



## Systematic Review

## Opportunities for leadership development in radiography, a scoping review

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## ARTICLE INFO

## Article history:

Received 28 January 2025

Received in revised form

13 March 2025

Accepted 18 March 2025

Available online xxx

## Keywords:

Leadership

Radiographer

Development

Opportunity

Career Progression

Transformation

## ABSTRACT

**Introduction:** The last decade has seen healthcare experience an exponential growth in terms of technological advancements and patients requiring diagnosis and treatment. Effective leadership is seen as being key in the transformation of services and improvements in patient outcomes. The aim of this scoping review was to identify and evaluate where leadership opportunities exist for the radiographic workforce and how these are supported, valued and actioned.

**Method:** A systematic search of relevant databases was undertaken. Inclusion criteria included literature from the last twenty years, both diagnostic and therapeutic radiographers, primary and secondary research as well as grey literature. Specific areas discussing leadership opportunities for radiographers were identified and arranged into relevant themes.

**Results:** Leadership development for radiographers has largely been aligned to clinical roles at the higher levels of practice, or around supporting and empowering students. Confusion between management and leadership is apparent as is the impact of leaders within radiography. Expectations around leadership capabilities are clear at advanced and consultant levels of practice but outside this remit, there has been minimal research undertaken that focuses on specific leadership development opportunities.

**Conclusion:** The literature outlines the potential for designated leadership development opportunities for radiographers. However, this is clearly limited to very specific areas of the workforce such as those practitioners working at an advanced and consultant level of practice. Current pressures on healthcare services to transform services and support innovative practice, suggest that the potential to develop the wider radiographer workforce through focused leadership development is explored and evaluated further.

**Implications for Practice:** Limited focal leadership development is evident within the radiography profession. This article seeks to inform future development opportunities for leadership development. Non-clinical leadership development requires further investigation.

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## Introduction

Effective leadership is a highly valued and complex action essential to the delivery of high quality clinical practice within healthcare.<sup>1</sup> In the UK there have been several high-profile reports citing ineffective National Health Service (NHS) leadership resulting in suboptimal care and compromised patient safety.<sup>2,3</sup> Further evidence provided by the Kings Fund<sup>4</sup> suggests a direct correlation

and interdependence between shaping organisational culture and leadership behaviours, strategies and qualities. As Adams<sup>5</sup> noted, in order to be successful in a fast paced, ever changing, and highly complex health environment, leadership wisdom is essential.

The challenges around leadership in healthcare are significant, something which Nicol<sup>6</sup> suggests is due to frontline clinicians wielding the greater power in day-to-day decision making whilst adopting a patient led, patient-centred focus. These actions serve to oppose and counteract the 'greatest good for the most' aspiration of leaders who are deemed to be 'in charge at the top'.<sup>6 (p60)</sup> Whilst the discussion around accountability and responsibility could be seen as contentious, it is clear that healthcare professionals operating within a leadership capacity must possess, and be able to

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demonstrate, qualities to support both effective service delivery and high-quality care resulting in improved patient outcomes.<sup>7</sup> Effective leaders engage others in the belief of achieving shared goals and influence their values, attitudes and behaviours through a dyadic relationship.<sup>1,8</sup> Describing leadership as a process, Yukl<sup>9</sup> suggests this is a transactional event between a leader and their followers. As such, leadership can therefore be considered to not solely being an inherited characteristic, or trait, making it available to everyone and not restricting its status solely to the people who wield the position of power.

The NHS Long Term Plan<sup>10</sup> clearly identifies the need to encourage positive cultural values and leadership behaviours within service delivery. A study undertaken by The Kings Fund<sup>11</sup> in partnership with NHS providers concluded that there was currently not a sufficient pipeline of highly skilled and readily deployable senior leaders to support this ambition.

Within radiography, it has been suggested that a systematic leadership development and succession model will support the profession to face ongoing changes and future challenges.<sup>12</sup> Snaith and Hardy<sup>13</sup> express that whilst leadership attributes may be a quality present in many, there are significant opportunities to further develop leadership skills within practice. They further defined leadership as ‘the ability to motivate and inspire others, though the development of a team, including guidance, direction and influence of others to maximise their potential and optimise service delivery’.<sup>13(p145)</sup> Historically radiologists have dominated the service leadership space with radiographers occupying the more subservient role around image acquisition.<sup>14</sup> For many radiographers the management route has been viewed as the only way to gain influence within the leadership space<sup>15</sup> suggesting that leadership is associated with a position of power. Kalar and Wright<sup>16</sup> highlight how this theory could be linked to a model whereby the ownership of power and authority acts to legitimise the leaders influence and control over service delivery.

