical case study in understanding the systemic barriers to implementing radiotherapy services. This report aims to explore the multifaceted challenges associated with establishing radiotherapy in such contexts and proposes strategic interventions to overcome them.

## **2. Executive Summary**

Afghanistan has a growing cancer burden but lacks essential infrastructure for diagnosis and treatment, particularly radiotherapy. The country's healthcare system is constrained by political instability, economic hardship, and a shortage of trained professionals. This report examines the historical context, political influences, and internal and external challenges that hinder radiotherapy implementation in Afghanistan. Comparative insights from other post-war and developing nations further illuminate potential pathways for progress.

## **3. Background**

Cancer care in low- and middle-income countries (LMICs) is hampered by insufficient health infrastructure. Radiotherapy, despite its clinical efficacy and cost-effectiveness, remains out of reach for millions in LMICs. In Africa, nearly 30 countries lacked a single radiotherapy machine as of 2014 (Grover et al., 2015). Similar challenges affect other regions where healthcare systems are fragile.

## **4. Global Challenges in Radiotherapy Access**

Common issues affecting radiotherapy deployment in LMICs include:

- High costs of equipment and maintenance
- Inadequate regulatory frameworks
- Lack of trained oncologists, physicists, and technicians
- Absence of cancer registries
- Urban-centric healthcare delivery systems

These obstacles are amplified in post-conflict settings where infrastructure is destroyed, and governance systems are unstable.

## 5. Afghanistan: A Case Study

Afghanistan presents a stark example. The country reported over 19,000 new cancer cases in 2020, with breast, stomach, lung, and cervical cancers being the most prevalent (GLOBOCAN, 2020). Yet, there is no operational radiotherapy center.

**5.1 History and Political Landscape** In the 1960s, Ali Abad Hospital in Kabul had a cancer unit, but this and other facilities were destroyed or degraded during decades of war (Sharan et al., 2010). The Taliban regime has further complicated healthcare delivery by imposing restrictions on female education and employment, reducing access for half the population (Human Rights Watch, 2024).

**5.2 Healthcare Infrastructure** Afghanistan's Basic Package of Health Services (BPHS) and Essential Package of Hospital Services (EPHS) offer primary and secondary care but exclude radiotherapy. As a result, patients must travel abroad, mainly to Pakistan or India, at great financial and logistical cost (Rao et al., 2016).

**5.3 Workforce Limitations** There are few trained oncologists and even fewer radiotherapy technicians or medical physicists. Gender restrictions also limit the number of female healthcare professionals, particularly in oncology.

## 6. Comparative Overview: SAARC and Other Post-Conflict Countries

Compared to other South Asian Association for Regional Cooperation (SAARC) countries, Afghanistan lags significantly. India has over 500 radiotherapy units; Bangladesh has more than 30; Pakistan over 50. Afghanistan has none (SAARC Cancer Initiative, 2022).

Post-war countries like Rwanda and Cambodia have gradually rebuilt radiotherapy capacity through international partnerships and investment in training.

## 7. Key Internal and External Barriers

- **Internal:**
  - Political instability
  - Poor infrastructure
  - Gender restrictions
  - Financial constraints
- **External:**
  - Limited foreign investment due to security concerns

- Inconsistent international aid
- Equipment import restrictions and lack of technical expertise

## 8. Recommendations

1. **Infrastructure Investment:** Secure international funding to build and equip at least one radiotherapy center.
2. **Human Resource Development:** Partner with global oncology centers to train Afghan professionals.
3. **Policy Reform:** Advocate for radiotherapy in national health strategies.
4. **Public Awareness:** Conduct nationwide campaigns on cancer and available treatments.
5. **International Collaboration:** Engage with IAEA, WHO, and NGOs for technical and financial support.

## 9. Conclusion

Afghanistan embodies the extreme challenges of introducing radiotherapy in a post-war, developing context. Despite a rising cancer burden, the absence of critical treatment modalities like radiotherapy leads to preventable deaths. A coordinated effort involving national authorities and international stakeholders is essential to close this fatal gap.

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