

peer reviewed **OPINION ARTICLE**

## An opinion on role extension, and advanced practice, in the South African radiography context. Where are we heading and what should we aspire to?

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### ABSTRACT

A variety of barriers exist that hinder quality and appropriate patient-centred healthcare services and care. One solution, in the radiography context, is role extension and advanced practice. Different terminology is discussed and an overview of the status regarding role extension and advanced practice in the South African radiography context is provided. Future directions regarding role extension and advanced practice for the radiography profession are also proposed.

**Keywords** task-shifting, role advancement, sustainable healthcare, multi-disciplinary team, artificial intelligence, professional development, career pathing

### LAY ABSTRACT

Role development in radiography, with a focus on clarifying different concepts, is discussed. An overview of the status of role extension and advanced practice in South Africa is presented as well as future directions for the profession.

### INTRODUCTION

Departing from a social justice and human rights perspective, governing structures of a country have a duty to recognise and implement reasonable measures, to enable each person to access the highest possible standard of physical and mental health care.<sup>[1]</sup> Whilst being cognisant of associated determinants of health and other intersecting human rights; adequate resources and shortages of healthcare professionals (HCPs) are significant barriers, which among others, hinder the provision of suitable and timely care to patients, as well as meeting patients' service expectations.<sup>[2]</sup> Such a scenario can result in burnout, demotivation and general job dissatisfaction among HCPs and subsequently contribute to reduced quality of healthcare service provision and patient-centred care.<sup>[3]</sup> Furthermore, job dissatisfaction can lead to an exodus of HCPs in search of better opportunities, which would further thwart an already dire situation.<sup>[4]</sup> These barriers, and other systemic challenges and concerns, are argued to persist and could even be exacerbated with the introduction of the National Health Insurance (NHI) scheme envisaged for South Africa. Therefore, universal healthcare (UHC), increased access to healthcare services and redress tenets underpinning the NHI may not be met.<sup>[5-6]</sup>

Career development is advocated as one strategy that could increase job satisfaction, productivity, and performance.<sup>[4]</sup> Considering healthcare, this development can result in increased quality of healthcare services provided by HCPs. To assist in bridging the gap between the ever-increasing workload demands on a finite complement of HCPs and providing optimal, timely care and quality service to patients, allied healthcare practitioners (AHPs), which include radiographers, were identified to possess the key aptitudes to fill this gap. This stance is upheld since patients may benefit from early input by AHPs in terms of assisting in reducing patient waiting times. Furthermore, having AHPs intervene increases access to timely care, enables sustainable healthcare services in a cost-effective manner, and improves patient outcomes.<sup>[7-8]</sup> To this end many allied health professions, including radiography, have adopted new roles and practices such as role extension and advanced practice roles.<sup>[9-10]</sup> These practices have been the topic of on-going debates for more than a decade.<sup>[11]</sup> Beneficiaries include the employers, HCPs and patients in terms of optimising available resources, employee motivation and quality of services provided.<sup>[12-13]</sup>

In this paper the different terminology associated with role development, role extension and advanced practice related to

radiography is explored. We also provide an overview of the current status of role extension and advanced practice in South Africa. Furthermore, we suggest the possible future directions related to role extension and advanced practice in the South African radiography context.

### ROLE DEVELOPMENT AND ADVANCES AND CHANGES IN THE SCOPE OF RADIOGRAPHY

Literature on role development and advances shows that the professional status of the radiography profession is uplifted in countries where this practice has been implemented and practiced, as those practitioners offer clinical expertise and leadership.<sup>[12]</sup> However, role development or task-shifting has sparked much critique with respect to its intention. Hardy et al.<sup>[12]</sup> maintain that the intention of role development or task-shifting is not for one profession to substitute another. The most important driver for the advances or changes in practice, and/or role development, should be to offer quality and effective patient-centred care. Contextual factors and service demands, such as to reduce patient waiting times, are some of the key motives for this extension or shifting of tasks.<sup>[12]</sup> One of the factors that impacts on the waiting times of patients is the shortage of radiologists.<sup>[14]</sup>

In the literature available on this topic, a variety of terminology is used related to role development and advancement. These terms are often conflated and used interchangeably. A few examples are: the red dot system or scheme,<sup>[15]</sup> pattern recognition and image interpretation, reporting radiographers,<sup>[16]</sup> role extension or development<sup>[17]</sup> and advanced practice.<sup>[9]</sup> However, we argue, that while some terms may refer to similar practices, there are distinct different areas of career pathing that may require specialised professional development, specifically for role extension, which may include reporting, and advanced practice.