Over the years, radiographers have had to contend with low professional status, low pay, limited professional autonomy and independence from radiologists.<sup>17</sup> These factors have limited the professional recognition of radiographers and it has only been since the introduction of the four-tier service delivery model<sup>18</sup> and recruitment into the first consultant radiographer posts, that diversity in leadership capability and accountability has been more formally recognised.<sup>19</sup> The publication of the fourth edition of the College of Radiographers Education and Career Framework<sup>20</sup> in 2022 provides clarity around the knowledge, skills and attributes (KSAs) aligned to the leadership pillar of practice and clearly states that leadership should be embedded at every level. Whilst challenges remain from increased workload and ongoing workforce shortages,<sup>21,22</sup> sustained operational pressures have facilitated an increase in the number of radiographers working at the advanced or consultant levels. Whilst key drivers for this include supporting service redesign and improvement in patient outcomes,<sup>14,23</sup> the

requirement to backfill radiologist duties such as reporting, or sonography has meant that leadership development has been viewed as less of a priority compared to the clinical task.<sup>15</sup>

Additionally, those working in senior management roles commonly took priority in accessing leadership education, something which Hardy and Snaith<sup>24</sup> felt hindered succession planning and the ability to embed a sustainable career pathway in practice. The early introduction of leadership skills and training has been advocated by many,<sup>12,25,26</sup> and the identification of potential leadership development opportunities available to radiographers provides the focus for this scoping review.

**Method**

A literature search was undertaken to identify research that had been published within the last 20 years on leadership development opportunities available to radiographers. This time period was selected due to the introduction of the UK four-tier service delivery model in 2003 which signified a step change in the profession.<sup>18</sup> This strategy enabled substantial career growth and development for radiographers in many areas that had previously been restricted.

A scoping review was deemed to be the most appropriate method as it enabled the mapping of key concepts underpinning the research area against the main sources and types of evidence available.<sup>27</sup> It also maintains the same rigorous and transparent methodology to ensure trustworthy results.<sup>28</sup>

The review question was developed using PIO from the adapted PI(C)O tool<sup>29</sup> and a systematic search of relevant electronic databases was conducted (Table 1). A variety of databases deemed relevant to health research (PubMed, Medline, Embase and CINAHL) were accessed to maximise the opportunity of including research that may be overlooked if only a single database was used. Identical search terms were entered into each database alongside truncated versions. In addition, the Google Scholar search engine was utilised as it forms a powerful addition to other traditional search methods in order to identify relevant grey literature.<sup>30</sup>

Titles and abstracts were initially assessed, and duplicate studies removed. The remaining full text articles were then assessed against the pre-determined inclusion and exclusion criteria (Table 2). Initial expectations were to include only primary research however formative searches yielded too few results to be deemed useful. This resulted in a pragmatic decision being made to extend the search to include secondary research. In a similar fashion, formative plans were to focus on UK-based studies, however due to the relatively small and singular focus it became apparent that a wider demographic was required to increase the diversity and depth of the subject matter.

Articles were evaluated on their leadership quotient as it was acknowledged that many were multifaceted by nature with minimal content on the various elements of leadership. In this instance,

**Table 1**  
Database search terms used, and number of results achieved.

Framework	Key Words	PubMed	Medline	Embase	Cinahl
P - People	radiographer OR Radiography OR (xray technician) OR (imaging technician) OR (radiologic technologist) OR (radiation therapist)	2,079,092	446,007	1,480,839	170,417
I- Intervention	opportunit* OR develop* OR experience* OR possibilit* OR education OR training	9,801,038	9,335,751	1,630,118	2,260,245
O- Outcome	Leader*	145,160	140,555	172,758	120,604
Results		1036	201	356	306

**Table 2**  
Inclusion and Exclusion criteria.

Inclusion	Exclusion
Date range 2003–2023	Radiologist or medical workforce focused.
Diagnostic radiography or radiographer	Managers from non-radiographic backgrounds
Therapeutic radiography or radiographer	Other Allied Health Professions
Grey literature	Not published in English
International Literature	Abstract only or Conference presentations
	Low leadership quotient and focus

articles that were deemed to hold little value for this scoping review were excluded. References of selected articles were also reviewed to identify additional suitable works, an approach designed to provide a more complete view of available evidence.<sup>31</sup>

Articles which met the criteria were further reviewed using a systematic review critical appraisal tool<sup>32</sup> to assess methodological quality and all were categorised as acceptable. Each article was reviewed for content and due to the diversity noted within the subject matter, identifying emergent key themes was considered the most appropriate method to appreciate the search objective and overall research question.

