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Research Article

Towards Advanced Practice in Medical Imaging: Reflections on Role Extension in Ghana

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Abstract

Objectives: This narrative review explores the feasibility and impact of role extension for radiographers as a strategy to address the critical shortage of radiologists in Ghana. It aims to assess the rationale, educational requirements, policy needs, and professional dynamics surrounding the implementation of advanced practice roles in medical imaging. The review also seeks to identify opportunities and challenges specific to the Ghanaian healthcare context and propose actionable recommendations to support policy and practice development.

Key Findings: The primary driver for radiographer role extension in Ghana is the significant imbalance between the demand for diagnostic services and the limited availability of radiologists, particularly in rural and underserved areas. Evidence from international contexts demonstrates that radiographers, with appropriate training, can perform advanced tasks such as image interpretation and reporting with accuracy comparable to radiologists. However, implementation in Ghana faces several barriers, including the absence of accredited training programs, lack of policy and regulatory frameworks, limited interprofessional collaboration, and professional skepticism. Key enablers include stakeholder engagement, investment in education, pilot program development, and continuous professional development. Role extension is also aligned with Ghana's goals for universal health coverage and health workforce optimization.

Conclusion: Role extension in medical imaging holds substantial potential to transform diagnostic service delivery in Ghana. By expanding the scope of radiographic practice, the country can enhance healthcare access, reduce diagnostic delays, and improve patient outcomes. The success of this initiative depends on the establishment of structured training programs, clear policy frameworks, and collaborative professional cultures.

Implications for Practice: To operationalize role extension, Ghana must adopt a multifaceted approach: (1) develop and accredit postgraduate training programs for radiographers; (2) implement policy guidelines through collaboration between government, regulatory bodies, and professional associations; (3) foster interprofessional acceptance and cooperation; and (4) launch pilot programs to test feasibility and inform national scale-up. Investment in these areas will not only address existing service delivery gaps but also empower radiographers to contribute meaningfully to diagnostic care, thereby strengthening the resilience and responsiveness of Ghana's healthcare system.

Keywords: Medical Imaging; Role extension; Radiographers; Healthcare

INTRODUCTION

The healthcare landscape in Ghana, like many low- and middle-income countries, faces significant challenges in delivering timely and effective diagnostic services, particularly in medical imaging. The shortage of radiologists, coupled with increasing demand for diagnostic imaging, has created a bottleneck in service delivery, especially in rural and underserved areas [1]. To address this gap, the concept of role extension for radiographers-enabling them to perform tasks traditionally reserved for radiologists, such as image interpretation and reporting-has gained traction [2]. Role extension represents a paradigm shift in the scope of practice for radiographers, offering a potential solution to enhance healthcare access and efficiency [3]. This narrative review explores the rationale, challenges, and implications of role extension in medical imaging within the Ghanaian context, drawing on international and local evidence to inform practice and policy [4]. By examining the opportunities and barriers to implementing advanced practice roles, this paper aims to contribute to the discourse on improving diagnostic imaging services in Ghana.

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LITERATURE SEARCH

A systematic literature search was conducted to identify relevant studies on role extension in medical imaging, with a focus on Ghana. Databases including PubMed, Scopus, and Google Scholar were searched for published articles, using keywords such as "role extension," "radiographers," "medical imaging," "Ghana," and "advanced practice". The search was supplemented by manual reviews of reference lists and grey literature, including reports from professional bodies like the Ghana Society of Radiographers. While the search yielded limited studies specific to Ghana, reflecting a research gap, international studies from countries like the United Kingdom, Australia, and South Africa provided valuable insights into the implementation and outcomes of role extension. The scarcity of local evidence underscores the need for targeted research to guide policy and practice in Ghana's unique healthcare context. The review included original research articles, systematic reviews, technical reports, editorials, commentaries, and legislative documents relevant to radiographic practice. Studies not published in English, or those for which no English translation was available, were excluded from the analysis.