The next section covers contextualising the terminology, followed by a detailed description of role extension and advanced practice. In terms of image interpretation skills, the red dot system or scheme was first introduced in two hospitals in London in 1981. This system recognises the education and training of radiographers to evaluate the quality of radiographic images and distinguish between normal and abnormal radiographic appearances. Radiographer participation in the red dot system is a voluntary practice. A radiographer who uses the system marks a suspicious area with a red dot. This acts as a flag to alert the referring clinician. This system is commonly implemented in accident and emergency departments (A&E).<sup>[15]</sup>

Ambiguity is a major limitation of the red dot system. The absence of a red dot does not equate to abnormalities not being present on a radiographic image. Therefore, if A&E medical practitioners are used to the red dot system and no red dot is placed on a radiographic image then this could lead to misdiagnoses; they may assume that no abnormality is present on a radiographic image.<sup>[16]</sup>

Role development or extension, in this instance, would include reporting on radiographic image findings, which is considered an extension of the red dot system.<sup>[17]</sup> Radiographer-led reporting requires intensive pattern recognition and report writing knowledge and skills through rigorous postgraduate education and training. Role development in South Africa would also include additional knowledge and clinical skills and competencies in areas such as intravenous cannulation, intravenous injection of contrast media, and reporting of contrast media studies and specialised modalities like computed tomography (CT).

With the imminent impact of artificial intelligence (AI) in the radiography profession regarding image interpretation practices,<sup>[18-19]</sup> imaging protocols and patient interactions,<sup>[20]</sup> AI can be added to an area of role development that needs attention.

Considering the above contextualisation of role development, as well as some examples to illuminate our argument, it becomes important to distinguish between what constitutes role extension and advanced practice.

#### • Role extension

Role extension is interpreted to relate to supplementary skills and responsibilities that extend beyond a radiographer's initial point of professional registration, as well as those skills and responsibilities that were previously considered to be in the domain of another HCP: a radiologist, oncologist, or nuclear medicine physician, for example. Main drivers for this change are the digitisation of medical radiation sciences and the shortages of HCPs.<sup>[9, 21-22]</sup>

To keep abreast with these advances, radiographers engage in both formal (i.e., postgraduate qualifications) and informal (i.e., continuing professional development [CPD] and in-service experiential training) educational activities to gain the necessary knowledge and skills to ensure that these alternative imaging services can be provided. But the education and training provided to and engaged in by radiographers is largely dependent on the needs of the specific context/institution radiographers find themselves in.<sup>[9, 23-24]</sup>

What is unclear is when does an extended role become normal practice. More clarity is therefore needed so that radiographer role development is not stifled to the detriment of an individual and their potential contribution to practice. A possible solution to this could be advanced practice.

#### • Advanced practice

Where role extension is suggestive of an increased breadth of knowledge and skill in specific areas of radiographic practice, advanced practice is more concerned with the extent to which such skills and knowledge are implemented for the benefit and development of clinical practice and patient management pathways.<sup>[9]</sup> Advanced practice is thus regarded as a more advanced role compared to role extension. Therefore, advanced practice

would include greater autonomy, accountability and responsibility related to the macro and meso-levels of service delivery and patient management and care areas of practice, where radiographers use their expert knowledge and skills in the workplace that they gained through role extension endeavours.<sup>[9-10]</sup> Another key feature of radiographers in advanced practice roles is the ability to identify areas that can benefit from quality improvement efforts and, to develop innovative practices to address the areas identified as needing attention.<sup>[10]</sup>

Price and Le Masurier's study<sup>[17]</sup> established that the development, extension or advancement of roles are linked to differentiated positions such as assistant radiographers, advanced practitioners and consultant radiographers. To be considered for an advanced practitioner role in the United Kingdom one needs a national vocational qualification at levels 4/5 and/or a master's degree, or any of their equivalents, and one needs to demonstrate that one possesses expert clinical practice skills and knowledge. Further to this, an individual should provide evidence that they will maintain such knowledge and skills through CPD, research and other developmental means to provide the highest quality service, in making clinical decisions, in their areas of expertise.<sup>[9-10]</sup> Consultant practitioners are at the end of the advanced practice spectrum. They work at the edge of the profession by creating, interpreting and implementing knowledge to ensure service delivery and clinical practices that extend the forefront of the radiography profession. They usually have a doctoral degree and/or workplace learning and other practice evidence equivalent to a doctoral level. These practitioners provide strategic leadership to influence and inform clinical practice and service delivery.<sup>[10]</sup>

### THE CURRENT STATUS IN SOUTH AFRICA

At present radiography practice is governed by the regulations defining the scope of the profession of radiography, government notice R2326, in Government Gazette 5349<sup>[25]</sup> and the rules of ethical conduct as outlined in annexure 10 of the Health Professions Council of South Africa's (HPCSA) booklet 2,<sup>[26]</sup> including other generic ethico-legal frameworks. In 2016 (Government Gazette 970) and 2020

(Government Gazette 43632), respectively, proposed amendments to the current regulations defining the scope of the profession of radiography were gazetted for public comment by the Minister of Health.