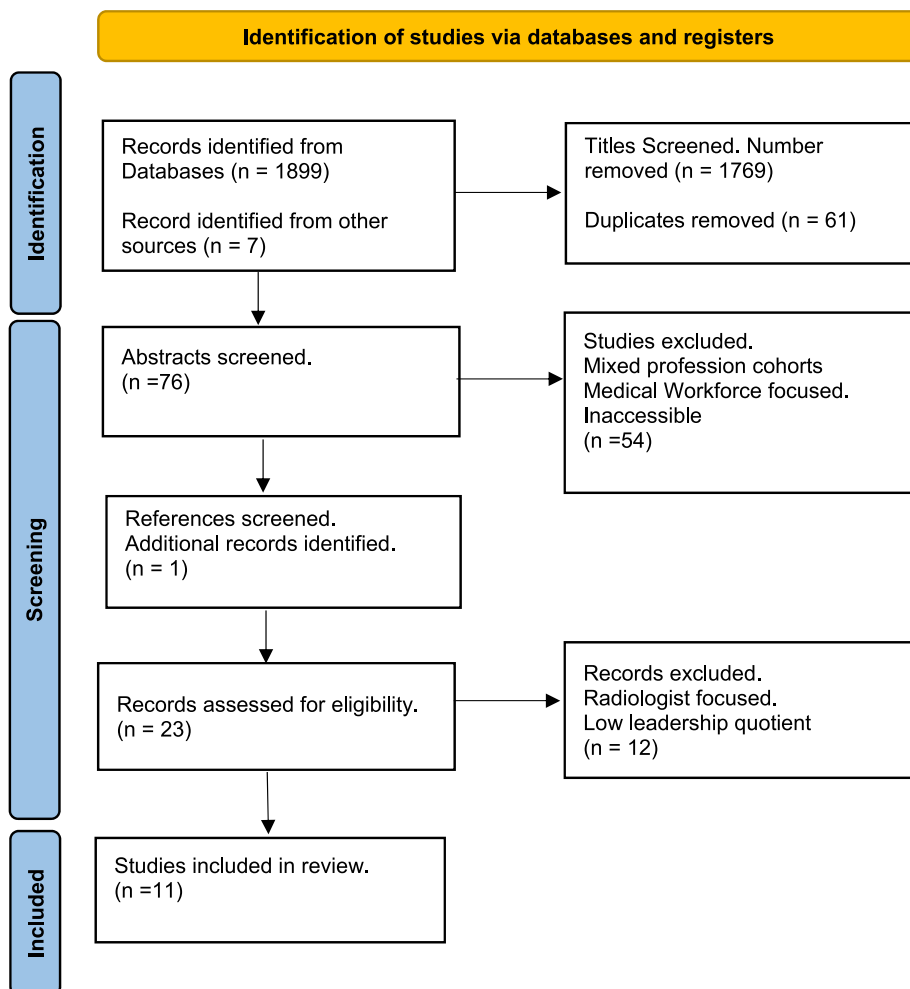
**Results**

Following screening of the literature, 11 articles met the inclusion criteria and were accepted (Fig. 1). The sample was heterogeneous consisting of primary research and educational opinion-based discussion articles (Table 3).

Over 50 % of the literature comprised UK based authors and included primary research and educational discussion focusing solely on the UK healthcare system (n = 6).<sup>15,19,22,34,37,39</sup> Australia had the next highest number of articles (n = 2),<sup>35,36</sup> with the remainder originating from Canada (n = 1),<sup>33</sup> New Zealand (n = 1)<sup>38</sup> and United States of America (USA) (n = 1).<sup>12</sup>

All the literature focusing on leadership within the advanced and consultant radiographer workforce was from the UK (n = 6). At the other end of the career spectrum, literature concerning pre-registration leadership opportunities originated from Australia (n = 1), Canada (n = 1) and the USA (n = 1). There was one article from New Zealand reporting a primary research study with a mixed population of both students and radiographers working at different levels within varying roles. The remaining article was written from an Australian perspective and focused on radiography in general with minimal reference to any specific target population.