KEY FINDINGS

Rationale for Role Extension

The primary driver for role extension in Ghana is the critical shortage of radiologists, particularly in rural and underserved regions [5]. According to Sarkodie et al, Ghana has a radiologist-to-population ratio significantly below the World Health Organization's recommended threshold, with many facilities relying on a single radiologist or none at all [6]. This shortage leads to prolonged waiting times, delayed diagnoses,

and compromised patient outcomes [7]. Radiographers, who are more numerous and often stationed in rural facilities, are well-positioned to bridge this gap [3]. Studies demonstrate that with appropriate training, radiographers can competently perform tasks such as ultrasound reporting, computed tomography (CT) interpretation, and preliminary radiograph reporting [5,8]. For example, in the United Kingdom, radiographer-led reporting has been shown to achieve accuracy rates comparable to radiologists in certain imaging modalities [9]. In Ghana, role extension could alleviate the burden on radiologists, improve access to diagnostic services, and enhance the overall efficiency of the healthcare system [5,7].

Beyond addressing workforce shortages, role extension aligns with Ghana's broader health policy goals of achieving universal health coverage. By empowering radiographers to take on advanced roles, the healthcare system can optimize resource utilization, reduce costs, and ensure equitable access to diagnostic services [7]. Additionally, role extension offers radiographers opportunities for professional growth, potentially increasing job satisfaction and retention in a field prone to brain drain [4].

Training and Education

The success of role extension hinges on robust training and education programs tailored to the Ghanaian context [5,7]. Radiographers require specialized skills in image interpretation, clinical decision-making, and patient management to perform advanced roles effectively [10]. International models, such as the United Kingdom's postgraduate training programs for reporting radiographers may provide a blueprint for other countries including Ghana [9]. These programs typically include modules on advanced imaging techniques, pathology recognition, and medico-legal considerations, delivered through a combination of classroom learning and supervised clinical practice [8].

In Ghana, however, the absence of accredited training programs for advanced practice poses a significant barrier [7]. While some radiographers undertake informal training or short courses, these are often inconsistent and lack standardization [5]. To address this, stakeholders, including the Ghana Health Service, universities, and the Allied Health Professions Council (AHPC), must collaborate to develop accredited curricula [5]. Such programs should be integrated into existing educational frameworks, such as bachelor's or master's degree programs in radiography, and aligned with international standards to ensure quality and transferability of skills [5,11]. Furthermore, training should be accessible to practicing radiographers through flexible delivery models, such as online courses or regional workshops, to accommodate those in remote areas [2].

Policy and Regulatory Framework

The absence of a formal policy and regulatory framework is a major impediment to role extension in Ghana [5]. Without clear guidelines, radiographers undertaking advanced roles risk operating in a legal and ethical grey area, potentially exposing themselves to liability [12]. Research emphasizes the need for the Ghanaian Ministry of Health and the AHPC to develop policies that define the scope of practice, training requirements, and accountability mechanisms for advanced practice radiographers [5]. These policies should draw on international frameworks, such as those in Australia, where role extension is supported by legislation and professional standards [11].

Policy development must also address issues of remuneration and career progression [7]. In Ghana, radiographers are often not financially incentivized to take on advanced roles, which may discourage participation [1]. A clear career pathway, including designated titles (e.g., "advanced practice radiographer") and salary scales, would legitimize and incentivize role extension [10]. Additionally, policies should ensure patient safety by mandating continuous professional development (CPD) and regular competency assessments for radiographers in advanced roles [3].

Professional Perception and Acceptance

The successful implementation of role extension depends on the acceptance and collaboration of both radiographers and radiologists [5,12]. In Ghana, many radiographers are enthusiastic about expanded roles, viewing them as opportunities for professional development and recognition [13]. However, some radiologists express concerns about the competence and reliability of radiographer-led reporting, citing potential risks to diagnostic accuracy and patient safety [7]. These reservations are not unique to Ghana; similar tensions have been documented in other countries during the early stages of role extension [9,14].

Building trust between professions requires collaborative efforts, such as joint training programs, interprofessional workshops, and pilot projects demonstrating the efficacy of radiographer-led services [11]. Evidence from the United Kingdom shows that radiologist-radiographer collaboration improves acceptance and outcomes, as radiographers gain confidence and radiologists recognize their competence [8]. In Ghana, fostering a culture of mutual respect and shared goals is essential to overcoming professional silos and ensuring the sustainability of role extension [5-7].

Impact on Healthcare Delivery

Preliminary studies suggest that role extension can significantly enhance healthcare delivery in Ghana [1]. By enabling radiographers to perform tasks such as image reporting, facilities can reduce waiting times, expedite diagnoses, and improve patient outcomes [7]. These improvements are particularly critical in resource-constrained settings, where delays in diagnosis can lead to adverse health outcomes [6].

