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abstract

Unlocking Radiotherapy Access: The Critical Role of Structural Quality and Radiation Therapists in Saudi Arabia

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Introduction: Radiation therapy (RT) is vital for cancer treatment, significantly improving survival and quality of life, yet access remains a challenge even in high-income countries like the Kingdom of Saudi Arabia (KSA). Key structural indicators include staffing and equipment availability, measured by staff-to-patient ratios and operational RT units. This study aims to examine how staffing and equipment availability, distribution, and capacity affect access to care and quality of RT services in Saudi Arabia.

Methodology: A mixed-methods design using a descriptive cross-sectional approach was employed. A survey was distributed electronically to the supervisors and managers of 20 RT units in the KSA between 24 September and 23 October 2025. The qualitative phase explored the per-spectives of radiation therapists (RTTs) and medical physicists, while the quantitative phase examined variables such as staff numbers and distribution, patient volumes, equipment avail-bility, treatment waiting times, and overall facility capacity between January to December 2024.

Results: The survey response rate was 85% (total n=20). Public facilities treated the highest caseloads but had fewer linear accelerators per patient, higher clinician workloads, and longer waiting times, with radical treatment often exceeding 14 days and in some cases over 42 days. Mixed centers had the greatest machine capacity and advanced technologies. Training opportunities were limited, particularly in the public sector, where most departments rated staffing and operational efficiency as inadequate. Equipment procurement presented a challenge, with 65% of centers (majority in the public sector) expressing that the tendering delays severely or critically affected their ability to provide care.

Conclusion: These findings will support the development of a strategic framework to strengthen RT capacity and reduce sector-based disparities. Ultimately, this evidence can guide policy and resource planning toward more equitable cancer care delivery in the country.

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