Of the identified literature there was a relatively even spread between primary research (n = 6) and educational discussion



**Figure 1.** PRISMA flow diagram.

**Table 3**  
Data extraction.

Author/s	Year	Article Type	Location	Participants	Overall Findings and Comments
Belliveau <sup>33</sup>	2021	Educational Perspective	Canada	N/A	<ul style="list-style-type: none"> <li>Discussed the importance of commitment from clinical and academic educators to support leadership development in diagnostic radiography students.</li> <li>Similar discussion and thoughts to Nuzzo et al. that experiential learning and opportunities would enable leadership development in students.</li> </ul>
Bloom <sup>12</sup>	2014	Primary Research Cross-sectional descriptive design 4-part online questionnaire	USA	n = 163 radiography graduates	<ul style="list-style-type: none"> <li>Grey literature – PhD Thesis</li> <li>1821 eligible participants, 242 responded with 163 viable responses</li> <li>Explored radiography students' perceptions of the transformational leadership behaviours, leadership opportunities, self-efficacy</li> <li>Students observed leadership skills in radiographers, and this supported their own self efficacy</li> <li>Findings support incorporation of leadership instruction and practical application into undergraduate curriculum</li> </ul>
Booth, Henwood and Miller <sup>34</sup>	2017	Primary Research Qualitative Thematic Approach Semi-structured Interviews	UK	n = 6 Consultant Radiographers (CR)	<ul style="list-style-type: none"> <li>Study about CR opinion on leadership</li> <li>Non-response bias noted due to operational workload pressures from other eligible CR – may have limited the range of issues being discussed.</li> </ul>
Chamunyonga et al. <sup>35</sup>	2021	Educational Perspective	Australia	N/A	<ul style="list-style-type: none"> <li>Reports part of a larger study (3 linked articles)</li> <li>Stated importance of incorporating leadership training into education – theoretical knowledge and acquisition of leadership skills</li> <li>Suggests empirical studies are necessary to enhance the learning experiences and identify the best methods to teach leadership.</li> <li>Recommends leadership development is embedded into curriculum - in both university and clinical environments</li> </ul>
Ford <sup>23</sup>	2010	Primary Research Mixed methods approach Comparison of JD, questionnaire and telephone interview	UK	n = 10 of possible 12 CR	<ul style="list-style-type: none"> <li>Study to evaluate CR experience around success and challenges.</li> <li>Found CR felt strongest in the expert clinical practice element and individual patient care.</li> <li>Evidence that CR acknowledged leadership as part of their role, but strategic type activities were minimal.</li> <li>Further research needed and suggested comparison to nursing regarding role overload and job satisfaction.</li> </ul>
Forsyth and Maehle <sup>19</sup>	2010	Primary Research	UK	n = 11 of possible 21 CR	<ul style="list-style-type: none"> <li>Early study on CR – acknowledged this may affect findings</li> <li>Research and leadership training were not identified as strong features in the job role</li> <li>Acknowledge that this level of practitioner was likely to have inherent leadership skills by nature.</li> <li>Did compare findings to nursing and found similarities in terms of line management, salaries, terms and conditions of employment</li> </ul>
Hudson <sup>15</sup>	2021	Reflective Discussion	UK	N/A	<ul style="list-style-type: none"> <li>Focused on leadership within advanced and consultant radiographic practice.</li> <li>Advanced and CR roles based less on being a figurehead and more on facilitating environment to inspire and support wider team.</li> <li>States it is difficult to conceptualise leadership within radiography and measure its impact.</li> <li>Recommends further research into leadership at these levels of practice to inform educational gaps.</li> </ul>
Nuzzo et al. <sup>36</sup>	2022	Educational perspective	Australia	N/A	<ul style="list-style-type: none"> <li>Discussed how commitment was essential to enable leadership development in students.</li> <li>Explored the value of experiential learning opportunities - placement, mentoring, professional group involvement etc.</li> <li>Concluded that experiential learning would enable students to exercise effective leadership in their current student roles and attain skills required for future professional roles.</li> </ul>
Price and Edwards <sup>37</sup>	2008	Educational Perspective	UK	N/A	<ul style="list-style-type: none"> <li>Discussion proposes a model for developing leadership skills for consultants focussing on competence, confidence, and capacity.</li> <li>Slightly dated as written at a time when CR roles were in their infancy.</li> <li>Good key points discussing why CR should not be compared to consultant radiologists and the traditional power hierarchy</li> </ul>
Sithole <sup>38</sup>	2013	Primary Research Interviews and focus group	New Zealand	n = 17 Mixed group of leaders, practitioners, and students	<ul style="list-style-type: none"> <li>Grey Literature – Master's Dissertation</li> <li>Confirmed that participants did not differentiate between leadership and management</li> <li>The following skills were also identified as essential for leaders to have; communication, interpersonal, relational, organisational and strategic.</li> <li>Study showed that the leadership styles employed by leaders was aligned to the context in which the leadership took place.</li> <li>Participants said leadership was affected by organisational culture and structure, values, beliefs, and ethics.</li> </ul>