Role extension also has economic benefits [12]. By redistributing tasks from radiologists to radiographers, the healthcare system can optimize workforce utilization and reduce costs associated with outsourcing diagnostic services [11]. Furthermore, radiographers report higher job satisfaction when engaged in advanced roles, which may reduce turnover and improve service continuity [10]. However, these benefits are contingent on addressing the aforementioned challenges, including training, policy, and professional acceptance [3].

Implications for Practice

1. Development of Training Programs: To realize the potential of role extension, Ghana must prioritize the development of accredited training programs for radiographers [12]. These programs should focus on advanced imaging techniques, diagnostic accuracy, and clinical decision-making, with a curriculum informed by international best practices [10]. Partnerships with universities and professional bodies, such as the Society and College of Radiographers in the United Kingdom, could facilitate knowledge transfer and capacity building [9]. Additionally, training should incorporate practical components, such as supervised reporting, to ensure radiographers are confident and competent in their expanded roles [8].

Accessibility is a key consideration [2]. Training programs should be offered through multiple channels, including online platforms, to reach radiographers in rural areas [4,7,12,15,16]. Scholarships or subsidies could further encourage participation, particularly for those facing financial barriers. By investing in education, Ghana can build a skilled cadre of advanced practice radiographers capable of meeting the country's diagnostic needs [5].

2. Policy Formulation and Implementation: The formulation of a comprehensive policy framework is critical to the success of role extension [5,12]. This framework should clearly delineate the roles, responsibilities,

and limitations of advanced practice radiographers, ensuring alignment with patient safety and professional standards. Stakeholder engagement is essential to ensure policies are practical and widely accepted. The Ministry of Health, AHPC, and professional associations should collaborate to develop guidelines that address training, certification, and ethical considerations [12].

Implementation requires a phased approach [10]. Pilot programs in selected hospitals could test the feasibility of role extension, with findings used to refine policies [6,12]. Additionally, policies should include mechanisms for monitoring and evaluation, such as audits of radiographer-led reporting, to maintain quality and accountability [3]. By establishing a robust policy framework, Ghana can create a sustainable model for advanced practice in medical imaging [5,9].

3. Public and Professional Awareness: Raising awareness about the capabilities of advanced practice radiographers is vital to their integration into the healthcare system [12]. Public education campaigns can inform patients about the role of radiographers in diagnostics, dispelling misconceptions and building trust. Similarly, professional awareness initiatives, such as seminars and conferences, can highlight the evidence supporting role extension and foster collaboration between radiographers and radiologists [8].

Collaborative research is another avenue for promoting acceptance [11]. Studies demonstrating the accuracy and impact of radiographer-led reporting can provide empirical support for role extension, addressing concerns about competence [4,16]. By engaging both the public and healthcare professionals, Ghana can create a supportive environment for advanced practice [6,7,12].

4. Continuous Professional Development: To sustain the efficacy of role extension, radiographers must engage in continuous professional development (CPD) [12]. CPD programs should cover emerging technologies, such as artificial intelligence in imaging, as well as ethical and legal considerations [10]. These programs can be delivered through workshops, online courses, or professional conferences, ensuring radiographers remain up-to-date and competent [2,5,12,16].

CPD should also include opportunities for peer learning and mentorship, allowing radiographers to share experiences and best practices [3]. By prioritizing lifelong learning, Ghana can ensure that advanced practice radiographers deliver high-quality services in an evolving healthcare landscape.

Recommendations

To realize the potential of radiographer role extension, Ghana must adopt a multifaceted approach that addresses policy, education, and stakeholder engagement. The following recommendations provide a roadmap for implementation:

1. Policy Development: The Ministry of Health, in collaboration with professional bodies like the Ghana Society of Radiographers, should develop a comprehensive policy framework for role extension. This framework should outline the scope of practice, certification requirements, and legal protections for radiographers, ensuring clarity and accountability [5]. Drawing on models from countries like Australia and Canada, Ghana can establish standards that balance innovation with patient safety

2. Education and Training: Universities and training institutions should introduce specialized programs in image interpretation and reporting, tailored to Ghana's healthcare needs. These programs could include online modules, hands-on workshops, and mentorship from radiologists to build radiographers' confidence and competence [10]. Partnerships with international institutions could also facilitate knowledge transfer and capacity building [9,17].