<sup>[27-28]</sup> Amendments in these Government Gazettes were proposed for all four categories in radiography. The amendments relate to obtaining specialist knowledge and skills in additional imaging modalities, medicine control and administration, patient counselling, image interpretation and report writing.<sup>[27-28]</sup> Underpinning these role development and extension endeavours is the need for adequate and appropriate education and training, guided by the Professional Board for Radiography and Clinical Technology (PBRCT) of the HPCSA before radiographers assume such roles.<sup>[29]</sup> When the proposed amendments to the regulations were gazetted in 2016 and 2020 the Society of Radiographers of South Africa (SORSA) did submit extensive comments related to all four categories, with the input from stakeholders in clinical practice, to the Minister of Health (personal communication A Ramkhelawan, SORSA president, 11 April 2021).

Evidence does exist in the South African radiography fraternity that role extension in intravenous contrast administration and radiographer-led image interpretation and reporting is supported, needed and beneficial for the South African healthcare sector given the contextual barriers the sector faces.<sup>[14, 21, 30-33]</sup> However, evidence in other areas of role extension in radiography is lacking; more research in these areas should be done to ensure evidence-based implementation of radiographer role extension.

With reference to role development pertaining to AI, SORSA hosted a virtual symposium in September 2020 related to the World Radiography Day (WRD) theme: elevating patient care with artificial intelligence. On WRD, 8 November 2020, SORSA also participated in the International Society of Radiographers and Radiological Technologists' (ISRRT) Facebook live webinar on the impact of AI on the profession of radiography. From these events, it was clear that there is an urgent need to provide formal educational opportunities, in addition to CPD, to radiographers to prepare them for an AI-enabled work environment. To address this need an international research collaboration between City University of London

and the Nelson Mandela University is underway to ultimately develop a formal educational opportunity for radiographers pertaining to AI.

## A SUGGESTED WAY FORWARD

Foregrounded by the above, the future of the radiography profession is exciting. The current technological advances and the implementation of AI and machine learning are some of the catalysts for changes in the profession. The addition of role extension and/or advanced practice, can offer more opportunities for professional development. However, to sensibly guide the profession regarding aspects such as advanced practice and/or role extension, research evidence is essential in all the categories of radiography. We therefore propose the following way forward regarding education, research, and policy development.

- Informal learning may offer an opportunity for radiographers to align their current knowledge and skills with an advanced role. Thus such activities should be explored. This could then be used to identify what kind of additional formal and informal learning would be necessary.
- Research evidence must explore the need and possible impact of role extension or advancement in all categories of radiography since evidence is largely limited to diagnostic radiography in the areas of image interpretation and reporting and intravenous administration of contrast media.
- Clarification of terminology is essential in South Africa for standardisation and future quality measurement and improvement purposes. This clarification relates to the respective competencies, to an adjusted formal and informal education and training model and an associated career path.<sup>[16]</sup>
- Role clarification of radiographers that assume these extended roles is imperative, as well as developing and implementing career pathing, post structures and monetary incentives congruent with extended roles. The question, however, is whether different regulatory and governing bodies will be required.<sup>[17]</sup>

- Criteria and/or policies are essential to cultivate specialist roles in the realm of advanced and consultant practice and need to be developed through a collaborative process involving all relevant stakeholders. These policies must be aligned to the current and future needs of the South African health sector in lieu of technological advances, staffing, burden of disease and the NHI with the view of ensuring equitable access to radiographic and radiological services and improved patient outcomes.

## CONCLUSION

Patient-centred care is non-negotiable. Adequate and appropriate healthcare provision is a basic human right. But, there are barriers that exist that hinder patient-centred care and access to healthcare services due to various systemic challenges that the healthcare sector faces in South Africa. In the radiography profession, a possible solution is role extension and advanced practice. Although steady progress is being made regarding radiographer role extension in South Africa, more work is required to fully appreciate the potential benefits that role extension and/or advanced practice can have in lieu of enhancing access to healthcare services and service delivery. The scope of practice and regulations defining the scope of the profession should therefore allow for role development in all categories of radiography to ensure more socially just healthcare services in South Africa.

We recognise that this is a long-term goal, but discussions need to urgently start around advanced practice and what it may mean in the South African context. To continue this debate, the voices of South African radiographers are essential.

## CONFLICT OF INTEREST

None to declare.

## CONTRIBUTIONS OF AUTHORS

RvdV and HFN both contributed to the conceptualisation, literature search and write up.

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