**Table 3** (continued)

Author/s	Year	Article Type	Location	Participants	Overall Findings and Comments
Snaith et al. <sup>39</sup>	2019	Primary Research Observational study based on interval sampling of activities.	UK	n = 6 CR within a multisite NHS Trust.	<ul style="list-style-type: none"> <li>• A later study undertaken when CR is more established and well known.</li> <li>• Study suggests that CR are positive leaders that live up to expectations of role and support service delivery and capacity generation.</li> <li>• The study demonstrated that service leadership undertaken by CR was strategic as well as clinical.</li> <li>• Suggested that CR working at clinical, organisational, system and national levels did require a range of leadership and development opportunities to be effective in role.</li> </ul>

(n = 5). Most of the primary research used a qualitative methodology including interviews and focus groups with the remainder utilising a mixed methods approach incorporating questionnaires and observational studies. Cohort sizes varied and ranged from 6 to 163 participants, with most of the primary research studies (n = 5) being conducted on smaller cohort sizes (maximum 17 participants).

Publication timelines for the selected literature varied, however there were some clear links to significant publications and chapters of professional development. The research and discussion around the advanced and consultant radiography workforce varied with three articles published in the early stages of role implementation (2008–2010) and the remaining three being more recent (2018–2021). The earlier studies concentrated mainly on the subjective experiences and role profiling of the first consultant radiographers whereas the later studies focused specifically on the leadership element of these roles. Of the literature discussing the pre-registration workforce (n = 3), these were more recent (2021–2022) and focused on embedding leadership awareness within the diagnostic, therapeutic and nuclear medicine undergraduate programmes of education.

Although the foci of the literature was broad, even in the context of a single profession, a number of recurring themes were evident. These comprised: leadership opportunities, education and training development, impact of radiography leadership, challenges and barriers to radiography leadership, leadership versus management conflict, role identify, self-perception and self-efficacy. Table 4 identifies the articles alongside the related themes.

**Discussion**

*Leadership opportunities*

Booth, Henwood and Miller<sup>34</sup> highlighted the lack of research addressing radiography leadership, something which Belliveau<sup>33</sup> also acknowledged. Where there is appropriate literature, this mainly outlined leadership opportunities and development for radiographers working as advanced and consultant practitioners.<sup>15,19,23,34,37,39</sup> More recently the limited research has

explored the pre-registration radiography context considering the merits of embedding leadership theory and education into the academic curriculum.<sup>33,35,36</sup>

A key driver in establishing leadership development within the NHS in England has been the publication of professional frameworks which underpin the requirements for the multidisciplinary advanced and consultant levels of practice.<sup>40,41</sup> These clearly outline the expectations of practitioners working at these levels, across all four domains of practice: clinical, education, research and leadership. The UK is currently the only country where radiographer consultant status can be achieved and is recognised.<sup>39</sup> Hudson<sup>15</sup> states the proportion of leadership functions within a role increases from advanced to consultant practice, suggesting that leadership should straddle all domains as an overarching theme rather than as a singular standalone pillar. This builds on the theory put forward by Booth, Henwood and Miller who state that 'leadership underpins all other functions and cannot be considered a discrete phenomenon that we can analytically partition away from the other domains'.<sup>42(p41)</sup>