3. Stakeholder Engagement: Engaging radiologists, policymakers, and patients is essential to address concerns and build consensus. Regular forums, workshops, and public awareness campaigns can clarify the benefits of role extension and dispel misconceptions. Involving radiologists in training programs can also foster collaboration and ensure that extended roles complement, rather than compete with, their expertise [8].

4. Pilot Programs: Implementing pilot projects in urban and rural healthcare facilities can provide valuable data on the feasibility and impact of role extension. These programs should include robust evaluation mechanisms to assess radiographer performance, patient outcomes, and cost-effectiveness [12]. Successful pilots can serve as models for national scale-up, building momentum for policy reform.

CONCLUSION

Role extension in medical imaging offers a transformative solution to the challenges posed by radiologist shortages in Ghana. By enabling radiographers to take on advanced roles, the healthcare system can improve access to diagnostic services, enhance patient outcomes, and optimize resource utilization. However, realizing these benefits requires addressing key barriers, including the lack of training programs, policy frameworks, and professional acceptance. Through strategic investments in education, policy development, and stakeholder collaboration, Ghana can establish a sustainable model for advanced practice in medical imaging. This approach not only strengthens the healthcare system but also elevates the role of radiographers, recognizing their potential as key contributors to universal health coverage. As Ghana moves towards advanced practice, continued research and evaluation will be essential to refine strategies and ensure long-term success

REFERENCES

1. Wuni AR, Courtier N, Kelly D. Opportunities for radiographer reporting in Ghana and the potential for improved patient care. Radiography. 2020; 26: e120-e125.
2. Smith TN. Radiographers' role in radiological reporting: A model to support future demand. Med J Aust. 2008; 188: 318.
3. Yielder J, Davis M. Where radiographers fear to tread: Resistance and apathy in radiography practice. Radiography. 2009; 15: 345-350.
4. McNulty JP, England A, Shanahan MC. International perspectives on radiography practice education. Radiography. 2021; 27: 1044-1051.
5. Wuni AR, Courtier N, Kelly D. Developing a policy framework to support role extension in diagnostic radiography in Ghana. J Med Imaging Radiat Sci. 2021; 52: 112-120.
6. Sarkodie BD, Ohene-Botwe B, Mensah YB, Tagoe E, Babatunde B, Brakohiapa EK, et al. Density and regional distribution of radiologists in a low-income country: the Ghana situation. Chinese J Acad Radiol. 2023; 6: 188-195.
7. Sule DS. Theory-practice integration in radiography education: the role of teaching strategies. 2018; 1-202.
8. Brealey S, Scally A, Hahn S, Thomas N, Godfrey C, Coomarasamy A. Accuracy of radiographer plain radiograph reporting in clinical practice: a meta-analysis. Clin Radiol. 2005; 60: 232-241.
9. Hardy M, Johnson L, Sharples R, Boynes S, Irving D. Does radiography advanced practice improve patient outcomes and health service quality? A systematic review. Br J Radiol. 2016; 89.
10. Palmer D, Snaith B, Harris MA. Assistant radiographer practitioners: Creating capacity or challenging professional boundaries?. Radiography. 2018; 23: 247-251.

11. Cowling C. A global overview of the changing roles of radiographers. Radiography. 2008; 14: e28-e32.

12. Wuni AR, Courtier N, Kelly D. Opportunities for radiographer reporting in Ghana and the potential for improved patient care. Radiography. 2020; 26: e120-e125.

13. Wuni AR, Courtier N, Kelly D. Developing a policy framework to support role extension in diagnostic radiography in Ghana. J Med Imaging Radiat Sci. 2021; 52: 112-120.

14. Hardy M, Snaith B. The impact of radiographer immediate reporting on patient outcomes and service delivery within the emergency department: Designing a randomised controlled trial. Radiography. 2011; 17: 275-279.

15. Bleiker J, Knapp KM, Hopkins S, Johnston G. Compassionate care in radiography recruitment, education and training: A post-Francis Report review of the current literature and patient perspectives. Radiography. 2016; 22: 257-262.

16. McNulty JP, Knapp KM, Brown P. Radiography education in the spotlight. Radiography. 2017; 23: S1-S2.

17. Hardy M, Snaith B. The impact of radiographer immediate reporting on patient outcomes and service delivery within the emergency department: Designing a randomised controlled trial. Radiography. 2011; 17: 275-279.