Bloom<sup>12</sup> speculates on the lack of radiographers in key leadership positions, resulting in decisions being made for the profession and its patients without appropriate input from the discipline. Early implementation of leadership development is a key recommendation across the literature involving the pre-registration population of radiographers.<sup>33,35,36</sup> Chamunyonga et al.<sup>35</sup> suggest this would support the acquisition of profession-specific knowledge, skills and attitudes that are necessary for effective clinical leadership of the future. Nuzzo et al.<sup>36</sup> agree around the potential of experiential learning at this level and impress that this should be an inclusive opportunity for students, irrespective of inherent qualities, to develop leadership skills for their future professional roles.

Within the literature, there was no reference to, or consideration of, the needs, aspirations and opportunities offered to those radiographers who are positioned between the pre-registration stage and higher levels of practice. Of the one study that was inclusive of this demographic, Sithole<sup>38</sup> identified that some participants felt leadership was not a feature of their role and did not see any value or requirement in understanding it more fully. It should be noted that this was a small sample study and therefore the findings

**Table 4**  
Identified articles and their related themes.

Theme	Article Reference										
	12	15	19	22	32	33	34	35	36	37	38
Leadership opportunities		•	•	•		•	•	•	•		•
Education and training development	•	•	•	•			•	•	•	•	
Impact of radiography leadership				•		•					•
Challenges and barriers to radiography leadership		•		•					•		•
Leadership versus management conflict				•							•
Role identity, self-perception and self-efficacy	•	•		•		•		•		•	•



cannot be considered representative of the wider radiographic profession.

#### *Education and training development*

Belliveau<sup>33</sup> signalled that individuals were normally promoted into leadership roles based on seniority rather than appropriate education. This observation was based on healthcare in general and is in contrast to the findings of Sithole<sup>38</sup> which focused specifically on clinical radiography. This study highlighted that the appointment of leaders had changed and was no longer in favour of solely promoting senior staff. Instead, individuals with leadership qualifications were recruited from outside the industry introducing feelings of misgivings from within the profession.

The evidence surrounding leadership education, training and development is linked solely to either advanced and consultant level practice or pre-registration radiography students. In their early study Price and Edwards<sup>37</sup> were keen to impress the importance for radiographic leaders to develop soft skills to support confidence, competence and the capacity to lead. They stated that consultant radiographers were already experts in their clinical fields and so it was the leadership and interpersonal skills that needed further developmental prioritisation. In positive alignment to this, Ford<sup>23</sup> found that in a cohort of ten of the earliest consultant radiographers, three had job descriptions which included a requirement for a leadership or management qualification. In the same year, another study with a similar cohort size (n = 11) demonstrated that 82 % of these consultant radiographers had undertaken additional leadership, management and education training, however they did not specify in what context or at what level this was.

Formal leadership education and the attainment of qualifications was discussed in the majority of the literature concerning advanced and consultant practice. Hudson<sup>15</sup> discussed how appropriate training, regular practice and support can nurture and grow individuals' leadership potential. Early literature states that during the infancy of consultant radiographer roles, formal leadership education was lacking.<sup>19,23</sup> Booth, Henwood, and Miller<sup>42</sup> also acknowledge this and note that the consultants in their study recognised in themselves the need for more formal training. As the expectations of the roles became clearer, it was anticipated that the educational requirements would be better understood and supported.<sup>37</sup>

The literature pertaining to pre-registration students indicated a strong emphasis on the benefits of formal leadership education. Chamunyonga et al.<sup>35</sup> felt this could support students to work in complex healthcare environments by teaching them cognitive skills such as self-confidence, humility, adaptability and resilience. Challenges around embedding leadership focused development into the undergraduate programmes include the ability to fit it into an already full curriculum<sup>12</sup> and prioritisation when regulatory bodies do not require it at entry level.<sup>35</sup>

There was strong support for students' leadership skills development through experiential learning in a clinical setting. Nuzzo et al.<sup>36</sup> highlighted the benefits of mentoring partnerships to support this and suggested that it could potentially increase a students' self-reflection, motivation, interpersonal team working, adaptability and emotional intelligence. They concluded these were essential qualities that aided successful transition into practice. Bloom<sup>12</sup> also suggested that it was important for students to observe radiographers demonstrating transformational leadership skills in the absence of formal titles or dedicated leadership roles. Role modelling in this respect, reinforces that leadership is present at all levels and supports individual's self-efficacy in developing leadership skills, attributes and behaviours.

#### *Impact of radiography leadership*

The impact of leadership appears to be discussed solely within the context of the consultant radiographer role. Ford<sup>23</sup> identified several areas where impact was evidenced, such as developing best practice and in the training of staff. Snaith et al.<sup>39</sup> signalled that consultant radiographers were able to evidence significant contributions to service delivery and capacity generation. These activities are clinically focused and would have historically fallen under the traditional remit of the medical workforce. Other duties however that could be considered to further develop their leadership status such as leading research, developing new partnerships, governance implementation and strategic planning, were still found to be very much under the influence and control of their medical colleagues.<sup>39</sup> There was strong opinion about the dominant clinical focus of consultant radiographer roles with Humphreys et al.<sup>43</sup> suggesting that their leadership elements tended to align to clinical services only. Interestingly, and perhaps providing unconscious support to this theory, Snaith et al.<sup>39</sup> found that consultant radiographers felt pressure when taking time away from clinical service delivery to undertake strategic activities.

The literature also considers the limitations to leadership practice. Booth, Henwood and Miller<sup>34</sup> demonstrated that for early consultant radiographers, the leadership aspect was very much centred at a daily practice level supporting clinical workload and management. This is similar to Ford<sup>23</sup> who confirmed that leadership was evident in clinical care and improving pathways, but less so at a strategic level. Both studies concluded that limiting leadership influence to a local level could potentially restrict the ability of the consultant radiographers to have a much wider strategic impact.

#### *Challenges and barriers to radiography leadership*

Price and Edwards<sup>37</sup> perceived there was some pessimistic scepticism around achieving equality between consultant radiographers and their medical counterparts. They suggested that being tasked to specific core duties would be detrimental to their role and limit their impact in other areas. The ongoing resistance and lack of acceptance from medical colleagues was also highlighted by Snaith et al.<sup>39</sup> who said that equality may never happen despite consultant radiographers attaining and achieving doctorate status.

The acceptance of non-medical consultants by their medical counterparts is a key discussion within the early literature with clear links demonstrated between the number of consultant roles and the shortage of radiologists.<sup>23</sup> Whilst this workforce deficit may have supported additional posts being created, the requirement to keep up with service delivery demands could also have influenced consultant radiographers to concentrate their leadership skills on solely relieving clinical pressures.<sup>23</sup>

Earlier research also indicates that radiography leaders working at the consultant level of practice felt they had little support from their professional body. Ford<sup>23</sup> suggested that this could be due to the role being in its infancy and the professional body not fully understanding the type of support required. Support networks are highlighted by Hudson<sup>15</sup> as being important in attaining effective leadership abilities. Ford<sup>23</sup> indicated that the consultant radiographer workforce often felt isolated with his study participants indicating this was a result of the autonomy afforded to them in their role. Whilst the freedom was welcomed, reported examples of negative behaviours encountered included lack of radiologist support, isolation outside the normal radiographer and radiologist circle of communication and interaction, breaking down traditional barriers, and gaining acceptance.<sup>23</sup> Consideration of the elevated status of consultant radiographers in conjunction with the wavering acceptance by their medical counterparts, could also

suggest uncertainty and a reduction in their sense of belonging, influencing their reported feelings of isolation.

#### *The leadership versus management debate*

The study by Sithole<sup>38</sup> found that the terms management and leadership were used interchangeably and the participants in their study viewed them as one entity. This was a common finding also highlighted by Stanley<sup>44</sup> who stressed the importance of acknowledging the difference. Bass and Bass<sup>45</sup> argue that leadership and management cannot easily be separated since both ultimately influence a group of individuals to accomplish goals. Yukl<sup>9</sup> also concurred with this interdependency, stating that they could be considered two mutually exclusive processes that require different skills and personality traits.

The research undertaken by Ford<sup>23</sup> found that upon evaluation of job descriptions for consultant radiographers, there was clear evidence of the inclusion and expectation of key management functions. These included activities such as health and safety, budgeting, creating business cases, complaints handling, recruitment, and radiation protection to quality assurance and clinical governance. This could perhaps be seen to be in conflict to the guidance given by the Department of Health<sup>46</sup> at the implementation of stage of the consultant roles, who clearly stated these were not to be management posts and should therefore not have any such responsibility.

#### *Role identify, self-perception and self efficacy*

Sithole<sup>38</sup> found that their study participants were easily able to identify formal leaders within their workplace and did so according to their hierarchical position. The study also found that participants who were operating within designated leadership roles failed to acknowledge that they themselves were also followers. This questions their underpinning knowledge around leadership theory and situational awareness. It could be suggested that leadership within the workplace is primarily associated more with management functions. According to Hudson,<sup>15</sup> management is more transactional and revolves around coping with complexity, more so than leadership which is considered transformational and enables change through people. Conversely, they also identify that the consultant radiographer role is a non-management route to leadership and is less based on being a figurehead and more on facilitating and enabling environments that inspire and support the wider team.

In terms of self-efficacy, Ford<sup>23</sup> indicated that consultant radiographers felt unsure about how to measure their success in terms of leadership, something with which Hardy and Nightingale<sup>47</sup> also concur. They stated that a lack of confidence and/or clarity around leadership expectation was apparent within this workforce group. What was deemed important however were aspects such as making a difference, exerting influence and improving healthcare service quality as a leader.<sup>34</sup> Coster et al.<sup>48</sup> found a positive correlation between the number of activities nurse consultants reported being engaged in and the extent to which they rated their impact on the service. Whilst this suggests that non-medical consultants benefit from having a wide remit in terms of self-reported impact, the practitioners involved in the study by Snaith et al.<sup>39</sup> reported feeling under pressure to undertake activities that took them away from patients and clinical service delivery. This in turn may be seen to negatively influence their ability and desire to contribute to leadership in areas other than clinical practice.

In respect of self-efficacy and the pre-registration workforce, Bloom<sup>12</sup> suggested that students' perspectives were likely to be influenced by role models with whom they most identified. They

also found higher self-efficacy ratings were apparent in students who observed radiographers undertaking leadership activities within the clinical workspace. From an educational perspective, Nuzzo et al.<sup>36</sup> also favoured this type of clinically situated learning. They endorsed the positive effects of initiating analytical thinking, independent learning and self-reflection, all key skills necessary for the emergent leader. It is hoped that by observing positive leadership behaviours in the field, the pre-registration workforce will perceive to a greater extent that there are future leadership opportunities available to themselves within radiography.<sup>12</sup>

#### **Conclusion**

This scoping review has highlighted a paucity in the literature around leadership development opportunities for radiographers. Where research has been undertaken, this has predominantly focused on clinical practice at either advanced or consultant level or has considered opportunities for pre-registration radiography students.

It has been acknowledged that leadership education and training is both a requirement and a necessity for the future radiographic workforce and that appropriate capabilities within this domain should be embedded at all levels of practice. Historically, this has been targeted towards practitioners working at the higher levels of clinical practice with a key driver being the publication of professional frameworks. Within the literature, the development of cognitive skills to support leadership responsibilities are considered an essential requisite to those groups studied, i.e. pre-registration students and advanced and consultant radiographers. Resultant impact and expectations of radiographic leadership are both undetermined and unknown.

There is a clear requirement for further research to evaluate leadership development and the differing styles within the radiographic workforce. Understanding and evaluating radiographers' perceptions of themselves as leaders and the subsequent impact on service delivery, team working, and retention would be beneficial considering the operational and workforce pressures that radiography and the wider clinical teams face.

#### **Animal welfare**

Guidelines for humane animal treatment did not apply to the present study because no animals were involved.

#### **Informed consent**

Informed consent for patient information to be published in this article was not obtained because no participants were involved.

#### **Ethics approval**

Ethical approval was not sought for the present study because it is a review of published literature only.

#### **Availability of data**

Data for this study was taken from the MEDLINE, CINAHL, PubMed and CINAHL.

#### **Author contributions**

KM: Conceptualisation, Methodology, Formal Analysis, Investigation, Writing (original draft), Writing (reviewing and editing).  
BS: Writing (original draft), Writing (reviewing and editing).  
AW: Supervision, Writing (reviewing and editing).

## Declaration of Generative AI and AI-assisted technologies in the writing process

No generative AI was used in the preparation of this manuscript.

## Conflicts of interest

The authors declare that there are no conflicts of interest.

## Acknowledgment

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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